NASA

7011 (201)

Aerospace Medicine
and Biology
A Continuing
Bibliography
with Indexes

NASA SP-7011 (201)
January 1980

National Aeronautics and
Space Administration

RK PUBLIC LIBRARY
FEB 19 1980
U. S. CO
DEPO

Aerospace Medicine & Biolog
& Biology Aerospace Medicine
ledicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bio
ine & Biology Aerospace Medi
ce Medicine & Biology Aerospa
Aerospace Medicine & Biology
& Biology Aerospace Medicine
ledicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bio

NASA SP-7011 (201)
Aerospace Medicine and Biology
A Continuing Bibliography with Indexes
Pages 293 – 319
January 1980

NAS 1.21:

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series)	N79-32150 – N79-34158
IAA (A-10000 Series)	A79-51016 – A79-54505

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by Informatics Information Systems Company.

NASA SP-7011(201)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 201)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in December 1979 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*

NASA Scientific and Technical Information Branch 1980
National Aeronautics and Space Administration
Washington, DC

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This Supplement is available from the National Technical Information Service (NTIS), Springfield, Virginia 22161, at the price code E03 ($6.25 domestic; $12.50 foreign).

INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 191 reports, articles and other documents announced during December 1979 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1979 Supplements.

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A79-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies of accessions are available at $6.00 per document up to a maximum of 20 pages. The charge for each additional page is $0.25. Microfiche (1) of documents announced in *IAA* are available at the rate of $2.50 per microfiche on demand, and at the rate of $1.10 per microfiche for standing orders for all *IAA* microfiche. The price for the *IAA* microfiche by category is available at the rate of $1.25 per microfiche plus a $1.00 service charge per category per issue. Microfiche of all the current AIAA Meeting Papers are available on a standing order basis at the rate of $1.35 per microfiche.

Minimum air-mail postage to foreign countries is $1.00 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

STAR ENTRIES (N79-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page vii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the * symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard $3.00 price, for those documents identified by a # symbol.)

---

(1) A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts*. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: Fachinformationszentrum, Karlsruhe. Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM).

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: U.S. Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free.

Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is $50.00 domestic; $100.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics
and Astronautics
Technical Information Service
555 West 57th Street, 12th Floor
New York, New York 10019

British Library Lending Division,
Boston Spa, Wetherby, Yorkshire,
England

Commissioner of Patents and
Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service
ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Scientific and Technical Information
Facility
P.O. Box 8757
B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Branch (NST-41)
Washington, D.C. 20546

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, California 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey
1033 General Services Administration
Building
Washington, D.C. 20242

U.S. Geological Survey
601 E. Cedar Avenue
Flagstaff, Arizona 86002

U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

U.S. Geological Survey
Bldg. 25, Denver Federal Center
Denver, Colorado 80225

Fachinformationszentrum Energie, Physik,
Mathematik GMBH
7514 Eggenstein Leopoldshafen
Federal Republic of Germany

NTIS PRICE SCHEDULES

Schedule A

STANDARD PAPER COPY PRICE SCHEDULE

(Effective October 1, 1977)

Price Code	Page Range	North American Price	Foreign Price
A01	Microfiche	$ 3.00	$ 4.50
A02	001-025	4.00	8.00
A03	026-050	4.50	9.00
A04	051-075	5.25	10.50
A05	076-100	6.00	12.00
A06	101-125	6.50	13.00
A07	126-150	7.25	14.50
A08	151-175	8.00	16.00
A09	176-200	9.00	18.00
A10	201-225	9.25	18.50
A11	226-250	9.50	19.00
A12	251-275	10.75	21.50
A13	276-300	11.00	22.00
A14	301-325	11.75	23.50
A15	326-350	12.00	24.00
A16	351-375	12.50	25.00
A17	376-400	13.00	26.00
A18	401-425	13.25	26.50
A19	426-450	14.00	28.00
A20	451-475	14.50	29.00
A21	476-500	15.00	30.00
A22	501-525	15.25	30.50
A23	526-550	15.50	31.00
A24	551-575	16.25	32.50
A25	576-600	16.50	33.00
A99	601-up	-- 1/	-- 2/

1/ Add $2.50 for each additional 100 page increment from 601 pages up.

2/ Add $5.00 for each additional 100 page increment from 601 pages up.

Schedule E

EXCEPTION PRICE SCHEDULE

Paper Copy & Microfiche

Price Code	North American Price	Foreign Price
E01	$ 3.25	$ 6.50
E02	4.75	9.50
E03	6.25	12.50
E04	7.50	15.00
E05	9.00	18.00
E06	10.50	21.00
E07	12.50	25.00
E08	15.00	30.00
E09	17.50	35.00
E10	20.00	40.00
E11	22.50	45.00
E12	25.00	50.00
E13	28.00	56.00
E14	31.00	62.00
E15	34.00	68.00
E16	37.00	74.00
E17	40.00	80.00
E18	45.00	90.00
E19	50.00	100.00
E20	60.00	120.00
E99 - Write for quote		
N01	28.00	40.00

TABLE OF CONTENTS

Page

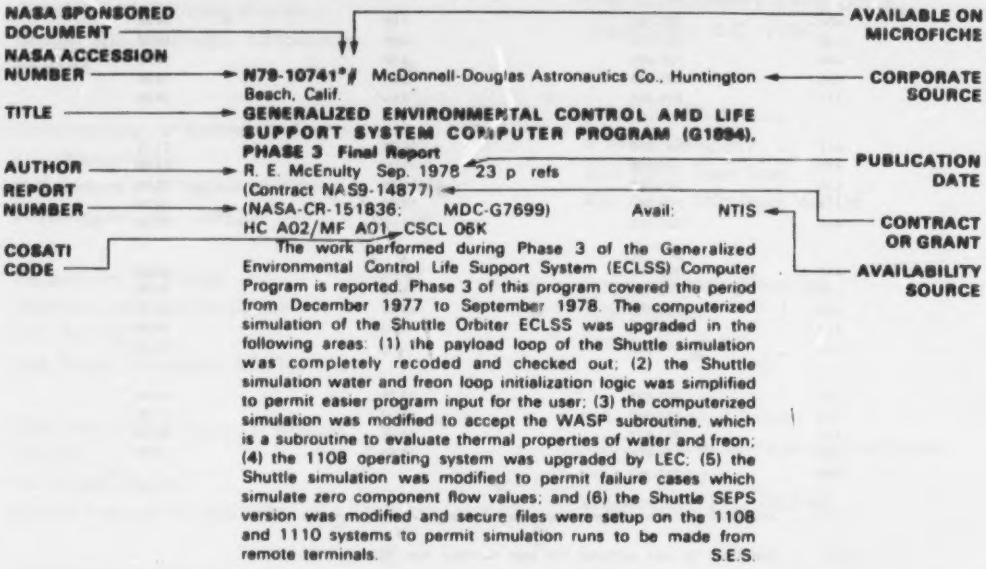
IAA Entries (A79-10000) 293

STAR Entries (N79-10000) 307

Subject Index I-1

Personal Author Index I-21

TYPICAL CITATION AND ABSTRACT FROM *STAR*



NASA SPONSORED DOCUMENT
NASA ACCESSION NUMBER
TITLE
AUTHOR
REPORT NUMBER
COSATI CODE
AVAILABLE ON MICROFICHE
CORPORATE SOURCE
PUBLICATION DATE
CONTRACT OR GRANT
AVAILABILITY SOURCE

N79-10741*# McDonnell-Douglas Astronautics Co., Huntington Beach, Calif.

GENERALIZED ENVIRONMENTAL CONTROL AND LIFE SUPPORT SYSTEM COMPUTER PROGRAM (G1894), PHASE 3 Final Report

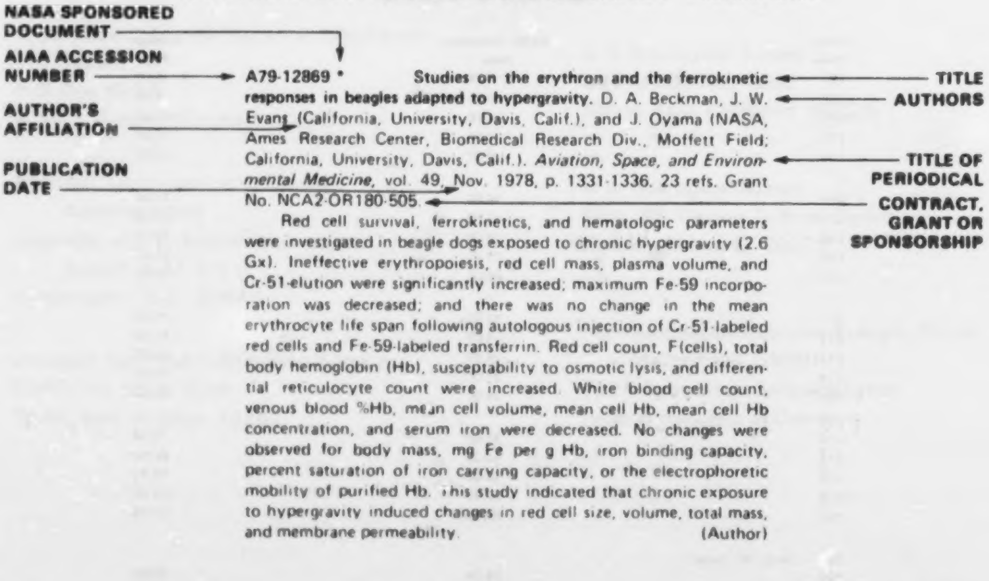
R. E. McEnulty Sep. 1978 23 p refs

(Contract NAS9-14877)

(NASA-CR-151836; MDC-G7699) Avail: NTIS HC A02/MF A01 CSCL 06K

The work performed during Phase 3 of the Generalized Environmental Control Life Support System (ECLSS) Computer Program is reported. Phase 3 of this program covered the period from December 1977 to September 1978. The computerized simulation of the Shuttle Orbiter ECLSS was upgraded in the following areas: (1) the payload loop of the Shuttle simulation was completely recoded and checked out; (2) the Shuttle simulation water and freon loop initialization logic was simplified to permit easier program input for the user; (3) the computerized simulation was modified to accept the WASP subroutine, which is a subroutine to evaluate thermal properties of water and freon; (4) the 1108 operating system was upgraded by LEC; (5) the Shuttle simulation was modified to permit failure cases which simulate zero component flow values; and (6) the Shuttle SEPS version was modified and secure files were setup on the 1108 and 1110 systems to permit simulation runs to be made from remote terminals. S.E.S.

TYPICAL CITATION AND ABSTRACT FROM *IAA*



NASA SPONSORED DOCUMENT
AIAA ACCESSION NUMBER
AUTHOR'S AFFILIATION
PUBLICATION DATE
TITLE
AUTHORS
TITLE OF PERIODICAL
CONTRACT, GRANT OR SPONSORSHIP

A79-12869 * Studies on the erythron and the ferrokinetic responses in beagles adapted to hypergravity. D. A. Beckman, J. W. Evans (California, University, Davis, Calif.), and J. Oyama (NASA, Ames Research Center, Biomedical Research Div., Moffett Field; California, University, Davis, Calif.). *Aviation, Space, and Environmental Medicine*, vol. 49, Nov. 1978, p. 1331-1336. 23 refs. Grant No. NCA2-OR180-505.

Red cell survival, ferrokinetics, and hematologic parameters were investigated in beagle dogs exposed to chronic hypergravity (2.6 Gx). Ineffective erythropoiesis, red cell mass, plasma volume, and Cr-51-elution were significantly increased; maximum Fe-59 incorporation was decreased; and there was no change in the mean erythrocyte life span following autologous injection of Cr-51-labeled red cells and Fe-59-labeled transferrin. Red cell count, F(cells), total body hemoglobin (Hb), susceptability to osmotic lysis, and differential reticulocyte count were increased. White blood cell count, venous blood %Hb, mean cell volume, mean cell Hb, mean cell Hb concentration, and serum iron were decreased. No changes were observed for body mass, mg Fe per g Hb, iron binding capacity, percent saturation of iron carrying capacity, or the electrophoretic mobility of purified Hb. This study indicated that chronic exposure to hypergravity induced changes in red cell size, volume, total mass, and membrane permeability. (Author)

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 201)

JANUARY 1980

IAA ENTRIES

A79-51026 **Noninvasive cardiovascular measurements.** Edited by H. A. Miller, E. V. Schmidt, and D. C. Harrison (Stanford University, Stanford, Calif.). Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE Proceedings. Volume 167), 1978. 232 p.

A collection of papers is presented regarding recent advances of prime importance in noninvasive cardiovascular measurement techniques. Five problem areas are discussed: (1) quantitative radiography; (2) computerized and contrast angiography (nuclear and computerized tomographic imaging, intravenous contrast angiography); (3) noninvasive blood pressure measurement and monitoring; (4) ultrasonography (echocardiography, blood flow); and (5) magnetocardiography. The authors of each section in this book review the most important advances in their fields, and project those new areas which are most promising for continued research. S.D.

A79-51027 * **Aerospace highlights and potential medical applications.** C. A. Syvertson (NASA, Ames Research Center, Moffett Field, Calif.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 1-10.

An attempt is made to provide an overview of activities going on in NASA from aeronautics to manned space flight, to exploration of other planets. Some of the spin-offs of NASA research related to the medical profession are described. The discussion focuses on the Space Shuttle, the unmanned spacecraft Seasat program, the exploration of other planets in the solar system, a water-cooled helmet, and some breakthroughs in medical diagnostic instrumentation. S.D.

A79-51028 **Computer quantitation of angiocardiographic images.** P. H. Heintzen, R. Brennecke, and J. H. Buersch (Kiel, Neue Universität, Kiel, West Germany). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 17-20. 10 refs.

A new technique for computerized videoangiocardiography is described which minimizes the disadvantages of contrast material and provides maximum structural and/or functional information from angiocardiograms for a given amount of contrast regardless of the site and mode of injection. This improvement is achieved by summing up instantaneous contrast angiocardiographic pictures in a continuous or heart-phase-related mode, and subtracting the corresponding nonspecific background obtained from X-ray pictures taken in real time prior to or following contrast injection. Digital filtering and histogram modification techniques are used to enhance the contrast and reduce the 'noise'. Typical results are presented. S.D.

A79-51029 **Clinical usefulness of radiopaque markers in left ventricular function.** G. T. Meester, P. W. Serruys, P. G. Hugenholtz (Rotterdam, Erasmus Universiteit, Rotterdam, Netherlands), and R. W. Brower (Interuniversitary Cardiological Institute, Amsterdam, Netherlands). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 21-26. 28 refs.

When coronary blood flow is restored after a successful coronary bypass surgery, improvement of local wall motion can be expected. However, this result is not clearly present in the available present-day extensive and somewhat conflicting literature. This is partly due to extraneous factors such as peri-operative infarctions, graft closure, the effect of concomitant medical treatment, and the methodology involved. The paper reviews some of these factors and discusses alternative approaches. Attention is given to an approach suitable for the quantitation of local wall motion through the use of implanted epicardial radiopaque markers. Relevant experimental results are presented. Also discussed is the automatic detection of ventricular contours in angiocardiograms. S.D.

A79-51030 * **Computer quantitation of coronary angiograms.** D. C. Ledbetter, R. H. Selzer (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.), R. M. Gordon (Informatics, Inc., Palo Alto, Calif.), D. H. Blankenhorn (Southern California, University, Los Angeles, Calif.), and M. E. Sanmarco (Rancho Los Amigos Hospital, Downey, Calif.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 27-36. 5 refs.

A computer technique is being developed at the Jet Propulsion Laboratory to automate the measurement of coronary stenosis. A Vanguard 35mm film transport is optically coupled to a Spatial Data System vidicon/digitizer which in turn is controlled by a DEC PDP 11/55 computer. Programs have been developed to track the edges of the arterial shadow, to locate normal and atherosclerotic vessel sections and to measure percent stenosis. Multiple frame analysis techniques are being investigated that involve on the one hand, averaging stenosis measurements from adjacent frames, and on the other hand, averaging adjacent frame images directly and then measuring stenosis from the averaged image. For the latter case, geometric transformations are used to force registration of vessel images whose spatial orientation changes. (Author)

A79-51031 **Computerized positron emission tomography /PET/ for the assessment of myocardial integrity.** M. M. Ter-Pogossian (Washington University, St. Louis, Mo.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 43-48. 14 refs.

Myocardial integrity is an important parameter in the diagnosis, therapy, and general understanding of cardiac disease. The paper describes the operating principles and capabilities of a new noninvasive technique, called the computerized positron emission tomography (PET), for the in vivo assessment of myocardial integrity.

This technique, a nuclear medicine imaging procedure, yields transverse tomographic images of the heart, which reflect the distribution of a previously administered positron-emitting radionuclide.The images are produced with a very high spatial resolution as compared to more conventional nuclear medicine procedures, and they provide highly quantitative information on the distribution of the radionuclide. The combined use of PET and cyclotron-produced short-lived positron-emitting radionuclides permits the in vivo regional noninvasive assessment of myocardial metabolism, which is perhaps the most important parameter of myocardial integrity. S.D.

A79-51032 **Current status of cardiovascular imaging by transmission computed tomography.** W. R. Brody (Stanford University, Stanford, Calif.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 49-55. 20 refs. Research supported by the Santa Clara County Heart Association.

Although the technological advances in transmission computed tomography (CT) have been dramatic, cardiovascular applications of CT are currently limited by inadequate temporal resolution to resolve moving structures (e.g., the myocardium), difficulties in timing the scan exposure to coincide with maximum contrast enhancement of vascular structures and cardiac chambers, and limited field of view perpendicular to the axial plane. The modes of cardiac CT operation are reviewed: static (single scan), dynamic (multiple scans in rapid succession), gated and rapid (scans less than 500 msec). Modest improvements in gated and dynamic scanning are expected with existing technology and optimization of reconstruction algorithms. Future advances in CT technology should be directed toward the development of rapid scanning systems for imaging the myocardium and toward higher resolution scanners for imaging vascular structures. (Author)

A79-51033 **The development of a digital video subtraction system for intravenous angiography.** T. W. Ovitt, M. P. Capp, H. D. Fisher, M. M. Frost, S. Nudelman, H. Roehrig (Arizona, University, Tucson, Ariz.), and J. L. Lebel (Arizona, University, Tucson, Ariz.; Colorado State University, Fort Collins, Colo.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 61-65.

A system is under development for a relatively noninvasive technique for the assessment of atherosclerosis. The principle of this method is digital video X-ray subtraction for the visualization of arterial structures after the intravenous injection of contrast media. The prototype unit for the development of video subtraction techniques has been assembled and preliminary testing has started. Results so far in dogs have shown good visualization of the heart, carotid arteries and renal arteries. (Author)

A79-51034 * **Iodine imaging using spectral analysis.** A. Macovski (Stanford University, Stanford, Calif.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 67-75. 7 refs. NSF Grant No. ENG-76-05529; Contract No. NAS5-23522.

Existing radiographic imaging systems provide images which represent an integration or averaging over the energy spectrum. In order to provide noninvasive angiography it is necessary to image the relatively small amounts of iodine which are available following an intravenous administration. This is accomplished by making use of the special spectral characteristics of iodine. Two methods will be presented. One involves a special grating for encoding the iodine information in the form of a fine line pattern. This is subsequently decoded to provide images of iodinated structures which are otherwise almost invisible. The second method utilizes a scanned X-ray beam which is rapidly switched in the high energy region. In this region, iodine experiences significant variations in the attenuation coefficient while bone and soft tissue do not. An efficient and accurate X-ray detector can be used with scanned X-ray beams. This provides a high degree of sensitivity enabling the visualization of small vessels containing relatively dilute iodine. (Author)

A79-51035 **Real-time computerized fluoroscopic cardiac imaging.** R. A. Kruger, C. A. Mistretta, T. L. Houk, S. J. Riederer, C. G. Shaw, D. L. Ergun, D. Carbone, W. Kubal, A. Crummy, and W. Zwiebel (Wisconsin, University, Madison, Wis.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 77-82. 7 refs.

A computerized fluoroscopy system employing several time and energy subtraction algorithms has permitted good visualization of the cardiovascular system using peripheral intravenous iodine injections of about 1 cm cu/kg. Image contrast improvements of 8-16 over conventional fluoroscopy are common. Several canine and human imaging studies are described including visualization of myocardial infarctions as regions of anomalous image grey shade. The system employs a standard image intensified fluoroscopy system and a specially constructed real-time image processor. Quasi-monoenergetic X-ray beams formed by filtration deliver typical doses of 400 mR/sec in adult human cardiac exams. (Author)

A79-51036 **A study of noninvasive blood pressure measurement techniques.** C. S. Weaver, J. S. Eckerley, P. M. Newgard, C. T. Warnke (SRI International, Menlo Park, Calif.), J. B. Angell, S. C. Terry, and J. Robinson (Stanford University, Stanford, Calif.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 89-105. 10 refs. Grant No. NIH-HL-17604.

Some results of a study of techniques for the noninvasive and ambulatory measurement of blood pressure are presented. A method for computer processing ambulatory or stress test data to determine blood pressure is described. It appears that good accuracies can be obtained with ambulatory patients during normal ranges of physical activities and perhaps during treadmill tests. The development and testing of a new transducer for the noninvasive beat-by-beat measurement of blood pressure is described. The transducer outputs are similar to intra-arterial waveforms that are obtained by catheter, and it is expected that the transducer will be used in the operating room, the ICU, and the CCU. (Author)

A79-51037 **Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements.** D. N. Ghista (Michigan Technological University, Houghton, Mich.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 107-120. 7 refs.

A79-51038 **A new noninvasive technique for cardiac pressure measurement. II - Scattering from encapsulated bubbles.** D. Z. Anderson, M. O. Scully, and W. C. Speed (Arizona, University, Tucson, Ariz.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 121-127.

A recent paper by Fairbank and Scully (1977) has reported a new technique for noninvasive measurement of cardiac pressure by using tiny air bubbles. The present paper investigates experimentally the utility of pressure-sensitive coated (Dow and Sephadex) spheres to the problem of remote pressure sensing. The experiments are performed in both the low bubble density (single scattering) and high density (multiple scattering) limits using both Dow and Sephadex spheres. The experiments described demonstrate the pressure sensitivity of the amplitude and frequency responses for both types of spheres. The viability of this encapsulated-bubble scheme as applied to remote cardiac pressure measurements is demonstrated. S.D.

A79-51039 * **Signal processing in ultrasound.** D. H. Le Croissette (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.) and P. M. Gammell (Southern California, University, Los Angeles, Calif.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 135-141. 7 refs. Contract No. NAS7-100.

Signal is the term used to denote the characteristic in the time or frequency domain of the probing energy of the system. Processing of this signal in diagnostic ultrasound occurs as the signal travels through the ultrasonic and electrical sections of the apparatus. The paper discusses current signal processing methods, postreception processing, display devices, real-time imaging, and quantitative measurements in noninvasive cardiology. The possibility of using deconvolution in a single transducer system is examined, and some future developments using digital techniques are outlined. S.D.

A79-51040 **Clinical applications of new echocardiographic techniques.** R. L. Popp (Stanford University, Stanford, Calif.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 143-150. 20 refs.

The paper reviews the method of two-dimensional echocardiographic imaging for clinical purposes, and attempts to differentiate those proven applications from the ones considered to need further definition and investigation. Capabilities of M-mode and two-dimensional echocardiography are compared. The two-dimensional echocardiographic system provides both M-mode information and two-dimensional display. This technique has been shown to be accurate for quantitation of the size of cardiac valves, segmental left ventricular wall motion abnormalities, complex congenital heart malformations, and the presence of intracardiac masses and of pericardial fluid surrounding the heart. In particular, the technique is suitable for identifying the orientation and location of myocardial segments to be sampled for tissue signature analysis for noninvasive characterization of the histology of the heart. S.D.

A79-51041 **Cardiac blood flow measurement - A component of the comprehensive cardiac examination.** D. W. Baker (Washington, University, Seattle, Wash.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 155-159. 15 refs. Grant No. NIH-HL-07293.

The resolution and sensitivity of ultrasonic techniques provide the potential for many types of cardiac blood flow detection and analysis. The paper discusses the need for the clinical flow measurements, specific measurements, instrumentation factors in quantitation, a systems approach to flow measurement, and data displays. A real-time computer-based ultrasound system with specialized display is under development. The availability of advanced, large-scale, digital integrated circuits and large memories makes it relatively inexpensive to collect, process, and display the large bodies of data required to utilize more blood-flow information in the diagnostic process. S.D.

A79-51042 **Quantitative flow estimation with transcutaneous Doppler ultrasound.** C. F. Hottinger, L. Gerzberg, J. D. Meindl, W. R. Brody, T. S. Nelsen (Stanford University, Stanford, Calif.), and W. C. Haase. In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 161-168. 17 refs. Grant No. NIH-NIGMS-17940.

The paper outlines an approach known as the attenuation-compensated volume flow meter (ACVF), which avoids the need for direct calculations of the vessel size, and assures measurement of flow normal to a sample surface using pulsed Doppler ultrasound. The transducer configuration and block diagram of the ACVF are schematically presented and described. The approach allows estimation of volume flow without precise determination of the Doppler angle, vessel size, or details of the velocity profile. The approach thus overcomes several of the major obstacles hindering transcutaneous quantitation of blood flow. This simplification arises through the close correspondence of the measurement method to the formal definition of flow. S.D.

A79-51043 * **Biomagnetic instrumentation and measurement.** E. J. Iufer (NASA, Ames Research Center, Moffett Field, Calif.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 175-180. 16 refs.

The instruments and techniques of biomagnetic measurement have progressed greatly in the past 15 years and are now of a quality appropriate to clinical applications. The paper reports on recent developments in the design and application of SQUID (Superconducting Quantum Interference Device) magnetometers to biomagnetic measurement. The discussion covers biomagnetic field levels, magnetocardiography, magnetic susceptibility plethysmography, ambient noise and sensor types, principles of operation of a SQUID magnetometer, and laboratory techniques. Of the many promising applications of noninvasive biomagnetic measurement, magnetocardiography is the most advanced and the most likely to find clinical application in the near future. S.D.

A79-51044 **Clinical magnetocardiography.** J. P. Wikswo, Jr. (Vanderbilt University, Nashville, Tenn.). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 181-193. 40 refs.

The paper outlines the theoretical basis of magnetocardiography (MCG) to elucidate the basic differences between the ECG and MCG. MCG instrumentation and various methods of recording, displaying and analyzing the MCG are described. The current clinical experience with MCG is discussed, and the rationale for the various clinical applications is summarized. There are currently four areas where MCG might prove clinically useful: (1) to complement ECG diagnosis, (2) to screen large numbers of people for cardiac electrical abnormalities, (3) to measure noninvasively the electrical activity of the Bundle of His, and (4) to detect infarct-related injury currents. The identification of those areas where magnetocardiography offers the most promise as a clinical tool is under way. S.D.

A79-51045 **Non-invasive information on the P-R segment of the cardiac cycle - An assessment of the clinical potential of the electric and magnetic methods.** D. Farrell, J. Tripp, and R. Norgren (Case Western Reserve University, Cleveland, Ohio). In: Noninvasive cardiovascular measurements. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1978, p. 195-200. 29 refs. Research supported by the American Heart Association; NSF Grant No. ENG-77-15952-A01.

A79-51084 # **Automatic audiometry in the practice of flight-personnel examination (Avtomaticheskaia audiometriia v praktike obsledovaniia letnogo sostava).** O. A. Nakapkin. *Voenno-Meditsinskii Zhurnal*, June 1979, p. 49-50. In Russian.

A79-51098 * # **Advanced transport operation effects on pilot scan patterns.** R. L. Harris, Sr. and R. W. Mixon (NASA, Langley Research Center, Hampton, Va.). *Human Factors Society, Annual Meeting, Boston, Mass., Oct. 30-Nov. 1, 1979, Paper.* 6 p. 11 refs.

Long straight-in and close-in, curved, descending instrument approaches were made in NASA's fixed-base Terminal Configured Vehicle simulator. The pilot either manually controlled the simulator or monitored the automatic system control of the simulated aircraft during the approach. Tests were performed with or without the display of traffic. The results indicate that the pilots' use of the Electronic Horizontal Situation Indicator (EHSI) increased appreciably for the close-in, curved, descending approach compared to the conventional straight-in approach. When operating as a monitor of the autopilot system, the pilot scanned around more with less attention devoted to the Electronic Attitude Direction Indicator (EADI). The pilots preferred the manual mode because it kept them in the control loop. The addition of displayed traffic to the EHSI increased the pilots' use of the EHSI with a corresponding reduction in his use of the EADI. Also, the pilot's pupil diameter increased during the landing flare indicating a higher stress level even though the tests were conducted in a fixed-base simulator. (Author)

A79-51111 **Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle.** I. Palacios, K. Sagar, and W. J. Powell, Jr. (Massachusetts General Hospital; Harvard University, Boston, Mass.). *American Journal of Physiology,* vol. 237, Sept. 1979, p. H293-H298. 31 refs. Research supported by the Universidad Central de Venezuela; Grants No. PHS-HL-06664; No. PHS-5P50-HL-17665; No. PHS-HL-07028.

A79-51112 **Application of an isolated heart model to investigate blood-oxygen delivery.** P. W. Rand, C. V. Nelson, E. H. Lacombe, N. D. Barker, and L. A. Pirone (Maine Medical Center, Portland, Me.). *American Journal of Physiology,* vol. 237, Sept. 1979, p. H348-H352. 13 refs. Research supported by the John A. Hartford Foundation.

Application of a blood-perfused isolated rabbit heart model providing metabolic, functional, and vectorcardiographic measurements is presented. The model avoided compensatory hemodynamic responses which limited interpretation of hemoglobin-oxygen affinity modifications, and fixed-flow perfusions of unchanged or affinity-modified red blood cell suspensions were performed to assess the benefits of high affinity during hypoxic hypoxia and of low affinity during posthypoxic recovery. High myocardial oxygen consumption (MVo2) was associated with high-affinity blood during mild hypoxia and low-affinity blood during posthypoxic recovery. Ventricular function, vectorcardiographic patterns, and lactate levels were affected by hypoxia and ischemia, but not by level of affinity, and the relevance of these observations to the therapeutic potential of hemoglobin-oxygen affinity modification is discussed. A.T.

A79-51113 # **The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia (Vliianie normobaricheskoi giperoksii na tkanevoe dykhanie mosga i pecheni belykh krys s razlichnoi ustoichivost'iu k gipoksii).** A. I. Nazarenko and T. N. Govorukha (Akademiia Nauk Ukrainskoi SSR, Institut Fiziologii, Kiev, Ukrainian SSR). *Fiziologicheskii Zhurnal* (Kiev), vol. 25, July-Aug. 1979, p. 339-342. 18 refs. In Russian.

A79-51114 # **Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia (Diffuzionnaia sposobnost' i pronitsaemost' legkikh dlia kisloroda u sobak raznogo vozrasta v norme i pri ostroi gipoksicheskoi gipoksii).** V. P. Pozharov, E. V. Rozova, and M. M. Seredenko (Akademiia Nauk Ukrainskoi SSR, Institut Fiziologii, Kiev, Ukrainian SSR). *Fiziologicheskii Zhurnal* (Kiev), vol. 25, July-Aug. 1979, p. 364-370. 19 refs. In Russian.

A79-51115 # **The effect of the reduction of inspired gas density on external respiration (O vliianii snizheniia plotnosti vdykhaemoi gazovoi smesi na vneshnee dykhanie).** E. V. Rozova and M. M. Seredenko (Akademiia Nauk Ukrainskoi SSR, Institut Fiziologii, Kiev, Ukrainian SSR). *Fiziologicheskii Zhurnal* (Kiev), vol. 25, July-Aug. 1979, p. 445-447. 14 refs. In Russian.

The effects of gas mixtures of various densities and normal and elevated oxygen concentrations on external respiration and gas exchange in humans is investigated. Subjects breathed atmospheric air as well as 21% O2-79% He, 40% O2-60% N2 and 40% O2-60% He mixtures for 15 min and ventilatory and gas exchange responses were monitored. Breathing of the normoxic oxygen-helium mixture is found to lead to a decrease in respiratory volume and the ratio between alveolar ventilation and respiratory volume relative to air breathing, indicating a decrease in the ability of the respiratory system to supply oxygen. An increase in the dead volume and decreases in oxygen consumption, carbon dioxide evolution and arterial oxygen pressure are also noted. The inhalation of hyperoxic oxygen-helium mixtures is found to lead to decreases in the alveolar ventilation/respiratory volume ratio and CO2 evolution, and a less marked increase in oxygen consumption as compared with the effects of a hyperoxic oxygen-nitrogen mixture. A.L.W.

A79-51116 # **The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia (Vliianie energii SVCh polia na napriazhenie kisloroda i temperaturu v myshechnoi tkani zhivotnykh, predvaritel'no adaptirovannykh k gipoksii).** U. N. Degtiar' (Kievskii Institut Obshchei i Kommunal'noi Gigieny, Kiev, Ukrainian SSR). *Fiziologicheskii Zhurnal* (Kiev), vol. 25, July-Aug. 1979, p. 448-450. 5 refs. In Russian.

A79-51117 # **The physiological role of surface-active substances in the lung (Fiziologicheskaia rol' poverkhnostnoaktivnykh veshchestv legkogo).** V. A. Berezovskii and V. Iu. Gorchakov (Akademiia Nauk Ukrainskoi SSR, Institut Fiziologii, Kiev, Ukrainian SSR). *Fiziologicheskii Zhurnal* (Kiev), vol. 25, July-Aug. 1979, p. 456-465. 98 refs. In Russian.

Current understandings of the role of lung surfactants in respiratory physiology are reviewed. The functions of lung surfactants in maintaining the elasticity of the lung, lowering gas-liquid interfacial tensions, stabilizing alveolus dimensions and regulating gas exchange are discussed and the structure of surfactant layers is outlined. Means of sampling and purifying surfactants are presented, and the role of surfactants in lung pathology is considered. Attention is also given to the effects of hypoxia and hyperoxia on the synthesis, reabsorption and surface activity of lung surfactants.
A.L.W.

A79-51118 # **Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics (Vozmozhnosti i perspektivy metoda tetrapoliarnoi transtorakal'noi impendansnoi reopletizmographii dlia neinvazivnogo issledovaniia gemo- i kardiodinamiki).** M. I. Gurevich, A. I. Solov'ev, and L. B. Doloman (Akademiia Nauk Ukrainskoi SSR, Institut Fiziologii, Kiev, Ukrainian SSR). *Fiziologicheskii Zhurnal* (Kiev), vol. 25, July-Aug. 1979, p. 465-471. 36 refs. In Russian.

A79-51174 **The visual cortex of normal and deprived monkeys.** D. H. Hubel (Harvard University, Boston, Mass.). *American Scientist,* vol. 67, Sept.-Oct. 1979, p. 532-543. 26 refs.

The paper reviews studies on the part of the brain that is concerned with vision. Attention is focused on the visual cortex of monkeys with normal vision and those deprived of the use of one or both eyes. The discussion covers the striate cortex and its functions; functional architecture; geometry of ocular dominance columns; physiological effects of visual deprivation; timing of deprivation effects; effects of closure on critical architecture; dominance columns in newborn monkeys; and some comments on normal and abnormal brains. The results described involve the visual pathway only, and probably a relatively peripheral part of it. They provide insight into some of the functions of the brain. S.D.

A79-51327 # **Reciprocal interaction between the photopic and scotopic systems of the visual analyzer in man (O retsiproknom vzaimodeistvii mezhdu fotopicheskoi i skotopicheskoi sistemami zritel'nogo analizatora cheloveka).** V. A. Il'ianok (Akademiia Nauk SSSR, Institut Vysshei Nervnoi Deiatel'nosti i Neirofiziologii, Moscow, USSR). In: Sensory perception systems (Sensornye sistemy). Leningrad, Izdatel'stvo Nauka, 1979, p. 40-53. 90 refs. In Russian.

A review is presented of available literature on the reciprocal interaction between the rod and cone systems of the visual analyzer in man. A description is given of this interaction in the electrical activity of different areas of the cerebral cortex during the redistribution of brightness in the field of vision. Mechanisms responsible for the occurrence of inhibitory processes, their dependence on the various parameters of light stimuli, and the role of these processes in regulating the functions of all visual-analyzer levels are examined. Practical recommendations are made as to the optimization of the brightness distribution in the field of vision. S.D.

A79-51328 # **Effect of adaptation level on certain visual functions in man (Vliianie urovnia adaptatsii na nekotorye zritel'nye funktsii cheloveka).** V. M. Kamenkovich (Akademiia Nauk SSSR, Institut Vysshei Nervnoi Deiatel'nosti i Neirofiziologii, Moscow, USSR). In: Sensory perception systems (Sensornye sistemy). Leningrad, Izdatel'stvo Nauka, 1979, p. 53-61. 50 refs. In Russian.

The paper presents a review of literature data on the effect of adaptation level on simple visual functions, viz., visual acuity and contrast sensitivity. Also presented are results of investigations into the adaptive changes in the threshold time for recognition of simple and complex visual images under conditions of varying and constant contrast. S.D.

A79-51698 * **Minute tubular forms in soil.** L. E. Casida, Jr. and K.-C. Liu (Pennsylvania State University, University Park, Pa.). *Canadian Journal of Microbiology,* vol. 25, no. 6, 1979, p. 722-729. 16 refs. Grant No. NGR-39-009-180.

Large numbers of long, straight, flattened structures were observed during an electron-microscope study of bacteriophage in aqueous extracts. These structures were called tubules and ranged in width from 10 to 50 nm. Materials and methods were discussed relative to extraction of tubules from soil, electron microscopy, quantitation of tubules in filtrate suspension, tests performed on tubules, plaque formation, and nutrient amendments. It is found that all of the tubules recovered from soil are broken at one or both ends. They are present in surface soils but not in a subsurface sample. Their numbers decrease during bacterial multiplication in soil or broth-containing soil. The tubules appear to be composed of protein that could be disintegrated to liberate nonprotein fibers. A possible clue to the nature of the tubules is their apparent relation to soil bacteria. S.D.

A79-51701 * **Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates.** D. L. Balkwill and L. E. Casida, Jr. (Pennsylvania State University, University Park, Pa.). *Applied and Environmental Microbiology,* vol. 37, May 1979, p. 1031-1037. 32 refs. Grant No. NGR-39-009-180.

A study to determine whether the firmness of microbial attachment that occurred for the overall bacterial population in natural unaltered soil could be duplicated for selected bacterial soil isolates introduced into autoclaved soil is presented. Pure cultures of Arthrobacter globiformis and four fresh isolates were incubated individually in autoclaved soil in the presence and absence of glucose. The attachment attained by the soil isolates duplicated that of the overall bacterial population that resides in unaltered, unamended soil. Electron microscopy indicated that all attached cells produced extracellular polysaccharide slimes in the autoclaved soil, and that these materials appeared to connect the cells to surrounding soil debris. The actual role of polysaccharides in attachment was not clear, however, because at least one of these organisms possessed extracellular slime during the period when it had not yet attached to the soil. A.T.

A79-52022 **Frequency and amplitude analysis of the EMG during exercise on the bicycle ergometer.** J. S. Petrofsky (St. Louis University, St. Louis, Mo.). *European Journal of Applied Physiology,* vol. 41, no. 1, 1979, p. 1-15. 38 refs. U.S. Department of Health, Education, and Welfare Contract No. HSM-099-71-21; Grant No. AF-AFOSR-72-2362.

Experiments were conducted in which the amplitude and frequency of the EMG were recorded from the quadriceps muscle in three male subjects during work on a bicycle ergometer. The objective was to examine the relationship of the center frequency and rms amplitude to the oxygen cost and fatigue in muscle during dynamic exercise. The results indicate that the EMG is a complex waveform, being influenced not only by fatigue, but to even a larger extent in many cases, by the temperature of the exercising muscles. Although muscular fatigue caused an increase in the rms amplitude and a decrease in the center frequency, the increase in muscle temperature opposed these changes by reducing the rms amplitude and increasing the center frequency. S.D.

A79-52023 **Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects.** M. Follenius, G. Brandenberger, B. Reinhardt, and M. Simeoni (CNRS, Centre d'Etudes Bioclimatiques, Strasbourg, France). *European Journal of Applied Physiology,* vol. 41, no. 1, 1979, p. 41-50. 27 refs.

A79-52024 **Time course of O2-pulse during various tests of aerobic power.** R. A. Wiswell and H. A. de Vries (Southern California, University, Los Angeles, Calif.). *European Journal of Applied Physiology,* vol. 41, no. 4, 1979, p. 221-231. 17 refs.

An experimental study was conducted to (1) test the hypothesis proposed by Balke (1954) that O2-pulse typically reaches a maximum before V(O2) max by observing the time course of O2-pulse throughout maximal exercise stress; (2) compare bicycle ergometer and treadmill exercise with respect to the elicited O2-pulse time course as well as to the V(O2)max and HR; (3) discern those physiologic variables which might predispose an individual to reach a peak O2-pulse at submaximal work load if this phenomenon is not universal; and (4) evaluate the use of O2-pulse at submaximal levels of exercise to predict V(O2)max. The results show that the use of maximal O2-pulse rather than V(O2)max offers no significant advantage. O2-pulse during submaximal exercise appears to provide a good indication of cardiorespiratory fitness. S.D.

A79-52025 **Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time.** G. A. Wood (Western Australia, University, Nedlands, Australia). *European Journal of Applied Physiology,* vol. 41, no. 4, 1979, p. 247-257. 18 refs.

A79-52055 **Manual landings in Category 3 conditions.** A. D. Brown and D. J. Gurney (Royal Aircraft Establishment, Bedford, Hants., England). *Aeronautical Journal,* vol. 83, Aug. 1979, p. 296-305. 9 refs.

Two aircraft were used for flight trials in accordance with the program involving flying in Category 3 fog conditions. The pilot techniques used and the problems encountered in manual landing are discussed. The trial progressed from simulation studies and aircraft performance measurements to actual flight trials in fog. At the start of the program, while experience was being gained, weather minima were imposed based partly on earlier trial results and partly on an improved knowledge of fog characteristics. As data were obtained and crew procedures refined, the minima were progressively reduced so that the limiting visual conditions for manual landings could be established. V.T.

A79-52276 **Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators.** M. F. Lewis and H. W. Mertens (FAA, Civil Aeromedical Institute, Oklahoma City, Okla.). *Aviation, Space, and Environmental Medicine,* vol. 50, Oct. 1979, p. 991-1002. 16 refs.

The paper presents the effectiveness of four different visual glidepath indicator systems, in terms of pilot performance, under conditions where the stimulus environment is severely reduced. These are the 2-bar, 3-bar, T-bar visual approach slope indicators (VASI) and the precision approach path indicator (PAPI) systems which have involved subjective pilot assessments rather than performance measures. 24 pilots were selected for testing, with at least a 20/30 acuity between 30 and 40 inches, employing an aircraft simulator that was connected to an analog-to-digital converter. The tests were simulated with downwind and upwind light bars for the 2-bar system, while a third was added upwind of the second for the 3-bar system. The T-bar employed a partially nonvisible wingbar, where the upwind position lights increased with deviation above the optimum glidepath to form an inverted T. It was determined that with varying approaches and landing systems, discrepancies in landing consistency did occur. C.F.W.

A79-52277 **Effect of fiber and dye degradation products /FDP/ on burn wound healing.** F. S. Knox, III, T. L. Wachtel, G. R. Mc-Cahan, Jr., and S. C. Knapp (U.S. Army, Aeromedical Research Laboratory, Fort Rucker, Ala.). *Aviation, Space, and Environmental Medicine,* vol. 50, Oct. 1979, p. 1007-1015. 12 refs.

Upon exposure to the thermal environment of an aircraft fire, many fire retardant fabrics off-gas fiber and dye degradation products (FDP). Condensation of these products on human skin raises questions concerning possible deleterious effects on burn wound healing. A porcine bioassay was used to study the physiological effects of FDP. Selected areas of living skin, protected by dyed aromatic polyamides and polybenzimidazole fabrics, were exposed to a thermal source adjusted to simulate a postcrash JP-4 fuel fire. Burn sites contaminated with FDP were evaluated by clinical observation and histological techniques. Healing of the burn wound was followed by recording time to begin epithelialization, time to closure of an open wound, and the amount and type of cicatrix formation. The experiment showed that each fabric has unique off-gasing products. The greatest amount of FDP was deposited on the skin when the skin was covered by a single layer of shell fabric separated by a 6.35-mm air gap. The presence of an intervening cotton T-shirt decreased the amount of FDP deposited on the skin. No evidence is found that FDP caused alterations in wound healing. (Author)

A79-52278 **Bimodal relationship of human tremor and shivering on introduction to cold exposure.** M. F. Schneider and J. D. Brooke (Guelph, University, Guelph, Ontario, Canada). *Aviation, Space, and Environmental Medicine,* vol. 50, Oct. 1979, p. 1016-1019. 18 refs. Research supported by the National Research Council of Canada and World Sugar Research Organization.

A79-52279 **Comparison of physiological effects of head-down tilting and immersion on the human body.** E. B. Shulzhenko, V. E. Panfilov, K. I. Gogolev, and E. A. Aleksandrova (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR). *Aviation, Space, and Environmental Medicine,* vol. 50, Oct. 1979, p. 1020-1022.

The effects on water balance and blood composition of two procedures used to simulate an acute stage of weightlessness adaptation, head-down tilting and water immersion, are compared. Healthy male subjects were exposed to seven days of either head-down tilting at 6 deg or support-free, dry immersion in water, and water consumption, diuresis, hematocrit, total blood protein and blood protein fractions were monitored. More pronounced changes in water balance, hematocrit, plasma volume and blood protein, albumin and globulin contents observed during immersion indicate that immersion produces a greater effect on the human body, to which it takes longer to adapt and which more closely reproduces the effects of weightlessness adaptation. A.L.W.

A79-52280 **Bioassay of thermal protection afforded by candidate flight suit fabrics.** F. S. Knox, III, T. L. Wachtel, and G. R. McCahan, Jr. (U.S. Army, Aeromedical Research Laboratory, Fort Rucker, Ala.). *Aviation, Space, and Environmental Medicine,* vol. 50, Oct. 1979, p. 1023-1030. 25 refs.

Four thermally protective flight suit fabrics designed to protect the aviator from the thermal environment of a post-crash fire were tested by porcine bioassay to determine their mitigating effects on skin burning. A JP-4 fueled furnace with a mean heat flux of 3.07 cal/sq cm per sec was used as a heat source to study the protective properties of 4.8-oz. twill weave Nomex aramide, 4.5-oz. stabilized twill weave polybenzimidazole, 4.8-oz. plain weave experimental high-temperature polymer (HT4) and 4.8-oz. plain weave Nomex aramide on a porcine model of human skin. Results of statistical analyses of clinical and microscopic data indicate that all fabrics tested provide essentially the same degree of thermal protection, although HT4 is slightly better in attenuating heat flux. When used with a cotton T-shirt or an air gap, however, protection was improved for all fabrics and in all configurations. It is suggested that the improvement of flight suits can be achieved by the redesign of current uniforms and fabrics to include multiple layers. A.L.W.

A79-52281 **Similarity in the number of lifespan heartbeats among non-hibernating homeothermic animals.** S. D. Livingstone and L. A. Kuehn (Defence and Civil Institute of Environmental Medicine, Downsview, Ontario, Canada). *Aviation, Space, and Environmental Medicine,* vol. 50, Oct. 1979, p. 1037-1039.

A79-52282 **Cold water survival suits for aircrew.** G. R. White (Department of Defence, Aeronautical Research Laboratories, Melbourne, Australia) and N. J. Roth (Royal Australian Air Force, Institute of Aviation Medicine, Point Cook, Australia). *Aviation, Space, and Environmental Medicine,* vol. 50, Oct. 1979, p. 1040-1045. 11 refs.

Laboratory and sea trials were used to compare the effectiveness of three aircrew exposure garments - the British Mark 10, the United States CWU 21/P, and the Canadian U.VIC. Thermofloat jacket. The first two are waterproof coveralls, whereas the third is a neoprene-lined jacket designed on the basis of the 'wet suit' concept. Rectal and skin temperatures, electrocardiograms and other variables were measured while subjects, wearing the suits, were immersed in water at temperatures of 70 C and 10.5 C. The three garments were found to be similar in the degree of thermal protection provided, but the Thermofloat jacket appeared superior in other ways and has the greater potential for development. A previously unreported observation was a marked reduction in core cooling rate after the expected linear fall in core temperature. This has possible implications in the conduct of research in this field. (Author)

A79-52283 **Passive resistive torques about long bone axes of major human joints.** A. E. Engin (Ohio State University, Columbus, Ohio). *Aviation, Space, and Environmental Medicine,* vol. 50, Oct. 1979, p. 1052-1057. 11 refs. USAF-supported research.

Multisegmented total-human-body models play an important role in studies such as vehicle crash victim simulation, pilot ejection and flailing. Proper biomechanical description of the major articulating joints of these mathematical models require passive resistive torque data for the rotational motions of the body segments about their long bone axes. The paper presents a research program which was developed to collect such data at the shoulder, hip, knee, elbow, and ankle joints. The research was conducted, with some obvious limitations, on live human subjects by means of specially designed experimental apparatus. The numerical results are presented for three subjects for the passive resistive torques about the long bone axes of the major articulating joints. It is concluded that the maximum tolerable passive resistive torques associated with the long bones of the lower extremities are more than twice the ones associated with the long bones of the upper extremities. (Author)

A79-52284 **Ultrastructural development of the vestibular system under conditions of simulated weightlessness.** J. Neubert (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Institut für Flugmedizin, Bad Godesberg, West Germany). *Aviation, Space, and Environmental Medicine,* vol. 50, Oct. 1979, p. 1058-1061. 12 refs.

Electronmicroscopy was used to track the development of the gravity system of frog embryos and larvae which have bred for 5, 7, and 10 d after egg fertilization under conditions of simulated weightlessness on the fast-running horizontal clinostat. Although no differences in the morphologic structure of the organ between test and control animals could be found up to 7 d of development, there is a significant accumulation of vacuoles in sensory epithelia of frog larvae developing for 10 d (stage 17) in simulated zero G. (Author)

A79-52285 **Medical barofunction testing of aviators with otorhinolaryngologic disease.** J. C. Emery, D. E. Furry, E. J. Sacks (U.S. Naval Aerospace Medical Center, Aerospace Medical Institute, Pensacola, Fla.), A. S. Kapadia, and M. H. Smolensky (Texas, University, Houston, Tex.). *Aviation, Space, and Environmental Medicine*, vol. 50, Oct. 1979, p. 1062-1066. 19 refs.

Forty aviators with otorhinolaryngologic pathology, previously considered physically disqualified for flight status, were tested in the hypobaric chamber to evaluate tolerance to rapid barometric pressure changes. Testing consisted of three sequential trials in the low-pressure chamber (LPC) at rates of 1,524 m/min ascent and descent. The first trial was to 1,524 m, the second to 3,048 m, and the third to 5,486 m. Failure consisted of any symptoms (pain) or physical findings of barotrauma (aerosinusities or aerootitis media). Results revealed a 22.5% failure rate. The findings indicate this type of 'Medical Barofunction Test' is a practical adjunct to the clinical evaluation of the aviator. The profile is safe and free from serious dysbaric episodes experienced above 7,620 m. Follow-up studies revealed the incidence of false negatives to be only 8% by the LPC test. The findings are not significantly different from the medical disqualification rate of a normal student aviator comparison group. (Author)

A79-52286 **Technique for simulating G-induced tunnel vision.** J. E. Whinnery (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine,* vol. 50, Oct. 1979, p. 1076.

A simple technique is described which helps subjects gain an understanding of the endpoint used to terminate exposure to centrifuge stress during training procedures on the human centrifuge. The technique involves manual induction of increased intraocular pressure which, in turn, causes a decrease in retinal perfusion followed by greyout and tunnel vision. (Author)

A79-52326 **The influence of low frequency vibration on pilot performance /as measured in a fixed base simulator/.** A. M. Stave (United Technologies Corp., Sikorsky Aircraft Div., Stratford, Conn.). *Ergonomics,* vol. 22, July 1979, p. 823-835. 11 refs. Grant No. DAAJ01-72-C-0634.

The results of a two-year study on the effects of low-frequency vibration on pilot performance are described. Data on the effects of low-frequency vibration are collected while pilots fly a helicopter simulator and accomplish navigation, approach, hover, and slung load handling tasks. Performance is measured in terms of flight path and altitude deviations from desired values. Times required to perform load pick-up and drop-off as well as load placement accuracy are also measured. The simulator used is a fixed base device which makes use of analog and digital computers. It is found that the vibration stimuli used do not degrade performance, which tends to improve with increased stress. It is hypothesized that this trend is due to motivation, i.e., as subjects feel the onset of fatigue they compensate by working harder and thus tend to improve their performance. Poor scores (about 6% of the observations) are attributed to lapses in the pilot's ability to respond to display cues. S.D.

A79-52327 **Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance.** C. H. Lewis and M. J. Griffin (Southampton, University, Southampton, England). *Ergonomics,* vol. 22, July 1979, p. 855-890. 28 refs. Research supported by the Ministry of Defence (Procurement Executive).

Three experiments are carried out to assess the effects of vibration frequency, level, and duration on a zero-order pursuit tracking task. It is found that the primary effects of vibration on the performance of a single-axis zero-order pursuit tracking task are increases in tracking error variance, due to vibration-induced control activity and increased operator-generated noise or remnant. The hypothesis proposed by Lewis and Griffin (1976) is supported only for vibration frequencies above 10 Hz. Perceptual and motor sources are suggested for the increased remnant. Prolonged continuous performance of the simple pursuit tracking task during both static and vibration conditions resulted in large increases in response lags and suppression of coherent responses, which are related to diminished levels of arousal. S.D.

A79-52475 # **Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite (Nekotorye neirokhimicheskie kharakteristiki krys posle kosmicheskogo poleta v iskusstvennom sputnike 'Kosmos-936').** O. G. Gazenko, N. N. Demin, A. N. Panov, D. A. Rashevskaia, N. L. Rubinskaia, and R. A. Tigranian (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR). *Akademiia Nauk SSSR, Doklady*, vol. 247, no. 2, 1979, p. 510-512. In Russian.

Results are presented for a biochemical study of samples concerning the cerebellar tissue as well as the frontal, temporal and occipital areas of the cerebral cortex in male Vistar-SPF rats following a 20-day space flight in the Cosmos-936 satellite. A preliminary conclusion is that the observed neurochemical changes in space flight are the result of a passive inhibition of the functional activity of the cerebral cortex (in the presence of stimulus deficiency) rather than the result of stress factors. Twenty-five days after landing, the observed deviations had vanished. S.D.

A79-52539 **Orientation relative to the retina determines perceptual organization.** B. Gillam and D. McGrath (New York, State University, New York, N.Y.). *Perception and Psychophysics*, vol. 26, no. 3, Sept. 1979, p. 177-181. 12 refs. NSF Grant No. B043254; Grant No. NIH-30840.

Two experiments are reported which show that perceptual unit formation, as measured by Gillam's method of using common reversals of ambiguous lines as an index of their coherence, depends strongly on the orientation of the configuration. Measurements under conditions of 90 deg head and body tilt show that the critical orientation is retinal, not physical. The results are discussed in relation to other findings and to possible explanations. (Author)

A79-52540 **Target redundancy in visual search - Do repetitions of the target within the display impair processing.** C. W. Eriksen and B. A. Eriksen (Illinois, University, Urbana, Ill.). *Perception and Psychophysics,* vol. 26, no. 3, Sept. 1979, p. 195-205. 20 refs. Grant No. PHS-MH-01206.

The effects of the repetition of a visual target within a display on input processing are investigated in order to test the predictions of Estes' (1972, 1974) interactive channels model and those of the continuous flow model of Ericksen and Schultz (1979) of visual search. Subjects were asked to discriminate between two sets of visual target stimuli surrounded by noise of different degrees of similarity, spacing and perceptual segregation in a response competition paradigm. Response times measured showed no impairment when noise was identical with the stimulus, thus favoring the continuous flow model and competition among internal recognition responses, rather than the interactive channels model which predicts a longer response time when noise and target stimuli are identical. A second experiment performed to assess any facilitating effect of redundancy by varying the type or spacing of noise stimuli confirms the above results, however, it provides no evidence of facilitation. A.L.W.

A79-52541 **Upper-velocity threshold for detection of movement.** J. R. Johnstone (Western Australia, University, Nedlands, Australia) and L. A. Riggs (Brown University, Providence, R.I.). *Optics Letters,* vol. 4, Oct. 1979, p. 309, 310.

The maximum velocity with which an object can move and be seen to be moving was measured as a function of its luminance. Object movements greater than 1000 deg/sec can readily be detected as movement. Saccadic eye movements should therefore produce sensations of visual movement. The absence of such sensations indicates that correct evaluation of the resulting visual input requires some other mechanism. (Author)

A79-52691 **Visual motion perception by intelligent systems.** W. Scacchi (California, University, Irvine, Calif.). In: Conference on Pattern Recognition and Image Processing, Chicago, Ill., August 6-8, 1979, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1979, p. 646-652. 44 refs. Research supported by the Hughes Aircraft Co.

The focus of this study is to develop an understanding of the state of the art in visual motion perception by intelligent systems. We examine diverse theoretical and empirical approaches to visual motion analysis, perception, and understanding. We survey the literature applicable to visual motion perception as discussed in scene analysis techniques, hardware-based vision systems, computer animation, artificial intelligence techniques, and human motion perception. We focus primarily on issues of observed object and image sequence description, representation, and perceptual control strategies. We next introduce two concepts in visual motion perception: motion vantage perspective and object motion coherence. We then suggest the emerging trends, problem areas, and alternative directions for research in visual motion perception by intelligent systems. (Author)

A79-52696 * # **Man and machine design for space flight.** A. J. Louviere (NASA, Johnson Space Center, Spacecraft Design Div., Houston, Tex.). *American Association for the Advancement of Science, Annual Meeting, Houston, Tex., Jan. 3-8, 1979, Paper.* 4 p.

The factors involved in creating effective designs for living and working in a weightless environment are discussed. Among the areas covered are special provisions for eating and drinking, a special shower nozzle to remove soap, electric shavers designed for vacuum containment of the clippings, and the need for restraint systems at the crew's workstations. Attention is given to the fact that the crewmen assume a neutral body posture in weightlessness which is an important consideration in designing displays, controls, and windows. It is concluded that the incorporation of the change in body posture and the requirement for restraint into future designs will greatly facilitate the crewman's task in the weightless environment. M.E.P.

A79-52878 **Protection standards for microwave and radiofrequency radiations.** F. Harlen (National Radiological Protection Board, Harwell, Oxon, England) In: Conference on Electromagnetic Compatibility, Guildford, Surrey, England, April 4-7, 1978, Proceedings. London, Institution of Electronic and Radio Engineers, 1978, p. 23-29. 17 refs.

The exposure limit standards for microwave and radiofrequency radiations are examined. The safe number adopted by the U.S. and West European standards is 100 W/sq m. The premise of the safe number is that the principle bioeffects are thermal, but the supportive biological work was concentrated in a limited range of microwave frequencies, so that the differences between Western standards are in the frequency ranges and the formulae for intermittent exposures. Current research shows that the VHF region may contain the most hazardous frequencies, and that people may be working in the near field at these frequencies. The concept of power density then becomes meaningless and it is necessary to consider the separate contributions of the E and H fields. The East European standards are generally more restrictive, and are based on subjective epidemiological studies of people working with microwaves and on behavioral effects in laboratory animals, while the Western approach is based on demonstrable injury. A.T.

A79-52894 **The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations.** K. T. Webber and J. S. Janicki (Pennsylvania, University, Philadelphia, Pa.). *American Journal of Cardiology*, vol. 44, Oct. 1, 1979, p. 722-729. 36 refs. Grants No. NIH-HL-17441; No. NIH-HL-18749; No. NIH-HL-808805.

A79-52895 **Temporal relation between onset of cell anoxia and ischemic contractile failure.** W. R. Harden, III, C. H. Barlow, M. B. Simson, and A. H. Harken (Pennsylvania, University, Philadelphia, Pa.). *American Journal of Cardiology*, vol. 44, Oct. 1, 1979, p. 741-746. 18 refs. Grant No. NIH-1-R01-HL-22315.

A79-53000 * **Energy transduction in Halobacterium halobium.** J. K. Lanyi (NASA, Ames Research Center, Moffett Field, Calif.). In: Membrane proteins in energy transduction. New York, Marcel Dekker, Inc., 1979, p. 451-483. 147 refs.

The properties and functions of the light-energy-transducing purple membrane of Halobacterium halobium are reviewed. Consideration is given to the protein structure and composition of the membrane and the photochemistry of the protein-retinal complex known as bacteriorhodopsin. The role of bacteriorhodpsin in establishing and maintaining an electrochemical (H(+)) gradient is examined, and interactions of this gradient with Na(+) and K(+) gradients, the light-induced transport of amino acids and the light-induced phosphorylation of ADP are considered. Bacteriorhodopsin and the respiratory chain are discussed as alternative sources of energy for the maintenance of the H(+) gradient. Advantages of the Halobacterium purple membrane system for studies of membrane energetics and the confirmation of the chemiosmotic hypothesis are also noted. A.L.W.

A79-53065 # **Tremometry as a method of evaluating the functional state of the nervous system of a pilot (Tremometriia kak metod otsenki funktsional'nogo sostoianiia nervnoi sistemy letchika).** A. N. Kol'tsov, Iu. A. Kukushkin, V. A. Varfolomeev, and V. Ia. Koliagin. *Voenno-Meditsinskii Zhurnal*, July 1979, p. 50-52. In Russian.

The dynamics of muscle tremors in pilots during various flight phases and in other operators subject to conditions of high physiological and emotional stress are investigated by means of contact and contactless coordinometers. Contact measurements reveal that prior to a flight, tremor frequency is greater in the first 15 sec of a test than in the last 15 sec, while during flight tremor frequencies tend to equalize, indicating that the dominance of the fundamental oscillations can be used as a criterion of fatigue. Measurements made by a contactless coordinometer with a capacitance probe reveal oscillations of 6 to 12 Hz superimposed on a carrier frequency of 0.8 to 3 Hz, which vary inversely in frequency as flight stress increases. Increases in oscillation amplitude are also found to be indicative of fatigue, while the high-frequency oscillations are attributed to levels of physiological and emotional stress. A.L.W.

A79-53066 # **The role of lesser circulation hemodynamic changes in pulmonary gas exchange (Rol' izmenenii gemodinamiki v malom kruge krovoobrashcheniia v legochnom gazoobmene).** E. S. Lebedeva, L. N. Danilov, S. A. Aganezov, and G. M. Laskin (Vsesoiuznyi Nauchno-Issledovatel'skii Institut Pul'monologii; I Leningradskii Meditsinskii Institut, Leningrad, USSR). *Fiziologicheskii Zhurnal SSSR*, vol. 65, June 1979, p. 881-886. 20 refs. In Russian.

The influence of changes in the hemodynamics of pulmonary circulation on gas exchange in the lungs is evaluated. Intravenous serotonin injections were administered to healthy dogs in order to increase intravascular pressure and the volume of pulmonary circulation. It is observed that hemodynamic changes are accompanied by increases in circulating pulmonary blood volume, lung diffusivity, arterial oxygen content and arterial oxygen saturation. It is concluded that these hemodynamic factors act to open up latent pulmonary vascular regions and thus more evenly distribute ventilation capabilities, leading to enhanced gas exchange, conceivably in response to pulmonary gas exchange disturbances. A.L.W.

A79-53067 # **A cinematographic technique for investigating some aspects of visual recognition (Kinematograficheskii metod issledovaniia nekotorykh aspektov zritel'nogo opoznaniia).** Iu. I. Levkovich (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). *Fiziologicheskii Zhurnal SSSR*, vol. 65, July 1979, p. 1075-1078. In Russian.

A79-53068 # **Continuous long-duration recording of the heart rate by means of a noncontact technique (Nepreryvnaia**

dlitel'naia registratsiia chastoty serdechnykh sokrashchenii beskontaktnym metodom). A. I. Belich (Akademiia Nauk SSSR, Institut Evoliutsionnoi Fiziologii i Biokhimii, Leningrad, USSR). *Fiziologicheskii Zhurnal SSSR*, vol. 65, July 1979, p. 1079-1082. 5 refs. In Russian.

A79-53096 **A spherical representation of a human body for visualizing movement.** N. I. Badler, J. O'Rourke (Pennsylvania, University, Philadelphia, Pa.), and H. Toltzis (Gould, Inc., Cleveland, Ohio). *IEEE, Proceedings,* vol. 67, Oct. 1979, p. 1397-1403. 33 refs. NSF Grants No. ENG-75-10535; No. MCS-76-19464; Contract No. N00014-78-C-0102.

A three-dimensional human body model for displaying body movements on a computer graphics display is described. The surface of the body model is formed from overlapping spheres, yielding a realistically formed and shaded body image on a raster graphics display. An experimental model consisting of 310 spheres is articulated with 19 joints and 20 body segments. The properties of this model include joints which do not deform during movement, simple hidden surface removal, and efficient collision and contact detection. The model may also be placed in a planar polygon environment. Applications in crash simulation and human movement simulation are indicated. (Author)

A79-53163 **Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye.** V. G. Dmitriev, V. N. Emel'ianov, M. A. Kashintsev, V. V. Kulikov, A. A. Solov'ev, M. F. Stel'makh, and O. B. Cherednichenko. *(Kvantovaia Elektronika /Moscow/,* vol. 6, Apr. 1979, p. 803-810.) *Soviet Journal of Quantum Electronics,* vol. 9, Apr. 1979, p. 475-479. 12 refs. Translation.

The present experimental study of the IR optical susceptibility of the human eye showed that in the 800 to 1355 micron range, IR radiation appears as visible radiation at a wavelength close to the second harmonic. The spectral sensitivity curve for IR radiation is spiky with the envelope maximum located at 1113 microns. The mechanism of nonlinear optical susceptibility to IR radiation appears to be localized in the retina nerves. V.P.

A79-53211 # **Role of n-aminobenzoic acid in repairing UV and gamma radiation damage (Rol' n-aminobenzoinoi kisloty v reparatsii povrezhdenii, indutsirovannykh u.-f. i gamma-izlucheniiami).** I. A. Rapoport, S. V. Vasil'eva, and L. S. Davnichenko (Akademiia Nauk SSSR, Institut Khimicheskoi Fiziki, Moscow, USSR). *Akademiia Nauk SSSR, Doklady,* vol. 247, no. 1, 1979, p. 231-234. 11 refs. In Russian.

Results are presented of an experimental study of an Escherichia coli strain characterized by the activity of certain enzymatic systems involved in the repairing of DNA damage caused by UV and gamma radiation in the presence of n-aminobenzoic acid, PAB, known as a vitamin (coenzyme). Mutagenic and 'reparagenic' activities are discussed. Particular attention is given to the function of PAB as a damage-repairing agent. S.D.

A79-53285 **Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life.** H. Saiki, M. Nakaya, M. Sudoh, and M. Abe (Jikei University School of Medicine, Tokyo, Japan). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-76.* 8 p. 5 refs.

This paper examines ease of readaptation of rats to the normal ambulatory life after hypodynamic exposure. A comparison of readaptability was made after 3, 5, and 10 week simulated exposures made by suspension technique expressed as the speed of recovery to the normal K(+) excretion level. Blood pressure, resting metabolic rate, and body weight were measured daily, and the urinary excretion rate of K(+) in the daily total urine was measured continuously. It was concluded that: (1) recovery is more readily accomplished when released from hypokinetic exposure after 10 weeks than after 5 weeks, and after 5 weeks than after 3 weeks exposure; (2) characteristic fluctuations in blood pressure, resting metabolic rate, and body weight occurred corresponding to hypodynamic exposure periods and time after return to normodynamic life; (3) during the 6th to 10th week of hypodynamic exposure two subjects suffered urinary bleeding and ischuria every few days accompanied by abnormal changes of blood pressure, resting metabolic rate, and body weight. A.T.

A79-53286 * **Early cardiovascular adaptation to zero gravity simulated by head-down tilt.** C. G. Blomqvist, J. V. Nixon, R. L. Johnson, Jr., and J. H. Mitchell (Texas, University, Dallas, Tex.). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-77.* 13 p. 32 refs. Research supported by the Harry S. Moss Heart Fund; Grants No. NsG-9026; No. NIH-HL-06296; No. NIH-5-M01-II-00633.

The early cardiovascular adaptation to zero gravity, simulated by head-down tilt at 5 deg, was studied in a series of 10 normal young men. The validity of the model was confirmed by comparing the results with data from Apollo and Skylab flights. Tilt produced a significant central fluid shift with a transient increase in central venous pressure, later followed by an increase in left ventricular size without changes in cardiac output, arterial pressure, or contractile state. The hemodynamic changes were transient with a nearly complete return to the control state within 6 h. The adaptation included a diuresis and a decrease in blood volume, associated with ADH, renin, and aldosterone inhibition. (Author)

A79-53287 **Ultrastructural development of the vestibular system of frog larvae in 0g simulation.** J. Neubert (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Institut für Flugmedizin, Bonn, West Germany). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-78.* 9 p. 10 refs.

The vestibular apparatus of 10 frog larvae exposed to weightlessness simulation till stage 15, 17, and 22 respectively was investigated by electron microscopy. Till stage 15 no significant changes in morphology of the gravity sensory system could be found. A stay under weightlessness simulation till stage 17 and 22 is followed by significant alterations in sensory epithelia and also in the otolith membrane. Large vacuols were concentrated in the region where an otolith membrance covers the hair cells but not in the rim zones of the epithelia with undifferentiated cells. The quantity of otoconia in the otolith membrane of simulated tadpoles seems to be diminished. The results are compared with data from flown experiments and some concordance was noted. (Author)

A79-53288 **Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight.** G. Aust, J. R. Hordinsky, B. Schmelzer (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Institut für Flugmedizin, Bonn, West Germany). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-80.* 13 p. 28 refs.

The responses of male and female test subjects who are motion sickness sensitive and resistant to vestibular tests are compared in order to evaluate sex differences in space flight suitability. Forty-two females and 44 males were subjected to a rotary motion sickness provocation test, a bithermal caloric test, a rotatory intensity damping test, a vestibular-spinal stepping test, pendular and unidirectional eye tracking tests and a test of caloric responsiveness under lower body negative pressure. Significant differences in vestibular nystagmus reaction were observed between males and females, indicating different operative nervous and psychological factors, however greater differences were observed between male and female groups designated motion sickness resistant and motion sickness sensitive on the basis of answers to a questionnaire. It is recommended that space flight selection procedures should seek to identify candidates with potential motion sickness sensitivity by vestibular tests and motion sickness histories. A.L.W.

A79-53289 **Preliminary selection of candidates for space flights.** S. Baranski, Z. Gierowski, and K. Klukowski (Wojskowy Instytut Medycyny Lotniczej, Warsaw, Poland). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-83.* 6 p. 6 refs.

Physiological and psychological aspects of Polish cosmonaut candidate selection are discussed. The physical training program undergone by groups of potential candidates is outlined and increases in physical fitness attained are illustrated graphically. Tests of tolerance to simulated flight conditions (acceleration, hypoxia, pressure and altitude) as well as cardiorespiratory efficiency, visual acuity, vestibular organ sensitivity, perceptual, intellectual and psychomotor abilities and personality are indicated, and criteria for the selection of the candidates chosen on the basis of the test results are discussed. Advantages of the training program in the evaluation of medical and psychological factors, particularly vestibular and vasomotor responses, are pointed out. A.L.W.

A79-53290 **A new application of LBNP to measure orthostatic tolerance before and after O-G simulation /water immersion/.** J. R. Hordinsky, U. Gebhardt, H. J. Borger, and J. Birk (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Institut für Flugmedizin, Bonn, West Germany). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-87.* 16 p. 21 refs.

The absolute orthostatic tolerances and orthostatic tolerances after periods of weightlessness simulation of male and female subjects are measured by means of lower body negative pressure (LBNP) tests. Subjects were exposed to increasing levels of LBNP until the onset of syncope or a prescribed set of symptoms as an isolated test, and before and after exposure to six hours of bed rest or water immersion. Mean tolerance times are found not to differ significantly between males and females, to correlate slightly with certain physiological factors, and not to depend on smoking history, exercise history, time of day, type of LBNP endpoint and contraceptive pill usage. Decreases in LBNP tolerance were observed after bed rest and water immersion in males and females. Tolerance levels attained are compatible with those obtained with males in other investigations, and indicate that responses to -50 mm Hg LBNP do not allow the prediction of absolute tolerance levels. A.L.W.

A79-53291 * **Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II.** H. M. Wegmann, R. Herrmann (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Institut für Flugmedizin, Bonn, West Germany), and C. M. Winget (NASA, Ames Research Center, Biomedical Research Div., Moffett Field, Calif.). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-88.* 12 p. 6 refs.

Results of the medical experiment on payload specialist workloads conducted as part of the ASSESS II airborne simulation of Spacelab conditions are reported. Subjects were fitted with temperature probes and ECG, EEG and EOG electrodes, and hormone and electrolyte excretion was monitored in order to evaluate the changes in circadian rhythms, sleep patterns and stress responses brought about by mission schedules over the ten days of the experiment. Internal dissociations of circadian rhythms, sleep disturbances and increased stress levels were observed, especially during the first three days of the experiment, indicating a considerable workload to be imposed upon the payload specialists. An intensive premission simulation is suggested as a means of estimating overall workloads and allowing payload specialist adaptation to mission conditions. The bioinstrumentation which was developed and applied to the airborne laboratory is concluded to be a practical and reliable tool in the assessment of payload specialist workloads. A.L.W.

A79-53293 **Evolution of space suit technology.** W. Elkins (Acurex Corp., Aerospace Systems Div., Mountain View, Calif.). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-92.* 13 p. 10 refs.

The paper defines the evolution of hard/hybrid technology, how it is being utilized in the Shuttle suit, and predictions for its application in future space suit designs. The discussion focuses on soft suit technology, hard suit and hybrid suit development, as well as high-pressure suit development. The Shuttle extravehicular maneuvering unit (EMU) represents a combination of the two distinct technologies. It employs typical soft suit technology in the sewn restraint and bladder layers of the arms, glove, waist, lower torso, legs and boots. The EMU also contains multiple sealed bearing joint elements, a rolling convolute single wall laminate shoulder joint element, hard structure upper torso, rigid torso closure, torso sealed bearing, and modular sizing; these elements are derived from hard/hybrid suit technologies. Certain details of future development of space suit technology are mentioned, including in-orbit resizing of the space suit to fit successive shifts of space workers, and quick in-orbit change out of pressure suit components. S.D.

A79-53294 * **Food and waste management biotechnology for the space shuttle.** R. W. Murray, J. D. Schelkopf, S. R. Hunt (General Electric Co., Philadelphia, Pa.), and R. L. Sauer (NASA, Johnson Space Center, Houston, Tex.). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-93.* 12 p.

Space-crew facilities for preparation, eating, personal hygiene and waste management are contained in one small area of the Shuttle Orbiter Mid-Deck, all the functional systems being interconnected. The paper discusses three major systems: (1) the Galley, which includes the personal hygiene station and food packages; (2) the Waste Collector, which includes provisions for male and female users, urine, feces and emesis collection in both a normal and contigency mode of operation; and (3) Biowaste Monitoring, which includes mass measurement and sampling. The technology improvement continues by assuring that the Orbiter systems have sufficient design flexibility to permit later improvements in operation and in function. S.D.

A79-53295 **Thoughts about man-machine interrelations in space flights applied to Spacelab missions.** P. Stampfl (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Bereich für Projektträgerschaften, Cologne, West Germany). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-95.* 17 p.

The paper discusses certain aspects of man-machine interface as related to manned Spacelab missions. The constraints on the human side and on the hardware side, which determine the man-machine interface, are identified and discussed. Specific rules for the days of launch and landing are given in terms of sleep times and lengths. Kinds of activities to be carried out during Spacelab missions are determined experimentally, where timeline is the sequency of activities during a manned space-flight mission. Valuable recommendations are given to prospective experimenters for successful accomplishment of Spacelab missions. Timeline analysis for Spacelab 1 and available Skylab experience have highlighted the possible role of man in space research activities. S.D.

A79-53296 **Equipment for surgical interventions and childbirth in weightlessness.** H. G. Mutke. *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-97.* 5 p.

A very lightweight, transparent plastic sack is developed which can contain all necessary instruments and free-floating liquids for surgical interventions and animal experiments in future (manned) Space Shuttle missions. This equipment can be attached to the affected crew member or used for experiments in such a way that the area to be treated is closed off from the environment. This operation sack can be inflated with a foot-operated electrical pump so that the experimenter and his assistants can operate within the sack without obstruction through long-sleeved plastic gloves under sterile conditions. Other details are also described. Since operations, experiments and even, for example, childbirths, can only take place when special precautionary measures have been taken to prevent contamination of the spacecraft by blood or other liquids or secretions, such equipment is indispensable for future Spacelab missions and larger platforms. S.D.

A79-53297 **Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions.** G. L. Murphy (McDonnell Douglas Astronautics Co., Huntington Beach, Calif.) and A. Kubozono (National Space Development Agency of Japan, Office of Space Shuttle Utilization, Tokyo, Japan). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-99.* 25 p. 10 refs. (MDAC-WD-2976)

The purpose of this paper is to describe selection procedures and criteria for Shuttle payload specialists, to relate these procedures and criteria to the clinical selection of working specialists for future space stations, and to provide useful proposals for selection of space station working specialists. The paper describes selection, training, and health care requirements imposed by NASA, processes used in selection of payload specialists for Spacelab 1, and planning by the Japanese for selection of payload specialists for Japanese Shuttle/Spacelab flights, and extrapolates these experiences to the requirements for selection of working specialists for advanced space stations. (Author)

A79-53424 * **Considerations associated with the introduction of female crewmembers in spacecraft and space stations.** J. W. Brown (NASA, Johnson Space Center, Houston, Tex.). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-A-22.* 18 p. 15 refs.

This paper examines considerations of inclusion of female crewmembers in spacecraft and space stations. The anthropometric and physiological differences between males and females as related to spaceflight such as body dimensions, muscle strength characteristics, body posture, reach, and physiological differences are discussed. Crew provisions including inflight garments, hair style, cosmetics, personal hygiene, waste management, and personal privacy are described. Impacts on hardware design and crew performance, examples of effects on Orbiter systems, data on females and their performance under conditions analogous to spaceflight, and earth-based simulation experience are examined. It is concluded that no major problems have been found which would preclude females from space, and in the future the novelty of mixed crews will significantly decrease. A.T.

A79-53425 **Communication problems of international crews.** V. Remek (Czechoslovak Academy of Sciences, Czechoslovak Committee Interkosmos, Prague, Czechoslovakia). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-A-23.* 13 p. 18 refs.

Problems in verbal communication with and among members of international space crews are discussed, emphasizing operational experience in the Intercosmos program. The space communication environment is examined, noting the complexity of communication circuits and the need for precision in technical directives. Means of communication optimization are suggested, including increasing the depth and extent of term standardization, and crew training for different levels of communication. Consideration is given to the linguistic arrangements made for the Apollo-Soyuz Test Project, and the problems within the Intercosmos program are distinguished, stressing the importance of a good knowledge of the Russian language. Communication aspects of the Soviet-Czechoslovak mission are considered, and the disturbance to the verbal behavior of the Czech participant in the mission is analyzed. A.L.W.

A79-53426 **Psychological training - One of the most important factors of enhancing the safety of space flights.** G. T. Beregovoi, I. V. Davydov, N. V. Krylova, and I. B. Solov'eva (Academy of Sciences, Institute of Psychology, Moscow, USSR). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-A-24.* 5 p.

The role of psychological training in enhancing cosmonaut preparedness for normal and emergency spacecraft operations is discussed. The use of such real-life emotiogenic situations as flying an aircraft or parachuting to teach an operator to concentrate on his performance under unusual, stressful situations is explained. Consideration is also given to environmental training courses designed to give cosmonauts confidence in dealing with unexpected landing environments, and the effectiveness of this training approach is illustrated by examples of successfully executed emergency landings in extreme or hazardous environments. A.L.W.

A79-53447 **The biomedical implications of extended duration zero-g extravehicular activities.** A. H. Bellenkes (Delaware, University, Newark, Del.). *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-ST-06.* 13 p. 24 refs.

The in-orbit construction of large space structures will require the use of lengthy extravehicular activities (EVAs) primarily in the assembly and maintenance phases. There are preliminary estimates that complete construction of, for example, a solar power satellite will require nearly a year, perhaps longer during the initial stages of the SPS program. After presenting a brief historical survey of past EVA programs and procedures, the paper addresses the biomedical variables which may be encountered by astronauts working for very long periods of time in the weightless environment. Furthermore, possible designs for extended duration life support systems are discussed with emphasis placed on the areas of basic biomedical conditioning, in-orbit living facilities, typical EVA workloads, and other related variables. Finally, current and proposed mission designs are discussed in terms of present technologies. (Author)

A79-53486 **Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/.** A. S. Barer, M. I. Vackar, O. G. Gazenko, L. G. Golovkin, V. P. Zinchenko, G. I. Severin, S. N. Filipenkov, and V. V. Chigolev. *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22 1979, Paper.* 7 p.

Measurements of changes in Salyut 6 cosmonaut physiological parameters and life-support system parameters during two occasions of EVA are reported. Excursions from the Salyut 6 orbital space station were performed for 88 and 125 minutes, with total stay times of 220 and 240 minutes, respectively, in a new semirigid liquid-cooled space suit with an integrated self-contained life support system. Pulse rate and respiratory rate telemetry data were found to be adequate to the work performed during the EVAs, and to be in general related to energy cost levels, which were determined from measurements of body temperature, suit temperature and respiratory functions. Ratios of energy cost levels to heat removal rates indicate that the life support system generally provided sufficient thermal conditioning during all phases of EVA, despite reported short-term sensations of local overcooling or overheating. A.L.W.

A79-53516 **Lightweight helmet-mounted eye movement measurement system.** J. A. Barnes (U.S. Army, Human Engineering Laboratory, Aberdeen Proving Ground, Md.). In: Electro-Optics/Laser Conference and Exposition, Boston, Mass., September 19-21, 1978, Proceedings. Chicago, Industrial and Scientific Conference Management, Inc., 1978, p. 343-347.

A helmet-mounted optical system has been developed for determining aircrewman's fixation points and paths of eye movement between fixation points. The optical system components are an optical head, a CID video camera, a video recorder, a monitor/receiver, a video transmitter, and a coupling lens. Consideration is given to the design and performance of the system. B.J.

A79-53531 **Theoretical foundations of cardiovascular processes.** Edited by D. N. Ghista (Michigan Technological University, Houghton, Mich.), E. Van Vollenhoven, W.-J. Yang (Michigan, University, Ann Arbor, Mich.), and H. Reul. Basel, S. Karger AG (Advances in Cardiovascular Physics. Volume 1), 1979. 192 p. $58.75.

The theory and governing equations of the electrical and magnetic processes, solid and fluid mechanics, and transport mechanisms of the cardiovascular system are presented. Attention is given to the electrical activity and magnetic field of the heart, thus providing the biophysical basis of electro- and magnetocardiography. The governing equations and models describing the constitutive properties of blood and the vasculature, and blood flow in the cardiovascular system are treated. Equations are presented for the mechanics and thermodynamics of biotransport processes, and heat transfer processes in thermoregulation and circulation measurement are examined. A.L.W.

A79-53532 **Fundamentals of electrical processes in the electrophysiology of the heart.** R. Plonsey (Case Western Reserve University, Cleveland, Ohio). In: Theoretical foundations of cardiovascular processes. Basel, S. Karger AG, 1979, p. 1-28. 22 refs. Grants No. NIH-HL-10417; No. NIH-HL-17931.

This chapter constitutes the biophysical basis for quantitative electrocardiography. It develops the fundamental equations of electricity which are applicable in study of the electrophysiology of the heart. Measurements which reveal some of the character of cardiac electrophysiology are described and the results are discussed. (Author)

A79-53533 **The theory of the magnetocardiogram.** J. H. Tripp (Case Western Reserve University, Cleveland, Ohio). In: Theoretical foundations of cardiovascular processes. Basel, S. Karger AG, 1979, p. 29-46. 38 refs. Grant No. NIH-RR-07113-09.

The formal theory of the magnetic field surrounding the heart is developed by treating the heart as a distributed current dipole source immersed in an inhomogeneous conducting medium. Equations governing the electric potential and the magnetic field are derived, following which a multipole expansion of the magnetic vector potential is used to obtain expressions for the dipole moments. These moments are then compared with the electric and magnetic heart vectors and it is shown how a lead field theory can be developed to yield expressions enabling these heart vectors to be measured directly. Some actual theoretical investigations which have made use of the formalism are then summarized. Finally, consideration is given to the potential practical importance of and future outlook for magnetocardiology. (Author)

A79-53534 **Basic biomechanics equations for cardiovascular flow.** T.-K. Hung (Pittsburgh, University, Pittsburgh, Pa.), G. Bugliarello (New York, Polytechnic Institute, New York, N.Y.), and C. E. Quevedo (Escuela Politécnica Nacional; Universidad Central del Ecuador, Quito, Ecuador). In: Theoretical foundations of cardiovascular processes. Basel, S. Karger AG, 1979, p. 47-101. 32 refs.

The basic equations of mass, momentum and energy transfer for biological flow processes are derived along with the equations of motion of the flexible blood vessel boundaries. For Newtonian fluids, the Navier-Stokes equations are simplified for linear flow processes as well as for one-dimensional analyses. A generalized Bernoulli's theorem is introduced to include the effects of the flexible boundary and of the unsteadiness of flow on energy balance. Electrical analog, hydraulic impedance and Windkessel theory are introduced along with non-linear analysis for flow and pressure pulses. (Author)

A79-53535 **Equations on biotransport mechanisms.** W.-J. Yang (Michigan, University, Ann Arbor, Mich.). In: Theoretical foundations of cardiovascular processes. Basel, S. Karger AG, 1979, p. 102-127. 6 refs.

The paper deals with the principles and laws which govern the transformation of energy and the transfer of energy and matter within a system or between the system and its environment. Important concepts in equilibrium thermodynamics and transport phenomena are outlined. Attention is given to the first and second laws of thermodynamics, free energy and its changes, reaction equilibrium constant, transfer potentials, some laws of physicochemical behavior, transport fluxes and principles of conservation of properties. Basic equations governing the physical, chemical and electrical behavior during material transformation are included. S.D.

A79-53536 **Bio-heat transfer processes, for human thermoregulatory and circulatory characteristics measurements.** U. Dinnar (Technion - Israel Institute of Technology, Haifa, Israel). In: Theoretical foundations of cardiovascular processes. Basel, S. Karger AG, 1979, p. 128-179. 40 refs.

Life is a continuous process of energy exchange between the body and the environment. This exchange of energy is carried out in different forms and its task is to maintain a fairly constant core temperature inside the body. The paper reviews various bioheat transfer processes: metabolism and other internal heat production, evaporation, conduction, convection, radiation and the work produced by the body. These items are discussed separately and then combined to form a gross model of the thermoregulatory system. Also discussed are measurement techniques, based on heat transfer principles, relative to velocity measurements, cardiac output measurement by thermodilution, local thermodilution for single blood vessels, and medical thermography. Further applications are mentioned, including the application of heat transfer in the study of skin burns, heat transfer in cryosurgery, and heat therapy. S.D.

A79-54091 **The retinal resolving power measured by laser interference fringes.** B. Rassow (University Eye Hospital, Hamburg, West Germany). In: European Electro-Optics Conference, 4th, Utrecht, Netherlands, October 10-13, 1978, Proceedings. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1979, p. 154-157.

A small device developed and constructed for daily routine eye measurements in hospital is described. The laser beam of a helium-neon laser is reflected from both surfaces of a glass plate. The two bundles created by this reflection are focused in the nodal plane of the eye examined. Interference fringes in the overlapping area are independent of the optics of the eye. Observing the fringes means that the resolving power of the retina-brain system is sufficient for this frequency. Variation of the line frequency is done by changing the glass plates. Glass plates of different thickness give different distances of the two light points in the pupil of the eye. A small distance corresponds to low and a greater distance to high frequency. V.T.

A79-54251 **Optokinetic reactions in man elicited by localized retinal motion stimuli.** M. F. W. Dubois and H. Collewijn (Rotterdam, Erasmus Universiteit, Rotterdam, Netherlands). *Vision Research*, vol. 19, no. 10, 1979, p. 1105-1115. 25 refs. Research supported by the Foundation for Medical Research.

A79-54252 **Changes in critical duration during dark-adaptation.** S. Montellese, L. T. Sharpe, and J. L. Brown (Rochester, University, Rochester, N.Y.). *Vision Research*, vol. 19, no. 10, 1979, p. 1147-1153. 48 refs. Contract No. N14-76-C-0189; Grant No. NIH-EY-00680.

Critical duration was measured using a 10 min test spot, located 5 deg from the fovea, in the nasal visual field. Subjects (N=2) were pre-adapted to a luminance of 2.3 L (23,000 td) for 10 min. Data were then collected at 250 and 500 msec, 1, 2, 4, 7, and 10 sec of dark-adaptation. For each of these times, stimulus duration ranged from 9.5 to 152 msec and temporal summation capability was calculated from resulting threshold determinations. Within the first 10 sec of dark-adaptation, critical duration increased from 30 to 80 msec, with approx. 75% of the change occurring within the first 2 sec for both observers. These results show that increases in temporal summation capability contribute to lowering of threshold primarily during the very early stages of dark-adaptation. (Author)

A79-54253 **A comparison of oculomotor and motion parallax cues of egocentric distance.** W. C. Gogel and J. D. Tietz (California, University, Santa Barbara, Calif.). *Vision Research,* vol. 19, no. 10, 1979, p. 1161-1170. 12 refs. NSF Grant No. BNS-77-16620.

Using the head motion procedure, the apparent distance of a point of light in an otherwise dark visual field was measured under conditions in which oculomotor cues (accommodation, convergence) and absolute motion parallax were varied together and separately. It was concluded that absolute motion parallax is almost as effective a cue to distance as are oculomotor cues from monocular observation, but is not as effective as oculomotor cues from binocular observation. Evidence was also presented that the null adjustment method, used in conjunction with the head motion procedure, provides an unbiased measure of apparent distance. (Author)

A79-54254 **Eye torsion in response to a tilted visual stimulus.** D. R. Goodenough, E. Sigman, P. K. Oltman, J. Rosso, and H. Mertz (Educational Testing Service, Princeton, N. J.). *Vision Research,* vol. 19, no. 10, 1979, p. 1177-1179. 12 refs. Grant No. NIH-MH-21989.

The induction of vestibular-controlled eye torsion by a tilted stationary visual stimulus is examined. Torsional eye responses to the rod-and-frame display, in which a vertical rod is viewed inside a frame when both are tilted, both are vertical or the rod is vertical and the frame is tilted (rod and frame illusion), were recorded photographically. Eye orientation is found to follow the tilt of the stimulus, changing on the average by 0.29 deg in response to a stimulus tilt of 28 deg. The discrepancy between the present results and the negative results obtained by Howard and Templeton (1964) is explained by the retinal eccentricity of the present stimulus. It is also concluded that, although eye torsion may contribute to the rod and frame illusion, the magnitude of the torsional response appears to be too small to account entirely for the illusory effects of the tilted frame on rod orientation. A.L.W.

A79-54266 **Evidence for increased intrathoracic fluid volume in man at high altitude.** J. J. Jaeger, J. T. Sylvester, A. Cymerman, J. J. Berberich, J. C. Denniston, and J. T. Maher (U.S. Army, Research Institute of Environmental Medicine, Natick, Mass.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 47, Oct. 1979, p. 670-676. 34 refs.

To determine if subclinical pulmonary edema occurs commonly at high altitude, 25 soldiers participated in two consecutive 72-h field exercises, the first at low altitude (200-875 m) and the second at high altitude (3,000-4,300 m). Various aspects of ventilatory function and pulmonary mechanics were measured at 0, 36, and 72 h of each exercise. Based on physical examination and chest radiographs there was no evidence of pulmonary edema at high altitude. There was, however, an immediate and sustained decrease in vital capacity and transthoracic electrical impedance as well as a clockwise rotation of the transpulmonary pressure-volume curve. In contrast, closing capacity and residual volume did not change immediately upon arrival at high altitude but did increase later during the exposure. These observations are consistent with an abrupt increase in thoracic intravascular fluid volume upon arrival at high altitude followed by a more gradual increase in extravascular fluid volume in the peribronchial spaces of dependent lung regions. (Author)

A79-54267 **Metabolic adrenergic changes during submaximal exercise and in the recovery period in man.** J. M. Pequignot, L. Peyrin, M. H. Mayet, and R. Flandrois (CNRS, Laboratoire de Physiologie; Lyon I, Université, Lyon, France). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 47, Oct. 1979, p. 701-705. 31 refs.

A79-54268 **Influence of skin temperature on sweating and aerobic performance during severe work.** C. T. M. Davies (Medical Research Council, Environmental Physiology Unit, London, England). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 47, Oct. 1979, p. 770-777. 27 refs.

A79-54269 * **Radiographic comparison of human lung shape during normal gravity and weightlessness.** D. B. Michels, P. J. Friedman, and J. B. West (California, University, La Jolla, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 47, Oct. 1979, p. 851-857. 20 refs. Grant No. NGL-05-009-109.

Chest radiographs in five seated normal volunteers at 1 G and 0 G were made with a view toward comparing human lung shape during normal gravity and weightlessness. Lung shape was assessed by measuring lung heights and widths in upper, middle and lower lung regions. No significant differences were found between any of the 1-G and 0-G measurements, although there was a slight tendency for the lung to become shorter and wider at 0 G. The evidence that gravity causes regional differences in ventilation by direct action on the lung is consistent with the theoretical analysis of West and Matthews (1972). S.D.

blank page

STAR ENTRIES

N79-32822*# Jet Propulsion Lab., Calif. Inst. of Tech., Pasadena.
MICROBIOLOGICAL EVALUATION OF THE MOBILE BIOLOGICAL ISOLATOR SYSTEM
Daniel M. Taylor, Frank Morelli, William Neiderheiser, and Wallace M. Tratz 1 Jul. 1979 61 p refs
(Contract NAS7-100)
(NASA-CR-162293; JPL-Pub-79-48) Avail: NTIS HC A04/MF A01 CSCL 06C

Evaluations on critical components of the mobile biological isolation system were performed. High efficiency particulate air filter efficiency and suit integrity were found to withstand repeated ethylene oxide (ETO) sterilizations. The minimum ETO sterilization time required to inactivate all contaminant organisms was established at four hours. Two days of aerating at 120 F was found to dissipate all harmful ETO residuals from the suit. Donning and doffing procedures were clarified and written specifically for isolation rooms. Author

N79-32823# Missouri Univ. - Columbia. Dept. of Veterinary Microbiology.
MECHANISMS OF OXYGEN TOXICITY AT THE CELLULAR LEVEL Annual Status Report, Jan. 1978
Olen R. Brown, Laurie Foudin, Fred Yein, Patti Gilliland, Richard Seither, and Doris Song 1 Jan. 1978 16 p refs
(Contract N00014-76-C-0328; NR Proj. 204-020)
(AD-A070026; Rept-32) Avail: NTIS HC A02/MF A01 CSCL 06/20

Oxygen at elevated pressures is toxic for life forms from microbes to man. Growth is inhibited in Escherichia coli and results primarily from poisoning of specific enzymes in the following biosynthetic pathways branched-chain and aromatic amino acids, NAD-niacin, phosphoribosylpyrosphosphate PRPP and reverse glycolysis. Inhibition of amino acid biosynthesis indirectly stops protein synthesis and induces 'stringency' production of pp-guainine-pp, a powerful inhibitor of metabolic processes which accounts for inhibition in metabolic processes where there is no observed enzymatic poisoning. Inhibitions in the PRPP, NAD-niacin, and reverse glycolysis pathways are significant to bacterial and perhps to human oxygen toxicity where products of the pathways protect. Author (GRA)

N79-32824# Ohio State Univ., Columbus. Dept. of Statistics.
ESTIMATION OF RATE CONSTANTS IN THE MICHAELIS-MENTEN MODEL
J. S. Rustagi and Joanne Yang Mar. 1979 18 p refs
(Contract N00014-78-C-0543)
(AD-A070360; TR-177) Avail: NTIS HC A02/MF A01 CSCL 12/1

Nonlinear models leading to the Michaelis-Menten scheme result from the study compartment systems as well as in other contexts. Using difference equation approach, rate constants are estimated in some simple models. Simulation methods are used to derive the distributions of these estimates. It is shown that the assumptions of normality of errors leads to the normal distribution of the estimated rate constants. Author (GRA)

N79-32825 Pennsylvania Univ., Philadelphia.
OXYGEN DELIVERY IN THE HYPOXIC PERFUSED HEART: RELATION TO FUNCTIONAL AND METABOLIC CHANGES Ph.D. Thesis
Charles Steenbergen 1979 261 p
Avail: Univ. Microfilms Order No. 7919520

It is recognized that the distribution of oxygen delivery is markedly altered by local vascular changes in the absence of any physical impediment to flow, and that local vascular control mechanisms result in decreased coronary perfusion into small areas of tissue. The contribution of these mechanisms to ischemia induced changes in contractility and metabolism is assessed utilizing NADH fluorescence photography. Results indicate (1) during ischemia, there is a parallel decline in effluent pH, intracellular pH, and pressure development; (2) the negative inotropic effect of ischemia is primarily due to acid accumulation despite the presence of relatively nonfunctioning, anoxic cells; and (3) decreased intracellular pH in the aerobic tissue does not substantially diminish high energy phosphate reserves, while in the anoxic tissue, high energy phosphate levels decline rapidly. Dissert. Abstr.

N79-32826# Illinois Univ. at Chicago Circle, Chicago. Dept. of Materials Engineering.
REFINEMENT AND VALIDATION OF A THREE-DIMENSIONAL HEAD-SPIN MODEL Final Report, 1 Jan. 1976 - 31 Dec. 1977
T. Belytschko and E. Privitzer Wright-Patterson AFB, Ohio AMRL Aug. 1978 162 p refs
(Contract F33615-76-C-0506)
(AD-A062502; AMRL-TR-78-7) Avail: NTIS HC A07/MF A01 CSCL 06/16

Four models of varying orders of complexity were developed, ranging from a complex model with 252 degrees of freedom to a vary simplified model with 32 degrees of freedom. Comparisons of the impedance curves of the models with experimentally developed curves show good agreement, both in the magnitudes and locations of peaks. Furthermore, by varying the components of the model it was shown that the primary peaks in the impedance curve in the 5 to 7 Hz range result from a combination of buttock-seat resonance, the flexural response of the spine and visceral resonance. Analogous head-spin models were developed for the chimpanzee, baboon, and rhesus monkey. Impedance curves are presented for these models and show significant differences in character from that of the human spine models. Model studies are presented for ejection loading and for pre-ejection alignment by an inertial reel. The influence of various parameters, such as head position and the restraint system properties, were studied. Author

N79-32827# Department of Energy, Washington, D. C.
METHODS FOR STUDYING AND CRITERIA FOR EVALUATING THE BIOLOGICAL EFFECTS OF ELECTRIC FIELDS OF INDUSTRIAL FREQUENCY
B. M. Savin, M. G. Shandala, K. V. Nikonova, and Yu. A. Morozov 1978 24 p refs Presented at Criteria for Evaluating the Biological Efforts, Paskeut, USSR, 15 May 1978
(CONF-780541-1) Avail: NTIS HC A02/MF A01

Data are reviewed from a number of U.S.S.R. research studies on the biological effects of electric power transmission lines of 1150 Kv and above. Effects on man, plants, animals, and terrestrial ecosystems are reported. Existing health standards in the U.S.S.R. for the exposure of personnel working in electric fields are included. It is concluded that high voltage electric fields have a harmful effect on man and his environment. DOE

N79-32828# Battelle Pacific Northwest Labs., Richland, Wash.
REVIEW OF UNFOLDING METHODS USED IN THE US AND THEIR STANDARDIZATION FOR DOSIMETRY
C. A. Oster [1979] 20 p refs Presented at the 2nd ASTM-EURATOM Symp. on Reactor Dosimetry: Dosimetry Methods for Fuels, Cladding and Structural Mater., Palo Alto, Calif., 3-7 Oct. 1977
(Contract EY-76-C-06-1830)
(BNWL-SA-6503; Conf-771036-17) Avail: NTIS HC A02/MF A01

A summary of the methods used in the U.S. to unfold radiation spectra is given. For discussion purposes, the methods studied are placed in groups, based on the algorithm used for unfolding and/or treatment of data uncertainties. Specific codes from each group are selected and examined for their role in dosimetry standardization. Finally, the preparation of the ASTM recommended practices and use of benchmark problems in the standardization process are discussed. DOE

N79-32829# Institute for Perception RVO-TNO, Soesterberg (Netherlands).
EFFECTS OF ACUTE NOISE TRAUMATA ON WHOLE-NERVE AND SINGLE-UNIT ACTIVITY
G. F. Smoorenburg and E. vanHeusden 1978 12 p refs
Presented at 15th Workshop on Inner Ear Biol., Seefeld, Austria, Sep. 1978
(IZF-1978-23; TDCK-71654) Avail: NTIS HC A02/MF A01

Some preliminary results of a research program on the effects of noise traumata on cochlear functioning are given. Measurements reported include the latency of the whole-nerve (compound) action potential (AP), the selectivity of frequency-tuning curves (e.g. the Q10-values) measured for the AP (with a forward-masking technique) and for single units in the antero-ventral cochlear nucleus, the degree of phase-locking of the action potentials of these units to the stimulus waveform, and the phase of the stimulus waveform to which these potentials are locked. The noise traumata were induced during the experiments. Results show that the AP latency increases after inducement of a noise trauma if the stimulus is presented at the same sound pressure level as before the trauma. An effect of the noise trauma on Q10 values, although small, can be measured. Neither the AP latency data nor the response times calculated from single-unit data suggest that a decrease in the sharpness of tuning found after inducement of noise trauma is accompanied by a decrease of cochlear response times. Author (ESA)

N79-32830# National Technical Information Service, Springfield, Va.
HYPOTHERMIA. A BIBLIOGRAPHY WITH ABSTRACTS Report, 1964 - May 1979
Elizabeth A. Harrison Jun. 1979 246 p Supersedes NTIS/PS-78/0517; NTIS/PS-77/0419; NTIS/PS-76/0398
(NTIS/PS-79/0533/4; NTIS/PS-78/0517; NTIS/PS-77/0419; NTIS/PS-76/0398) Avail: NTIS HC $28.00/MF $28.00 CSCL 06S

The selected abstracts cover high pressure narcosis, organ preservation, hyperbaric conditions, thermal homeostasis, thermoregulation, cold stress, cold tolerance, physiological effects and cold water immersion as related to hypothermia. (This updated bibliography contains 238 abstracts, 12 of which are new entries to the previous edition.) GRA

N79-32831# Naval Aerospace Medical Research Lab., Pensacola, Fla.
HUMAN PERFORMANCE IN TIME-SHARED VERBAL AND TRACKING TASKS Interim Report
Steven D. Harris, Jerry M. Owens, and Robert A. North Apr. 1979 27 p refs
(ZF5154004)
(AD-A070275; NAMRL-1259) Avail: NTIS HC A03/MF A01 CSCL 17/2

Significant progress has been made in the development of automated speech understanding systems for application to naval aviation systems. One advantage that is anticipated for speech over conventional man-machine interfaces is that speech could function as an independent channel for the control of systems. The experiment reported in this paper represents an initial effort to investigate the assumption that an automatic speech understanding system will provide a parallel channel for the performance of an information processing task currently with a visual/manual control task. The experiment required human subjects to time-share a digital information processing task and a continuous compensatory tracking task. Independent variables in the design were task loading (single- vs. dual-task conditions), stimulus presentation modality for the digital task (auditory vs. visual), and response modality for the digital task (voice vs. keyboard). Data from 16 subjects were analyzed. The results indicated that the combination of visual stimulus modality and voice response provided optimum joint-task performance. No combination of stimulus and response modalities resulted in equivalent single- and dual-task performance. Future experiments should be designed to investigate the joint-task performance space for tasks that are more representative of the information processing performance requirements of specific systems. However, the interpretability of the results of such research will depend upon the solution of methodological problems, such as how to control or account for subjects' speed-accuracy tradeoff strategies and the priorities they place upon the concurrent tasks. GRA

N79-32832# Air Force Human Resources Lab., Brooks AFB, Tex.
PILOT PERFORMANCE IN SIMULATED AERIAL REFUELING AS A FUNCTION OF TANKER MODEL COMPLEXITY AND VISUAL DISPLAY FIELD-OF-VIEW Final Report, Oct. 1977 - Feb. 1978
Robert R. Woodruff, Thomas M. Longridge, Jr., Philip A. Irish, III, and Richard T. Jeffreys May 1979 25 p refs
(AF Proj. 1123)
(AD-A070231; AFHRL-TR-78-98) Avail: NTIS HC A02/MF A01 CSCL 05/9

This research was conducted in the Advanced Simulator for Pilot Training (ASPT) to determine Computer Image Generation (CIG) complexity and field-of-view (FOV) requirements for aerial refueling (AR). The adequacy of three detail levels and five FOVs was assessed. Aircraft simulated, in addition to the KC-135 tanker, were the A-10, F-4, B-52, and F/FB-111. Twelve experienced pilots (three per aircraft) served as subjects. Performance measures included elapsed time to criterion, number of disconnects and aircraft control profile. An assessment of FOV position employed for takeoff/landing versus AR was also made. A-10 and F-4 pilots found the visual FOV position employed for simulated takeoff/landing must be raised approximately 12 degrees to accomplish AR. B-52 and F-111 pilots found AR could be satisfactorily performed using the same FOV position employed for takeoff/landing. Performance measures clearly indicated that AR performance varies as a function of both FOV size and tanker detail level. The larger the FOV, the better the performance. Similarly, the more detailed the tanker model, the better the performance. GRA

N79-32833# Catholic Univ. of America, Washington, D. C. Dept. of Psychology.
A COMPARISON OF VERBAL AND VISUAL IMAGERY LEARNING STATEGIES: THEIR IMPORTANCE FOR INSTRUMENTAL TECHNOLOGY Final Report, Jan. 1976 Dec. 1978
Forrest R. Ratliff, James A. Earles, James D. Ratliff, and Dale Wissman 1 Dec. 1978 214 p refs
(Grant AF-AFOSR-2973-76; AF Proj. 2313)
(AD-A069983; AFOSR-79-0673TR) Avail: NTIS HC A10/MF A01 CSCL 05/10

Two learning experiments were conducted to compare verbal and imagery based encoding techniques. Experiment 1 was conducted under rigorously controlled conditions comparing four encoding methods, and Experiment 2 compared the imagery matrix and eclectic verbal encoding in a classroom environment. The results showed the imagery matrix to be superior to all other methods and imagery based methods were superior over all to verbally mediated methods. The imagery matrix is suitable for use in an instructional technology. Author (GRA)

N79-32834# National Aerospace Lab., Amsterdam (Netherlands). Flight Div.
PERFORMANCE AND WORKLOAD ANALYSIS OF INFLIGHT HELICOPTER MISSIONS
P. H. Wewerinke 10 Apr. 1979 34 p refs Presented at 13th Ann. Conf. on Manual Control, Cambridge, Mass., 15-17 Jun. 1979 Sponsored by Res. Branch of the Directorate of Mat. Air RNLAF
(NLR-MP-77013-U) Avail: NTIS HC A03/MF A01

The potentials of an optimal control model for predicting the characteristics of realistic operational helicopter missions were assessed. The theoretical and experimental results indicate that the optimal control model succesfully predicts the best attainable (rather than the average) performance of a group of well-trained, highly motivated subjects. Furthermore, the model allows a description of inter-subject variability. The control effort model predictions are supported by subjective ratings. The model provides a meaningful representation of pilot workload relative to complex control tasks. Author (ESA)

N79-32835# National Aerospace Lab., Amsterdam (Netherlands). Flight Div.
A THEORETICAL AND EXPERIMENTAL ANALYSIS OF THE OUTSIDE WORLD PERCEPTION PROCESS
P. H. Wewerinke 15 Jun. 1978 23 p refs Presented at 14th Ann. Conf. on Manual Control, Los Angeles, 25-27 Apr. 1978
(NLR-MP-78020-U) Avail: NTIS HC A02/MF A01

The outside scene is often an important source of information for manual control tasks. Important examples of this are car driving and aircraft control. The modeling for this visual scene perception process on the basis of linear perspective geometry and the relative motion cues is discussed. Model predictions, utilizing psychophysical threshold data from baseline experiments and literature on a variety of visual approach tasks, are compared with experimental data. Both the performance and workload results illustrate that the model provides a meaningful description of the outside world perception process, with a useful predictive capability. Author (ESA)

N79-32836# Research Inst. of National Defence, Stockholm (Sweden).
SHALIT PERCEPTUAL ORGANIZATION AND REDUCTION QUESTIONNAIRE (SPORQ). REPORT 2: CHARACTERISTICS AND RELIABILITY
Ben Shalit May 1979 73 p refs
(FOA-C-55031-H6) Avail: NTIS HC A04/MF A01

The characteristics and reliability of the Shalit Perceptual Organization and Reduction Questionnaire are examined. The population to which the test was applied consisted of three main groups: national servicemen-conscripts (N = 201), professional soldiers (N = 383), and civilians (N = 145). Each of these were further subdivided into four groups representing various types of occupations or units. The distributions of their scores (structural - quantitative and content - qualitative) are analyzed and discussed. An analysis of structure and interrelationships between the elements of the test was made and a mapping sentence formulated. Test scoring reliability and test-retest reliability was also investigated. The test was shown to have good overall scoring and retest reliabilities, ranging from .70 to .98 and from .56 to .98, respectively. Author (ESA)

N79-32837# Institute for Perception RVO-TNO, Soesterberg (Netherlands).
THE USE OF ARTIFICIAL SIGNALS DURING SONAR-WATCH
W. A. Wagenaar and A. F. Sanders 1978 7 p
(IZF-1978-25; TDCK-71719) Avail: NTIS HC A02/MF A01

The detection of submarines using CW 610 sonar on board Van Speyk class frigates was evaluated and found to be less than optimal. This loss in detection efficiency is attributed to degradation in operator's vigilance. As a possible solution to the vigilance problem operators were required to monitor the screen only for a short period of time (20 to 30 minutes) after which they either relaxed, or worked on something else, for the same length of time. However, laboratory experiments show that if the rest period is also rather unstimulating alertness is not improved. As an alternative, the frequent presentation of artificial signals, or echoes (without the operator knowing when or where such a signal will occur) was tried and knowledge of results about the detection of these artifical signals was provided to him. Results show that real signals are detected better under such circumstances and, moreover, that lapses of attention are counteracted. Author (ESA)

N79-32838# Institute for Perception RVO-TNO, Soesterberg (Netherlands).
CAR DRIVING AS A CYBERNETIC TASK
G. J. Blaauw 1979 71 p refs In DUTCH; ENGLISH summary
(IZF-1979-6; TDCK-71982) Avail: NTIS HC A04/MF A01

The possibilities of cybernetics in analyzing driver's behavior quantitatively are evaluated. Several task analyses of driving are surveyed. The results of this survey are used systematically in presenting the available cybernetic models of driving. The cybernetic models of driving are grouped with respect to the number of input signals (as related to driver's search) and to the implementation of future information of signals (as related to driver's prediction). Models are described for lateral control as well as longitudinal control (car following). Models are not yet available for combinations of driving tasks. The representation consists of an estimated value and an uncertainty around the estimate for each state. Both values for all states initiate (1) an increase in attention to any state for which the uncertainty becomes too high, and (2) the execution of control actions. This model structure permits an analysis of the multivariable driving task in terms of supervisory control. As a result, driver's internal criterion can be determined in relation to driving experience, among other things. Author (ESA)

N79-32839# Institute for Perception RVO-TNO, Soesterberg (Netherlands).
EFFECTS OF AMPHETAMINE ON RESPONSE SELECTION AND RESPONSE EXECUTION PROCESSES IN CHOICE REACTION TASKS
H. W. Frowein 1979 27 p refs Sponsored by Found. for Med. Res. FUNGO
(IZF-1978-8; TDCK-71983) Avail: NTIS HC A03/MF A01

Two experiments to investigate the effect of an amphetamine derivative (phentermine HCL) on different stages in the reaction process were carried out. Experiment 1 showed that amphetamine shortened the reaction time, but this effect was additive with the effects of relative signal frequency and stimulus-response compatibility, which suggests that the amphetamine effect on the reaction time cannot be attributed to a specific effect on the response selection stage. Experiment 2 showed that amphetamine shortened the movement time in a target-aiming task. This effect was greater for longer movements but independant of target width, which suggests that amphetamine specifically affects the motor processes involved in the execution of aiming responses, but that the visual feedback processes during the movements were not affected by amphetamine. In addition, Experiment 2 showed an effect of amphetamine on the reaction time which was interpreted in terms of an amphetamine effect on the preparatory motor processes proceeding the aiming response. These findings are consistent with findings in the literature suggesting effects of amphetamine in motor tasks rather than in cognitive and perceptual tasks. Author (ESA)

N79-32840# Houston Univ., Tex.
APPLICATION OF A STRUCTURED DECISION PROCESS FOR PROPER INCLUSION OF HUMAN RESOURCES IN THE DESIGN OF A POWER UNIT SUPPORT STAND Interim Technical Report, 1 Sep. 1977 - 30 Sep. 1978
Benjamin Ostrofsky Sep. 1978 67 p refs
(Contract F49620-77-C-0116; AF Proj. 2313)
(AD-A069978; AFOSR-79-0689TR) Avail: NTIS HC A04/MF A01 CSCL 01/5

A structured design process was applied to the design of the F-16 Aircraft Emergency Power Unit (EPU) Service Stand. Explicit steps in the accomplishment of a set of candidate systems, development of a multi-attribute criteria function along with the attendant parameters and their feasible ranges, and the ordinal ranking of the candidate systems in order of preference were accomplished. An exploration of the design space was made to identify the parameter values which would yield the maximum theoretic value of the criteria for this design space and the results compared with the highest ranked candidate system. During the design of the Service Stand, no unusual emphasis on human factors was made with the design engineers, but the results indicate strong acceptance of human factors and human resource limitations when the problem definition is adequately structured for the designers. GRA

N79-32841# Trinity Univ., San Antonio, Tex. Dept. of Engineering Science.

A THEORETICAL INVESTIGATION OF POWER AND CONTROL CONFIGURATIONS FOR A HIGH G-ONSET CENTRIFUGE DRIVE SYSTEM Final Technical Report, Jun. 1978 - May 1979
T. J. Jones 22 May 1979 11 p
(Grant AF-AFOSR-3622-78; AF Proj. 2313)
(AD-A070912; AFOSR-79-0820TR) Avail: NTIS
HC A02/MF A01 CSCL 14/2

An investigation of both the power drive system and the control system for high G-onset rates in a human centrifuge was carried out. Although the analysis was general, much of it specifically considered the A/F 37V-1 centrifuge at Brooks AFB. It is shown that an electric drive system, and gondola passenger control of G forces results in a system capable of simulating aerial combat maneuvers. The drive system consists of an SCR control of the A.C. line voltage applied to D.C. motors. The control system provides for cockpit stick control of the centrifuge's angular velocity and angular acceleration. GRA

N79-32842# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.
COMBINED DISCRETE NETWORK: CONTINUOUS CONTROL MODELING OF MAN-MACHINE SYSTEMS Ph.D. Thesis
Deborah J. Seifert Mar. 1979 204 p refs
(AF Proj. 2313)
(AD-A071574; AMRL-TR-79-34) Avail: NTIS
HC A10/MF A01 CSCL 05/8

The role of the human operator in control systems is evolving towards that of a supervisor who plans sequences, and monitors and away from strictly tracking. New modeling approaches and techniques are required to realistically represent and examine these new system configurations and resulting performance issues. This dissertation study proposed an alternate modeling approach comprised of discrete network models in combination with elements of an open-loop optimal control model formulation. The feasibility of employing this combined modeling approach was demonstrated through its application to the DAIS (Digital Avionics Information System) system in which pilot duties involve information retrieval and cognitive processing tasks in addition to flight control. GRA

N79-32843# Institute for Perception RVO-TNO, Soesterberg (Netherlands).
TENTATIVE EVALUATION OF ANNOYANCE CAUSED BY NOISE FROM GUNFIRE
G. F. Smoorenburg 1978 52 p refs In DUTCH; ENGLISH summary
(IZF-1978-21; TDCK-71624) Avail: NTIS HC A04/MF A01

Based on an extensive survey of the pertinent literature a method was developed to determine the annoyance that may be expected from noise due to gunfire. This method may be applied to noise from both small and heavy firearms, and also to sonic booms. The annoyance to be expected is derived from the difference between the rating sound level and the noise criterion. The rating sound level is determined by the number of shots per day and the sound levels of the respective shots measured with the A-weighting and the impulse characteristic. Application of the impulse characteristic is based on properties of the hearing organ in the perception of short sounds. If the sound impulses contain a lot of low-frequency energy (heavy firearms, explosions, or sonic booms) the peak level of the sound impulse must be measured with linear frequency weighing. The rating sound level is determined by the lin. peak-level if this level exceeds the A. imp-level by more than 10 dB.
Author (ESA)

N79-33788# Army Research Inst. of Environmental Medicine, Natick, Mass.
COMPOSITION OF CEREBRAL FLUIDS IN GOATS ADAPTED TO HIGH ALTITUDE
V. Fencl, R. A. Gabel, and C. Wolfe 23 Jan. 1979 32 p refs
(DA Proj. 3A1-61101-A-910)
(AD-A070142; USARIEM-M-6/79) Avail: NTIS
HC A03/MF A01 CSCL 06/16

The ionic composition of cerebral ISF was explored in 6 unanesthetized goats at sea level (SL) and again after 5 days at simulated high altitude (HA) of 4300 m, by measuring net transependymal fluxes of HCO3 ion, Cl ion and lactate during ventriculo-cisternal perfusions with lactate-free artificial CSF with various (HCO3 ion) and (Cl ion): concentration of an ion in cerebral ISF is indicated by concentration of that ion in the inflowing perfusate, that produces zero flux. We conclude that, at SL, (HCO3 ion) and (Cl ion) in CSF were the same as in cerebral ISF, which is in agreement with previously published findings. In goats adapted to HA, (Cl ion) in cerebral ISF remained equal to (Cl ion) in CSF, while (HCO3 ion) in cerebral ISF was demonstrably lower, and (lactate) presumably higher, than in CSF. The fluid surrounding the central chemoreceptors appears to be more acidic in goats acclimatized to HA than at SL, in spite of the alkalosis in cisternal CSF. This may contribute to ventilatory acclimatization to HA. Author (GRA)

N79-33789# Joint Publications Research Service, Arlington, Va.
SPACE BIOLOGY AND AEROSPACE MEDICINE, NO. 4, 1979
9 Oct. 1979 145 p refs Transl. into ENGLISH of Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 145 p
(JPRS-74330) Avail: NTIS HC A07/MF A01

Problems associated with spacecraft habitability are discussed with emphasis on the effects of radiation and weightlessness on physiological processes and chemical reactions in man, animals, and plants.

N79-33790# Joint Publications Research Service, Arlington, Va.
IMMUNOBIOLOGICAL REACTIVITY OF THE BODY UNDER HYPERBARIC AND HYPOBARIC CONDITIONS
A. S. Kaplanskiy *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 1-7 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 3-7
Copyright. Avail: NTIS HC A07/MF A01

Data existing in the literature concerning the effects of hyperbaric and hypobaric gas mixtures on resistance to infections and immunobiological reactivity of the body are surveyed. Despite contradictory results obtained by different researchers, the exposure of man and animals to hyperbaric conditions in isolated chambers is associated with an increase in morbidity rate and the aggravation of infectious and inflammatory processes. The increased incidence of infectious diseases is apparently due to the depression of nonspecific resistance of the body as well as to the adverse hygienic conditions in pressure chambers. There is also reason to believe that impairment of immunity under hyperbaric conditions occurs as a result of the development of stress, the etiology of which is not clear, although overcooling of the body could be a factor. The limited number of studies dealing with the effects of hypobarism on resistance to infection, and the contradiction of the published data, preclude the derivation of any conclusions at present. A.R.H.

N79-33791# Joint Publications Research Service, Arlington, Va.
STUDIES OF VENOUS CIRCULATION IN THE CREW OF THE SALYUT-5 ORBITAL STATION
V. A. Degtyarev, A. S. Nekhayev, V. S. Bednenko, O. B. Kulikov, Ye. A. Kobzev, V. M. Bolshov, and A. A. Tsvetkov *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 8-13 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 8-12

Copyright. Avail: NTIS HC A07/MF A01

Measurements of venous circulation in the crewmembers of the orbital station Salyut-5 demonstrate weightlessness induced symptoms specifically associated with blood redistribution and pressure increase in the jugular veins. Further studies of venous circulation and regional hemodynamics are recommended to determine the time and degree of human body adaptation to weightlessness. A.R.H.

N79-33792# Joint Publications Research Service, Arlington, Va.

FLUID-ELECTROLYTE METABOLISM IN THE CREW OF SALYUT-4

G. I. Kozyrevskaya, A. I. Grigoryev, B. R. Dorokhova, N. M. Vatulya, and N. D. Radchenko *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 14-21 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 12-18

Copyright. Avail: NTIS HC A07/MF A01

Fluid-electrolyte metabolism was studied in two cosmonauts before and after completion of a 63-day orbital flight. Post flight weight losses of 5.6% and 3.5% were attributed to body dehydration. Both men showed a trend for an increased renal excretion of potassium, magnesium, and calcium as compared to their food intake, with increases being more expressed the day after the water load application. Possible causes of the changes and the pattern of recovery of fluid-electrolyte metabolism after a prolonged space flight are discussed. A.R.H.

N79-33793# Joint Publications Research Service, Arlington, Va.

CONTROL OF VERTICAL POSITION AFTER FLIGHTS ABOARD THE SALYUT-4 ORBITAL STATION

V. I. Myasnikov, O. P. Kozerenko, N. M. Rudometkin, V. M. Mikhaylov, and V. S. Georgiyevskiy *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 22-27 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 18-22

Copyright. Avail: NTIS HC A07/MF A01

The stabilography method, used on the crews of the Soyuz 4 and 5 spacecraft revealed an increase in amplitude and an undulant change in frequency of oscillations of the body's center of gravity. Post-flight studies of the crews of Soyuz 17 and 18 are discussed to demonstrate the distinctions of regulation of vertical position and autonomic reactions to it after prolonged weightlessness. The process of restoration of the initial level of control of the upright position is examined. A.R.H.

N79-33794# Joint Publications Research Service, Arlington, Va.

EFFECTS ON LIPID METABOLISM IN MAN OF SOME FACTORS THAT SIMULATE SPACE FLIGHT CONDITIONS

V. P. Bychkov, A. G. Kasatkina, and O. S. Khokhlova *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 28-34 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 28-34

Copyright. Avail: NTIS HC A07/MF A01

Studies of the effects of space flight simulation factors on lipid metabolism show that space diets developed for space flights of different duration (dehydrated foodstuffs alone or in combination with foods preserved by other methods) do not product noticeable changes in lipid metabolism. Nevertheless, other factors, i.e. hypokinesia, intake of nerobol during hypokinesia, an altered work-rest cycle, an increased carbon monoxide concentration (up to 15 mg/cu m) influenced lipid metabolism. Author

N79-33795# Joint Publications Research Service, Arlington, Va.

ELECTROLYTE COMPOSITION OF RAT BLOOD PLASMA AND SKELETAL MUSCLES AFTER FLIGHT ABOARD THE COSMOS-690 BIOSATELLITE

V. P. Nesterov and R. A. Tigranyan *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 35-39 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 35-39

Copyright. Avail: NTIS HC A07/MF A01

Measurements of Na(+), K(+), Mg2(+) and Ca2(+) concentrations in the functionally different muscles (soleus, plantaris, diaphragm muscles) and plasma of the rats flown for 20.5 days aboard the biosatellite Cosmos-690 did not show any significant changes as compared with the controls. At the same time a decrease of the K(+)/Na(+) ratio and a similar shift of Mg2(+) and Ca2(+) concentrations in plasma of irradiated rats as compared with these of non-irradiated animals demonstrated that the combined effects of space flight factors and gamma-irradiation influenced the system of ionic homeostasis in the blood. In the animals sacrificed on the R + 1 day the K(+)/Na(+) ratio in the soleus muscle changed in favor of Na(+) and in the plantaris muscle in favor of K(+), and remained essentially unchanged in the diaphragm. Comparison of the flight experiments with the ground-based controls show that ion changes occur because of ionizing radiation rather than weightlessness. Author

N79-33796# Joint Publications Research Service, Arlington, Va.

INTENSITY OF DNA SYNTHESIS IN ANIMAL ORGANS AFTER FLIGHT ABOARD THE COSMOS-782 BIOSATELLITE

F. T. Guseynov, I. A. Yegorov, G. S. Komolova, and R. A. Tigranyan *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 40-44 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 30-33

Copyright. Avail: NTIS HC A07/MF A01

At six hours postflight, the rate of tritiated thymidine incorporation into the liver of flight rats did not differ from normal (vivarium controls) and was 50% higher than in synchronous rats. In the spleen and thymus of flight animals, this parameter was 60% and 33% below the norm. Similar but less pronounced changes in the spleen were found in the synchronous rats. Twenty-five days postflight, the rate of DNA synthesis in lymph organs recovered completely and tended to increase, whereas in the liver it remained significantly below the norm. A.R.H.

N79-33797# Joint Publications Research Service, Arlington, Va.

EFFECT OF BRIEF HEAD-DOWN POSITION ON PARAMETERS OF CARBOHYDRATE METABOLISM AND BETA LIPOPROTEIN CONTENT OF BLOOD

A. A. Seid-Guseynov, V. Ye. Katkov, V. V. Chestukhin, L. I. Shefter, N. S. Zakharova, and Ya. A. Sokolov *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 45-51 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 34-38

Copyright. Avail: NTIS HC A07/MF A01

Before and after 5-day bed rest in the head-down position (at an angle of -4.5 deg), the healthy male test subjects were exposed to selective catheterization with blood samples withdrawn from different compartments of the cardiovascular system. The content of glucose, insulin, lactic acid and Beta-lipoproteins was measured. After bed rest the systemic circulation, mixed arterial and venous blood, showed a trend for a decrease of carbohydrate metabolism and an increase of the content of Beta-lipoproteins. Transcapillary metabolism in different organs, first of all, in the brain and liver altered significantly. The liver began to release glucose and ceased to utilize lactic acid whereas the brain increased substantially its release of Beta-lipoproteins. The data obtained were analyzed using a model of carbohydrate metabolism to control and artificial pancreas. Author

N79-33798# Joint Publications Research Service, Arlington, Va.

INFLUENCE OF PRESSURE CHAMBER CONDITIONS ON ADRENOCORTICAL FUNCTION IN MAN (ACCORDING TO RESULTS OF ASSAYING BLOOD PLASMA 11-HYDROXYCORTICOSTEROIDS)

S. Kalandarov, V. P. Bychkov, and A. V. Sergiyenko *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 52-57 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 39-42

Copyright. Avail: NTIS HC A07/MF A01

The effect of a changed atmosphere, hypoxia, hypercapnia, their combinations and different motor activities on the adrenocortical function was studied in 36 test subjects kept in an 8 cu m altitude chamber. Human adaptation to the environmental changes developed with an active involvement of the adrenal cortex. The level and direction of the changes depended on both the force of the influences and on the initial state of the test subjects. Author

N79-33799# Joint Publications Research Service, Arlington, Va.

ENERGY EXPENDITURES OF MAN DURING LONG EXPOSURE TO A PERIODICALLY CHANGING ATMOSPHERE

N. A. Agadzhanyan, V. M. Baranov, M. A. Vytchikova, G. A. Davydov, and Yu. A. Spasskiy *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 58-63 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 42-46

Copyright. Avail: NTIS HC A07/MF A01

The results of studying man's gas exchange and energy expenditures as related to the composition of a cyclically changing environment of an altitude chamber are presented. The experiments were carried out on a 24-hour basis. The environmental parameters that physiologically were most adequate as the training factor are given. The respiratory reactions suggest that the enclosed environment used is suitable to prevent hypokinesia effects. G.Y.

N79-33800# Joint Publications Research Service, Arlington, Va.

DISTINCTIONS OF INFLUENCE OF THE RETICULAR FORMATION OF THE MIDBRAIN ON THE HEART AND RESPIRATION WITH EXPOSURE TO CENTRIPETAL ACCELERATIONS

L. D. Klimovskaya *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 64-70 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 46-50

Copyright. Avail: NTIS HC A07/MF A01

Experiments were carried out on white rats and rabbits exposed to transverse accelerations of 6-10 g for 5 min. Before, during and after centrifugation the reticular formation of the midbrain underwent high-frequency electric stimulation. During centrifugation the inhibitory effects of the recticular formation on the cardiorespiratory rhythm decreased, whereas stimulatory effects either remained unchanged or increased. Author

N79-33801# Joint Publications Research Service, Arlington, Va.

SIGNIFICANCE OF THE VIBRATION COMPONENT TO THE DELETERIOUS EFFECT OF IMPACT ACCELERATIONS

G. P. Mirolyubov, V. A. Elivanov, and G. P. Stupakov *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 71-76 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 51-54

Copyright. Avail: NTIS HC A07/MF A01

Animal experiments demonstrated that damped oscillations of the support construction induced by impact accelerations enhanced their damaging effect on dogs. Within the frequency range tested (from 20 to 178 Hz) the threshold of lesions of the lungs, heart and liver decreased and reached 34% at a frequency of 85 Hz. The level of liver lesions was inversely proportional to the frequency of the support oscillations. Lesions of the lungs and the heart were more expressed at 85 Hz and decreased with an increase or a decrease of the oscillation frequency. At a frequency of 130-176 Hz the effect of the vibration component was not seen. Author

N79-33802# Joint Publications Research Service, Arlington, Va.

EFFECT OF RESTRICTED ACTIVITY ON VESTIBULAR FUNCTION

G. I. Gorgiladze, G. I. Samarin, and G. S. Kazanskaya *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 77-82 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 55-58

Copyright. Avail: NTIS HC A07/MF A01

The hypokinetic effect on the nystagmic reaction and illusory sensations upon caloric and galvanic stimulations of the labyrinths was studied on six test subjects (professional gymnasts). Under normal conditions the sportsmen predominantly showed the nystagmic response to the caloric irritation of the left labyrinth. A 10-day hypokinetic exposure produced a noticeable decrease of the above asymmetric nystagmic reaction to the caloric irritation of both labyrinths. Simultaneously an enhancement of illusory sensations and a decrease of their thresholds in response to the direct current labyrinthine stimulation were noted. The above changes can be attributed to the hypokinesia-induced decline of mechanisms of vestibular adaptation of sportsmen. Author

N79-33803# Joint Publications Research Service, Arlington, Va.

EFFECT OF ROCKING ON ABSORPTION OF SOME GROUP B VITAMINS AND ASCORBIC ACID IN THE SMALL INTESTINE OF DOGS

R. P. Faytelberg and T. V. Gladkiy *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 83-88 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 59-62

Copyright. Avail: NTIS HC A07/MF A01

On the dogs with a Thiry-Pavlov fistula (an isolated loop of the small intestine) the effect of 30-min acceleration on the absorption of thiamine-bromide, riboflavine, pyridoxine-hydrochloride and ascorbic acid as well as on the gastric juice secretion was studied. It was demonstrated that back-to-forth linear acceleration increased vitamin B1 absorption, decreased vitamins B2 and B6 and ascorbic acid absorption, and altered secretion of gastric juice. Author

N79-33804# Joint Publications Research Service, Arlington, Va.

ULTRASTRUCTURE OF LYMPH NODES OF DOGS EXPOSED TO LONG-TERM EXTERNAL GAMMA RADIATION

V. V. Shikhodyrov, L. A. Bespalova, and V. S. Romanov *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 89-93 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 62-66

Copyright. Avail: NTIS HC A07/MF A01

An electron microscopy study of lymph nodes of dogs exposed to chronic gamma-irradiation during 6 years (with a total dose of 125 rad/year) was performed. The exposure induced changes in the cell composition of the paracortical regions due to a decrease of the count of small lymphocytes and a predominant increase of young blast cells with an altered ultrastucture. Chronic gamma-irradiation led to an increase of the number of plasma cells and emergence of intermediate cell forms due to plasmatization of lymphocytes and reticular cells. G.Y.

N79-33805# Joint Publications Research Service, Arlington, Va.

SOME OF THE PROBLEMS INVOLVED IN PLANNING BIOLOGICAL EXPERIMENTS

V. V. Verigo *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 94-99 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 66-69

Copyright. Avail: NTIS HC A07/MF A01

Certain cases of using mathematical methods in the planning of biological experiments are described. The paper presents an algorithm of the distribution of the experimental data based on dynamic programming. An application of computer-aided calculations for the formation of homogeneous groups of experimental and control tests is discussed. G.Y.

N79-33806# Joint Publications Research Service, Arlington, Va.

ADAPTIVE OPTIMIZATION OF EXCHANGE OF GASES IN PLANTS IN A SEALED PHYTOTRON

Yu. A. Berkovich, V. L. Korbut, and O. B. Suslova *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 100-104 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 70-73

Avail: NTIS HC A07/MF A01

The study of adaptive optimization of wheat photosynthetic productivity in the phytotron allowed a 25-100% increase in the daily volumes of carbon dioxide assimilated by plants. Author

N79-33807# Joint Publications Research Service, Arlington, Va.

QUALITY OF WATER RECLAIMED FROM URINE AS RELATED TO pH OF INITIAL PRODUCT

N. M. Nazarov, I. V. Yakimova, N. A. Golikova, Yu. Ye. Sinyak, and S. V. Chizhov *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 105-108 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 73 76

Copyright. Avail: NTIS HC A07/MF A01

It was demonstrated that the quality of reclaimed water depends on pH of initial urine: the water reclaimed by evaporation at temperatures not higher than 50 C shows higher content of ammonium nitrogen and better oxygenation at pH 3-5. G.Y.

N79-33808# Joint Publications Research Service, Arlington, Va.

EVALUATION OF OXIDIZABILITY OF AIR IN CLOSED AREAS

L. A. Mokhov, L. D. Karpova, and N. Ya. Shuinova *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 109-112 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 76-78

Copyright. Avail: NTIS HC A07/MF A01

Acetic acid, aldehydees, as well as a number of other organic substances, are the natural products of human vital functions, and they are released into the environment with exhaled air, sweat, urine, excrements, etc. In the air of a small, closed area, these organic compounds as a whole could induce discomfort, associated with a number of unpleasant sensations (odor, nausea, vertigo, headache, etc.). Heretofore, air oxidability was determined according to the organic impurities capable of oxidation to acetic acid or acetaldhyde, and as a result a number of compounds were overlooked. For this reason, when making a sanitary chemical evaluation of air in closed areas of a limited size, if possible, organic impurities to carbon dioxide must be oxidized. The influence of duration of reaction, acidity of medium, heating conditions and use of catalysts on the reaction of oxidation of ethanol were tested. G.Y.

N79-33809# Joint Publications Research Service, Arlington, Va.

EFFECT OF HYDROSTATIC FACTOR ON ORTHOSTATIC STABILITY AND PHYSICAL FITNESS OF MAN DURING 60-DAY ANTIORTHOSTATIC HYPOKINESIA

O. D. Anashkin, Z. K. Trushinskiy, F. V. Reva, and T. P. Shatunina *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 113-115 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 78-80

Copyright. Avail: NTIS HC A07/MF A01

Six essentially healthy male volunteers participated in the studies (age ranged from 19 to 37). Three subjects (control group) were kept on strict bed rest in antiorthostatic (head down) position, with the head of the bed tilted -4.5 deg down, for 60 days. The other three subjects spent 2 hours/day in sitting position (1 hour after breakfast and 1 hour after lunch-dinner), and the remaining 22 hours were spent in the anteriorthostatic position. Heart rates and arterial pressures were recorded and physical fitness was evaluated. G.Y.

N79-33810# Joint Publications Research Service, Arlington, Va.

VERTICAL ORIENTATION OF MAN DURING 5-DAY ANTIORTHOSTATIC HYPOKINESIA (-4, -8 AND -12 DEG HEAD DOWN POSITION)

B. B. Bokhov and Yu. N. Taranenko *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 116-120 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 80-83

Avail: NTIS HC A07/MF A01

Two tests were used to study the effect of 5-day hypokinesia on vestibuloproprioceptive orientation: orientation in a field of vision without a reference point and in a field with an image. G.Y.

N79-33811# Joint Publications Research Service, Arlington, Va.

EFFECT OF IMPACT ACCELERATIONS ON CHEMICAL RESISTANCE OF RAT ERYTHROCYTES

Ye. Ye. Simonov *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 121-124 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 83-85

Copyright. Avail: NTIS HC A07/MF A01

Experiments were conducted on 36 male albino rats weighing 150-180 g, which were divided into three equal groups. The 1st group was exposed to landing impact accelerations of 410 + or - 50 units at a collision rate of 10 m/s; the 2d group was exposed to accelerations of 760 + or - 50 units at the same collision rate. The accelerations were in the back--chest direction. Blood was taken for tests from the tail before the experiment, then 1, 2 and 3 days after it. Chemical resistance of erythrocytes was determined by a modified method of acid erythrograms. Concurrently, determination was made of total erythrocyte count and hemoglobin content thereof. G.Y.

N79-33812# Joint Publications Research Service, Arlington, Va.

EXTERNAL RESPIRATION AND GAS EXCHANGE REACTIONS OF MAN DURING ROTATION ON A SHORT-ARM CENTRIFUGE

O. L. Golovkina *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 125-126 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 85-86

Copyright. Avail: NTIS HC A07/MF A01

The reactions of the human external respiration system and gas exchange were studied during exposure to accelerations and combination thereof with exercise on a bicycle ergometer, using a short-radius centrifuge. G.Y.

N79-33813# Joint Publications Research Service, Arlington, Va.

BLOOD COAGULATION AND TISSULAR FACTORS OF BLOOD CLOTTING IN HEPARINIZED RABBITS SUBMITTED TO HYPOKINESIA

L. P. Suiridkina, V. I. Inchina, and Yu. I. Grinevskaya *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 129-132 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 87-89

Copyright. Avail: NTIS HC A07/MF A01

Some investigators report an increase in blood clotting potential at the early stages of hypokinesia. On this basis, the blood clotting system and coagulant properties of the wall of the aorta, venae cavae and myocardium during brief, strict immobilization of rabbits were studied against the background of giving them heparin, which has a marked hypocoagulant action. G.Y.

N79-33814# Joint Publications Research Service, Arlington, Va.

THIRD SYMPOSIUM ON MOTION SICKNESS

G. L. Komendantov and A. G. Bystrova *In its* Space Biol. and Aerospace Med., No. 4, 1979 (JPRS-74330) 9 Oct. 1979 p 133-135 Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), no. 4, 1979 p 89-90 Symp. held at Moscow, 21-22 Nov. 1978
Copyright. Avail: NTIS HC A07/MF A01

The third symposium on the problem of motion sickness was held in Moscow, on 21-22 November 1978, in accordance with the work schedule of the section of aviation and space medicine of the Moscow department of the All-Union Society of Physiologists. A total of 173 people participated in the work of the symposium, referable to scientists, practicing physicians and specialists from 18 cities of the Soviet Union. The agenda topics were pathogenesis of motion sickness, questions of expertise and pharmacological prevention. G.Y.

N79-33815 California Inst. of Tech., Pasadena.
METHODS FOR LOCALIZATION OF ELECTRICAL SOURCES IN THE HUMAN BRAIN AND APPLICATIONS TO THE VISUAL SYSTEM Ph.D. Thesis
Terrance Michael Darcey 1979 320 p
Avail: Univ. Microfilms Order No. 7920351

Multichannel human visual evoked scalp potential (VESP) recording was combined with results from electric field theory and the methods of nonlinear parameter estimation to see if it was possible to infer the general spatio-temporal course of brain excitation in the processing of a visual stimulus. Various models of the head and underlying sources were tested. Forty Channel VESP measurements were made to briefly appearing checkerboard patterns placed in various areas of the visual field. These data were analyzed in terms of underlying equivalent sources in the brain. The measured potential distributions showed a radical dependence of VESP topography on stimulus locus and indicated that these VESP's are probably volume-conducted field effects arising from a small number of fairly localized sources in the brain. Dissert. Abstr.

N79-33816 Polytechnic Inst. of New York.
ACOUSTIC ATTITUDE ORIENTATION Ph.D. Thesis
Bjorn Jay Matz 1979 138 p
Avail: Univ. Microfilms Order No. 7920790

The phenomenon of acoustical tracking in a multi-axis task was investigated in order to determine whether man's audio system can discriminate or resolve two axes of simultaneous acoustic inputs sufficiently well to acoustically track at least as well as his visual system can track visually. The specific task for this investigation was flying an airplane. The results show that in almost all cases, flying using acoustical instrumentation is as good, or better than, flying with visual instrumentation under the first three out of four turbulence levels tested. At the fourth level of turbulence (severe), the results of individual parameters are mixed, but flying with visual instrumentation is slightly better than flying with acoustical instrumentation, but the result is not statistically significant. Dissert. Abstr.

N79-33817 Rice Univ., Houston, Tex.
A NONLINEAR MAPPING APPROACH TO DISCRIMINATION OF SLEEP STAGES FROM THE HUMAN ELECTROENCEPHALOGRAM Ph.D. Thesis
Roderick Pruett 1979 138 p
Avail: Univ. Microfilms Order No. 7919622

New nonlinear analysis techniques were developed for the discrimination of seven sleep stages from the eight lead human electroencephalogram (EEG). The EEG was preprocessed using Period Analysis. Then, appropriate descriptive measures were derived such that discriminant analysis techniques were able to automatically obtain appropriate classifications of sleep EEG samples. Cluster analysis was used to study the similarities and dissimilarities of sleep EEG samples. A nonlinear dimension reduction algorithm was then used to create a two dimensional (2 D) representation of the multi-dimensional (40 D) data set. Dissert. Abstr.

N79-33819# Civil Aeromedical Inst., Oklahoma City, Okla.
EFFECTS OF CONGENER AND NONCONGENER ALCOHOLIC BEVERAGES ON A CLINICAL ATAXIA TEST BATTERY
David J. Schroeder (Veterans Administration Hospital, Topeka, Kansas) and William E. Collins Jan. 1979 19 p refs
(AD-A069375; FAA-AM-79-9) Avail: NTIS HC A02/MF A01 CSCL 06/20

The performance of normally 'heavy' and normally 'light' young male drinkers on an ataxia test battery before and after drinking either a high congener (bourbon) or low congener (vodka) alcoholic beverage was investigated. To assess possible long term effects of alcohol, testing was conducted 1, 3, 5, 9, 24, and 32 hours after drinking. With the exception of one walking test that showed inferior performance 1 hour after drinking and recovery thereafter, the measures of the ataxia test battery were about equally affected, showing decrements from 1 to 3 hours after drinking and a return to a normal plateau by the fifth postdrinking hour. Normally heavy drinkers tended to display less ataxia following drinking than did normally light drinkers. Comparisons of the low and high congener beverages failed to reveal any significant differential effects. There were also no indications of any significant impairment on ataxia tests during the hangover period. R.E.S.

N79-33820# Civil Aeromedical Inst., Oklahoma City, Okla.
LABORATORY PERFORMANCE DURING ACUTE INTOXICATION AND HANGOVER
William E. Collins and W. Dean Chiles Feb. 1979 30 p refs
(AD-A069373; FAA-AM-79-7) Avail: NTIS HC A03/MF A01 CSCL 06/16

Eleven private pilots (7 men and 4 women) were recruited and trained on the multiple task performance battery (MTPB), static and dynamic tracking of a localizer/glide slope instrument, a speech intelligibility test (single words with a background of aircraft noise), and use of the intoxilyzer. The experiment comprised four test sessions (vodka, bourbon, placebo, and control sessions) held at weekly intervals. Results showed clear deleterious effects of alcohol on the MTPB and the tracking tasks immediately following drinking. During the morning (hangover) tests, scores on the MTPB and on the static and dynamic tracking tasks showed small circadian effects (scores were better) without impairment due to the alcohol. Speech perception scores were unaffected by alcohol; scores were always best in the evening and poorest in the morning. There were no congener effects. These results thus offer no evidence contrary to the 'eight hour rule'. Author

N79-33821# Civil Aeromedical Inst., Oklahoma City, Okla.
DEVELOPMENT OF ELECTROPHYSIOLOGICAL INDICES OF NEUROLOGICAL TOXICITY FOR ORGANOPHOSPHATE PESTICIDES AND DEPRESSANT DRUGS
A. M. Revzin May 1979 18 p refs
(AD-A070299; FAA-AM-79-15) Avail: NTIS HC A02/MF A01 CSCL 06/20

The effects of certain drugs and environmental pollutants on brain mechanisms controlling these visual reflexes were investigated using single nerve cell recordings in animal model systems. Most agents studied deleteriously affected reflex functions at extremely low doses. This was especially true for organophosphate pesticides, related cholinergic compounds, and ethyl alcohol. Some drugs, such as imipramine and amphetamine, seemed to have little deleterious effect. Overall, the results suggest that some drugs and environmental pollutants can impair visual functions at doses not normally considered hazardous, and thus indicate the need for extreme caution in evaluating the safety margins of such materials in aviation medicine. R.E.S.

N79-33822*# National Aeronautics and Space Administration, Washington, D. C.
EXPERIMENTAL AND THEORETICAL INVESTIGATIONS CONCERNING A FREQUENCY FILTER BEHAVIOR OF THE HUMAN RETINA REGARDING ELECTRIC PULSE CURRENTS Ph.D. Thesis
A. Meier-Koll Sep. 1979 58 p refs Transl. into ENGLISH from experimentelle und theoretische untersuchungen ueber ein frequenzfilterverhalten der menschlichen retina gegenveber electrischen impulsstroemen, Tech. Hochschule, Fak. fuer Maschinenwesen und Electrotech., (Munich) 1970 p 90 Original language doc. was announced as A71-14372 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)

(NASA-TM-75372) Avail: NTIS HC A04/MF A01 CSCL 06P

Investigation involving patients with injuries in the visual nervous system are discussed. This led to the identification of the epithelial ganglion of the retina as a frequency filter. Threshold curves of the injured visual organs were compared with threshold curves obtained with a control group as a basis for identification. A model which considers the epithelial ganglion as a homogeneous cell layer in which adjacent neurons interact is discussed. It is shown the behavior of the cells against alternating exciting currents can be explained. R.E.S.

N79-33823*# National Aeronautics and Space Administration, Washington, D. C.

CONTRIBUTION TO THE THEORY OF PHOTOPIC VISION: RETINAL PHENOMENA

H. Calvet Sep. 1979 13 p Transl. into ENGLISH from Sci. Tech. (Paris), 15 Oct. 1974 p 13-17 Original language document announced as A75-17025 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75507) Avail: NTIS HC A02/MF A01 CSCL 06P

Principles of thermodynamics are applied to the study of the ultramicroscopic anatomy of the inner eye. Concepts introduced and discussed include: the retina as a three-dimensional sensor, light signals as coherent beams in relation to the dimensions of retinal pigments, pigment effects topographed by the conjugated antennas effect, visualizing lights, the autotropic function of hemoglobin and some cytochromes, and reversible structural arrangements during photopic adaptation. A paleoecological diagram is presented which traces the evolution of scotopic vision (primitive system) to photopic vision (secondary system) through the emergence of structures sensitive to the intensity, temperature, and wavelengths of the visible range. Author

N79-33824# Weather Wing (5th), Langley AFB, Va.

MINIMUM SEA SURFACE TEMPERATURES AND ASSOCIATED SURVIVAL TIMES Final Report

Gerald L. Wheeler May 1979 30 p Supersedes Rept-5WW-SS-319
(AD-A070162; Rept-5WW-TN-79-001; Rept-5WW-SS-319)
Avail: NTIS HC A03/MF A01 CSCL 06/19

This technical note contains sea-surface isotherm charts, showing the approximate survival times of humans immersed in the waters of the North Atlantic and North Pacific Oceans. Minimum sea-surface temperatures are based on the 95th (North Atlantic) and 97.5th (North Pacific) percentiles. GRA

N79-33825# Texas Univ. at Austin. Bio-Medical Engineering Research Lab.

MEASUREMENTS IN THE LASER IRRADIATED EYE Final Report, 1 Apr. 1977 - 31 Mar. 1978

Ashley J. Welch and Larry D. Forster 15 Nov. 1978 78 p refs
(Grant AF-AFOSR-3314-77; AF Proj. 2312)
(AD-A069842; AFOSR-79-0672TR) Avail: NTIS HC A05/MF A01 CSCL 06/18

The work involves the fabrication and use of a small fiber optic probe to measure (1) the transmission of the ocular media which is the ratio of the total light intensity reaching the retina to the total light intensity incident on the cornea, and (2) the cross-sectional intensity profile of a minimally small image. Information concerning the resolution of the eye is derived from the small image measurements. The transmission of the ocular media, measured on a limited number of animals, compares well with some of the best previously reported data. The transmission was measured via a 600 micron diameter fiber optic probe which collected all the light from a 200 micron diameter irradiating laser beam. Three lasers, providing seven wavelengths, were employed. The minimal images measured in the monkey eye were larger than values reported from subjective acuity tests or by diffraction theory. Some of this poor quality could be attributed to experimental error, but perhaps the most significant factor affecting eye quality was the fact that the neural controls for blinking, tearing, and micro-accommodation, which aid the eye in forming a retinal image, were inactive in the anesthetized animal. GRA

N79-33826# Franklin Research Center, Philadelphia, Pa. Science Information Services Organization.

BIOLOGICAL EFFECTS OF NONIONIZING ELECTROMAGNETIC RADIATION, VOLUME 3, NUMBER 4 Quarterly Report, Mar. - Jun. 1979

Jun. 1979 71 p refs Sponsored by the Navy and Nat. Telecommun. and Inform. Admin.
(AD-A070242; Rept-80G-C5003-01-Vol-3-No-4) Avail: NTIS HC A04/MF A01 CSCL 06/18

This quarterly digest presents current awareness information on the biological effects of nonionizing electromagnetic radiation (microwave and radio frequency) in the range of 0 Hz to 100 GHz. The effects of magnetic and electric fields (static and alternating) are also covered. Each issue contains abstracts of English and foreign current literature, summaries of ongoing research investigations, news items, and a directory of meetings and conferences. GRA

N79-33827# Texas Univ. at Galveston. Marine Biomedical Inst.

FUNDAMENTAL BIOPHYSICAL ASPECTS OF DECOMPRESSION SICKNESS Final Report, 1 May 1975 - 31 May 1979

Brian A. Hills 1 Jun. 1979 13 p refs
(Contract N00014-75-C-1035)
(AD-A069998) Avail: NTIS HC A02/MF A01 CSCL 06/19

The work described in this report is directed at determining the physiological and physical factors which underly the formulation of safe decompression procedures. Some aspects are continuations of studies initiated by the principal investigator at Duke University under contract N00014-67-A-0251-0015. Almost all of the work has been published or is currently in press and a full list of publications arising from these contracts is appended to this report. This report summarizes the results and then goes on to describe the way in which the principal investigator now envisages decompression sickness and its prevention in the light of these and other published studies. GRA

N79-33828# Rochester Univ., N. Y. School of Medicine and Dentistry.

STUDIES OF METABOLISM, FUNCTION AND MECHANISM OF DESTRUCTION OF RED CELLS Final Report, 1 Jul. 1973 - 31 Mar. 1978

Marshall A. Lichtman, Robert I. Weed, Paul L. LaCelle, and Jules Cohen Apr. 1978 44 p refs
(Contract DADA17-73-C-3135)
(AD-A070240) Avail: NTIS HC A03/MF A01 CSCL 06/16

We have studied the effects of propranolol on hemoglobin-oxygen affinity and red cell shape, both in vitro and in vivo. We have also examined the effects of hemodialysis on red cell organic phosphates and on oxygen-binding to hemoglobin. Studies were conducted on the role of blood pH alterations in the elevation of red cell 2,3-DPG and decrease in hemoglobin-oxygen affinity observed in subjects with hypoproliferative anemia. Studies of the interactions of anemia, red cell ATP concentration and changes in plasma inorganic phosphate have been conducted. The interrelationships of red cell magnesium concentration and ATP concentration on hemoglobin oxygen binding have been performed. We have studied patients with acute myocardial infarction and have found that whole blood oxygen consumption remains constant despite a nearly three-fold variation in arterial oxygen flow rate. We calculated that a reduction in hemoglobin oxygen affinity could explain about one-third of the increased extraction of oxygen required to maintain oxygen consumption. Other, probably, tissue compensating mechanisms must account for the remaining adaptation. We have studied water soluble radiographic contrast materials and have found them to produce a significant alteration in the distribution of irons across the red cell membrane. GRA

N79-33829# Defence and Civil Inst. of Environmental Medicine, Downsview (Ontario).
THE RELATIONSHIP BETWEEN AEROBIC FITNESS AND CARDIOVASCULAR RISK FACTORS IN THE CANADIAN FORCES
T. E. Brown, W. S. Myles, and C. L. Allen Mar. 1979 18 p refs
(AD-A069865; DCIEM-TR-79X11) Avail: NTIS HC A02/MF A01 CSCL 06/14

Aerobic fitness and the incidence of risk factors related to cardiovascular disease (CVD) were compared for 1595 Canadian servicemen 20-50 years of age. Aerobic power (V02 max) was predicted from heart rates during submaximal exercise performed on a bicycle ergometer. The risk factors, body fat, serum cholesterol, serum triglycerides and blood pressure were measured by standard procedures. Smoking histories were obtained by questionnaire. A positive relationship was demonstrated between V02 max and all of the CVD risk factors examined. This relationship was most significant among those over 40 years of age, the age group most at risk from CVD. The validity of this and other studies relating aerobic fitness to susceptibility to CVD is discussed. GRA

N79-33830# Tuskegee Inst., Ala. Dept. of Physics.
ANALYTICAL MODELLING OF LOAD-DEFLECTION BEHAVIOR OF INTERVERTEBRAL DISCS SUBJECTED TO AXIAL COMPRESSION Final Research Report, 1 Apr. 1971 - 31 May 1979
Marshall L. Burns May 1979 26 p refs
(Contract AF-AFOSR-3578-78; AF Proj. 2312)
(AD-A071019; AFOSR-79-0795TR) Avail: NTIS HC A03/MF A01 CSCL 06/16

The analytical modelling of creep response phenomena of intervertebral discs subjected to a constant axial compressive load is attempted by using Kelvin-solid models. A mathematical analysis scheme is proposed for unique model identification wherein exact parameter solutions are developed for the one-Kelvin-unit model, the three-parameter-solid model, and the two-Kelvin-unit model. In addition, a method is presented by which the associated Young's moduli and viscosity coefficients for an identified model are obtainable. Most importantly, unique parameter values are obtained for the three-parameter-solid by utilizing exact model parameter solutions on experimental strain, E (t), data. This particular model is observed to yield theoretical strain, E (t)cal, values that are within an average error of 3.48% of the experimentally measured values, E (t)exp, for different intervertebral discs. Further, mechanical properties of the intervertebral discs are obtained by using the values of the three-parameter-solid model parameters to calculate the associated Young's moduli and viscosity coefficient. The appropriate applications, data limitations, and possible generalizations of this exact analysis scheme are fully discussed, along with suggestions for future investigatory efforts. GRA

N79-33831# Rochester Univ., N. Y. Dept. of Radiation Biology and Biophysics.
METABOLIC AND PHYSICAL SCALING IN MICROWAVE/RADIOFREQUENCY BIOEFFECTS STUDIES
S. M. Michelson and S. T. Lu 1979 4 p refs Presented at the Bioelectromagnetics Symp., Seattle, 18 Jun. 1979
(Contract EY-76-C-02-3490)
(UR-3490-1561; Conf-790627-3) Avail: NTIS HC A02/MF A01

The absorbed energy required to cause deleterious changes in body functions of experimental animals were determined through quantitative evaluation and comparison of the many experiments which have been conducted. The results of animal experiments were then extrapolated to the exposure conditions of man. Data obtained on dogs, rabbits, and rats exposed to 2880 MHz and 1280 MHz, pulsed and 200 MHz CW were reevaluated in the light of more recent concepts related to specific absorption rates. DOE

N79-33832# Equitable Environmental Health, Inc., Rockville, Md.
FEASIBILITY OF AN EPIDEMIOLOGICAL STUDY OF WORKERS OCCUPATIONALLY EXPOSED TO HIGH VOLTAGE ELECTRIC FIELDS IN THE ELECTRIC POWER INDUSTRY Final Report
H. M. D. Utidjian Mar. 1979 31 p refs
(EPRI Proj. TPS 76-639)
(EPRI-EA-1020) Avail: NTIS HC A03/MF A01

This feasibility study was conducted for the Electric Power Research Institute to investigate the practicality of an epidemiological study on workers occupationally exposed to high voltage electric fields. Identification of a target population to be studied, examination of the various epidemiologic methods which could be undertaken, and cost estimates were the objectives. As an initial step to address these issues, a sample questionnaire was sent to several utility companies. Tentative recommendations regarding possible approaches and specific cost estimates and time projections were stated. DOE

N79-33833# California Univ., Berkeley. Lawrence Berkeley Lab.
EFFECTS ON POPULATIONS OF EXPOSURE TO LOW LEVELS OF IONIZING RADIATION: IMPLICATIONS FOR NUCLEAR ENERGY AND MEDICAL RADIATION The 1979 Report of the Advisory Committee on the Biological Effects of Ionizing Radiation (the BEIR Report)
J. I. Fabrikant Apr. 1979 46 p refs Presented at Symp. on Known Effects of Low Level Radiation Exposure, Pittsburgh, Penn., 25 Apr. 1979 Sponsored in part by EPA
(Contract W-7405-eng-48)
(LBL-9084; Conf-790474-1) Avail: NTIS HC A04/MF A01

The following aspects of the 1979 BEIR report are described: societal decision-making; nuclear energy needs and medical care services; epidemiological and experimental studies; public acceptance; concept of risks to health; risk estimates and cost-benefit analysis; and comparison of risks. Other topics discussed are as follows: need for advisory committees on radiation; value of the BEIR report; health effects of low levels of ionizing radiation; determination of radiation risk estimates; and quantitation of radio-induced cancer risk estimates. DOE

N79-33834# California Univ., Berkeley. Lawrence Berkeley Lab.
HEALTH EFFECTS OF LOW-LEVEL IONIZING RADIATION
J. I. Fabrikant Apr. 1979 10 p
(Contract W-7405-eng-48)
(LBL-9018) Avail: NTIS HC A02/MF A01

Possible hazards to health of persons exposed to low level ionizing radiation are discussed; specifically, effects following exposure to x-rays and to gamma rays from radioactive sources, since these are the ionizing radiations most often encountered in medicine and in industry. There are a number of biological effects of ionizing radiations, but the three most important health effects are: carcinogenic, teratogenic and genetic. Conclusions on the health effects are presented. R.E.S.

N79-33835# Forschungsinstitut fuer Anthropotechnik, Meckenheim (West Germany).
INFLUENCE OF LIGHT ADAPTATION ON DARK ADAPTATION TIME FOR PATTERN RECOGNITION TASKS [EINFLUSS DER ART DER HELLADAPTATION AUF DEN DUNKELADAPTATIONSVERLAUF BEI FORMERKENNUNGSAUFGABEN]
E. Schubert Sep. 1977 62 p refs In GERMAN
(FB-31) Avail: NTIS HC A04/MF A01; Forschungsinst. fuer Anthropotech., Meckenheim, West Ger. DM 10

Night vision parameters such as acuity, adaptation, and accomodation were investigated. Physiological aspects of night vision together with eye/telescope interaction characteristics were studied. The effects of color, relative foreground/background illumination levels, and brightness levels, as well as choice of subjects (ships officers) for these experiments are discussed. Experimental setups used to simulate real conditions are described and results are graphically reported. Author (ESA)

N79-33836# National Bureau of Standards, Washington, D. C.
ULTRASONIC TISSUE CHARACTERIZATION II
Melvin Linzer Apr. 1979 346 p refs Presented at Intern. Symp. on Ultrasonic Tissue Characterization, 2d, Gaithersburg, Md., 13-15 Jun. 1977 Sponsored in part by NSF and NIH

(PB-296356/9; NBS-SP-525; LC-79-600026) Avail: NTIS HC A15/MF A01 CSCL 06E

The Second International Symposium on Ultrasonic Imaging and Tissue Characterization was held at the National Bureau of Standards on June 13-15, 1977. The meeting was cosponsored by the National Bureau of Standards, the National Science Foundation, and the National Institutes of Health. This volume contains extended and reviewed papers based on 43 of the 53 talks presented at the symposium. Topics covered include techniques for measurement of ultrasonic tissue parameters, the dependence of tissue properties on physical and biological variables (e.g., ultrasonic frequency, temperature), mechanisms of ultrasonic tissue interactions, propagation through bone and skull, tumor Doppler signatures, computerized tomography, signal processing and pattern recognition, and tissue phantoms. A survey of velocity and attenuation data in mammalian tissue is included. GRA

N79-33837# National Technical Information Service, Springfield, Va.

HYPERBARIC OXYGENATION. A BIBLIOGRAPHY WITH ABSTRACTS Progress Report, 1964 - Jun. 1979

Elizabeth A. Harrison Jul. 1979 169 p Supersedes NTIS/PS-78/0676, NTIS/PS-77/0600, NTIS/PS-76/0526, and NTIS/PS-75/236

(NTIS/PS-79/0744/7; NTIS/PS-78/0676; NTIS/PS-77/0600; NTIS/PS-76/0526; NTIS/PS-75/236) Avail: NTIS HC $28.00/MF $28.00 CSCL 06S

Microbiology, respiratory infections, oxygen toxicity, diving, decompression sickness, and metabolism as applied to hyperbaric oxygenation are covered in the citations. This updated bibliography contains 160 abstracts, 4 of which are new entries to the previous edition. GRA

N79-33838*# National Aeronautics and Space Administration. Langley Research Center, Hampton, Va.

MODELS OF HUMAN OPERATORS IN VISION DEPENDENT TASKS

Marvin C. Waller, ed. Oct. 1979 86 p refs Seminars held at the Human Factors Soc. 1979 Ann. Meeting, Boston, 29 Oct. - 1 Nov. 1979; sponsored in part by Human Factors Soc. Visual Performance Tech. Group

(NASA-CP-2103; L-13338) Avail: NTIS HC A05/MF A01 CSCL 05J

Descriptive overviews of some existing models and techniques of modelling the human operator are presented.

N79-33839*# Applied Psychological Services, Wayne, Pa.

A SURVEY OF APPLIED PSYCHOLOGICAL SERVICES' MODELS OF THE HUMAN OPERATOR

Arthur I. Siegel and J. Jay Wolf *In* NASA. Langley Res. Center Models of Human Operators in Vision Dependent Tasks Oct. 1979 p 1-18 refs

Avail: NTIS HC A05/MF A01 CSCL 05H

A historical perspective is presented in terms of the major features and status of two families of computer simulation models in which the human operator plays the primary role. Both task oriented and message oriented models are included. Two other recent efforts are summarized which deal with visual information processing. They involve not whole model development but a family of subroutines customized to add the human aspects to existing models. A global diagram of the generalized model development/validation process is presented and related to 15 criteria for model evaluation. Author

N79-33840*# Analytics, Inc., Willow Grove, Pa.

VISUAL PERFORMANCE MODELING IN THE HUMAN OPERATOR SIMULATOR

Melvin I. Strieb *In* NASA. Langley Res. Center Models of Human Operators in Vision Dependent Tasks Oct. 1979 p 19-31 refs

Avail: NTIS HC A05/MF A01 CSCL 05H

A brief description of the history of the development of the human operator simulator (HOS) model is presented. Features of the HOS micromodels that impact on the obtainment of visual performance data are discussed along with preliminary details on a HOS pilot model designed to predict the results of visual performance workload data obtained through oculometer studies on pilots in real and simulated approaches and landings. Author

N79-33841*# Bolt, Beranek, and Newman, Inc., Cambridge, Mass.

A BRIEF OVERVIEW OF THE THEORY AND APPLICATION OF THE OPTIMAL CONTROL MODEL OF THE HUMAN OPERATOR

Sheldon Baron *In* NASA. Langley Res. Center Models of Human Operators in Vision Dependent Tasks Oct. 1979 p 33-47 refs

Avail: NTIS HC A05/MF A01 CSCL 05H

The underlying motivation and concepts are presented, along with a review of the development and application of the model. The structure of the model is described and results validating the model are presented. R.E.S.

N79-33842*# AiResearch Mfg. Co., Phoenix, Ariz.

SAINT: A COMBINED SIMULATION LANGUAGE FOR MODELING MAN-MACHINE SYSTEMS

Deborah J. Seifert *In* NASA. Langley Res. Center Models of Human Operators in Vision Dependent Tasks Oct. 1979 p 49-60 refs

Avail: NTIS HC A05/MF A01 CSCL 05H

SAINT (Systems Analysis of Integrated Networks of Tasks) is a network modeling and simulation technique for design and analysis of complex man machine systems. SAINT provides the conceptual framework for representing systems that consist of discrete task elements, continuous state variables, and interactions between them. It also provides a mechanism for combining human performance models and dynamic system behaviors in a single modeling structure. The SAINT technique is described and applications of the SAINT are discussed. R.E.S.

N79-33843*# National Aeronautics and Space Administration. Langley Research Center, Hampton, Va.

ANALYSIS OF VISUAL ESTIMATION OF SYSTEM STATE FROM ARBITRARY DISPLAYS

Patrick A. Gainer *In its* Models of Human Operators in Vision Dependent Tasks Oct. 1979 p 61-82 refs

Avail: NTIS HC A05/MF A01 CSCL 05H

A method is presented for implementing the state estimator of the manual control model when the system output is a visual display of arbitrary form; that is, the display may be pictorial, including real world, or made up of dials and pointers. The method is used to provide error criteria for a look-point controller that appears to be capable of modeling human scanning behavior. This model, if combined with a model of the control process, should be useful in predicting effects of changes in displays on performance of flight tasks. Author

N79-33844# Air Force Human Resources Lab., Brooks AFB, Tex. Flying Training Div.

UNDERGRADUATE PILOT TRAINING: VISUAL DISCRIMINATION PRETRAINING FOR LAND TASK Final Report, Jul. 1976 - Jun. 1978

Bernell J. Edwards, Douglas Weyer, and Bruce A. Smith AFSC Feb. 1979 40 p refs

(AF Proj. 1123)

(AD-A068141; AFHRL-TR-78-78) Avail: NTIS HC A03/MF A01 CSCL 05/9

The utility of training task-relevant visual discrimination skills as prerequisite behaviors for subsequently taught landing skills was investigated in this study. A multi-media training package was developed and used to impart visual skills to student pilots prior to their training on the flightline in landing procedures in the T-37 aircraft. The transfer of the visual discrimination skills of the landing field environment was assessed by measuring students' landing skills in the Advanced Simulator for Pilot Training and in the T-37 aircraft. Results showed that pretrained and non-pretrained student group performances on most measures were not significantly different. In several specific parameters of performance, non-pretrained groups performed significantly better in the aircraft transfer tests as rated by instructor pilots. GRA

N79-33845# Kentucky Univ., Lexington. Wenner-Gren Research Lab.
THE CAUSES OF DECREMENTS IN AIRCREW PERFORMANCE PHYSIOLOGICAL CHANGES PRODUCED BY VIBRATION AND OTHER ENVIRONMENTAL STRESSES AND RESPONSE OF THE CARDIOVASCULAR SYSTEM TO VIBRATION AND COMBINED STRESS Final Report, 1973 - 1978
Charles F. Knapp, J. M. Evans, and D. R. Randall 20 Sep. 1978 148 p refs
(Contract F44620-74-C-0012; AF Proj. 2312)
(AD-A069952; AFOSR-79-0676TR) Avail: NTIS HC A07/MF A01 CSCL 06/5

The goal of this program is the understanding of cardiovascular responses to whole body, low frequency, sinusoidal acceleration loading of the intact physiological system. Our efforts in the early phase of the program were limited to investigating cardiovascular responses to high frequency whole body acceleration (2-30Hz), but more recently have been extended to the domain between sustained and time-varying acceleration of less than 1 Hz. Results from the early phase indicated that whole-body acceleration in the 2-3Hz range produced an exercise-type response that was directly dependent on the force level applied. Mean heart rate, stroke volume, cardiac output and whole body oxygen consumption were found to be linearly dependent on the peak net force delivered to each animal. Results from the later phase of this study indicated that whole body acceleration in the .005 to 0.25 Hz range included a resonance-type phenomenon in which the neural regulatory systems appeared to be unable to regulate arterial pressure in the middle portion of this frequency range. GRA

N79-33846# Canyon Research Group, Inc., Westlake Village, Calif.
DEVELOPMENT OF AN OBJECTIVE GRADING SYSTEM ALONG WITH PROCEDURES AND AIDS FOR ITS EFFECTIVE IMPLEMENTATION IN FLIGHT Research Note, 15 Nov. 1977 - 14 Nov. 1978
Jerry M. Childs May 1979 49 p refs
(Contract DAHC19-77-C-0008; DA Proj. 2Q7-63743-A-772)
(AD-A071106; FTR-09-79; ARI-RN-79-18) Avail: NTIS HC A03/MF A01 CSCL 05/9

This report contains a description of the characteristics and tests of two alternative inflight scoring procedures. These procedures were designed to meet the requirements of (1) minimal data collection, and (2) objective scores for Initial Entry Rotary Wing (IERW) student performance on Basic Instrument maneuvers. The procedures were criterion-referenced, employing different performance criteria, sampling techniques, and scoring algorithms. They were subjected to tests in the UH-1 simulator to assess the potential value of various characteristics within each procedure for meeting the requirements. Results of the tests provided general indications of those characteristics which best discriminated proficiency within and among students across training days. GRA

N79-33847# National Technical Information Service, Springfield, Va.
HUMAN MEMORY. A BIBLIOGRAPHY WITH ABSTRACTS Progress Report, 1964 - May 1979
Mary E. Young Jul. 1979 307 p Supersedes NTIS/PS-78/0348, NTIS/PS-77/0352, NTIS/PS-76/0352, and NTIS/PS-75/297
(NTIS/PS-79/0640/7; NTIS/PS-78/0348; NTIS/PS-77/0352; NTIS/PS-76/0352; NTIS/PS-75/297) Avail: NTIS HC $28.00/MF $28.00 CSCL 05J

Reports on the abilities and functions of human memory and recall are cited. Reports on memory and learning methods are included, such as semantics, mnemonics, and visual and acoustic aids. (This updated bibliography contains 301 abstracts, 36 of which are new entries to the previous edition.) GRA

N79-33848*# National Aeronautics and Space Administration. John F. Kennedy Space Center, Cocoa Beach, Fla.
A SYSTEM FOR STERILIZING OBJECTS Patent Application
Coleman J. Bryan, Edward E. Wright, and Clyde V. Moyers, inventors (to NASA) Filed 8 Jun. 1979 12 p
(NASA-Case-KSC-11085-1; US-Patent-Appl-SN-046739) Avail: NTIS HC A02/MF A01 CSCL 06K

A system for producing a stream of humidified sterilizing gas for sterilizing objects such as the water systems in space vehicles is described. The system includes a source of sterilant gas which is fed to a mixing chamber having inlet and outlet ports. Water is carried in the mixing chamber, with the level of the water only partially filling the mixing chamber, to provide an empty space adjacent the top of the chamber. A heater is provided for heating the water in the chamber producing a humidified atmosphere. The sterilant gas is fed through an arcuate shaped tubular member connected to the inlet port of the mixing chamber to produce a vortex type of flow in the sterilant gas being humidified. A tubular member extends from the mixing chamber to supply the humidified sterilant gas to the object to be sterilized. Scrubbers are provided for removing the sterilant gas after use. NASA

N79-33849*# Lockheed Missiles and Space Co., Sunnyvale, Calif.
SPACELAB SCRUBBER ANALYSIS AND TEST SUPPORT Final Report
30 Sep. 1979 38 p
(Contract NAS8-32628)
(NASA-CR-161309; LMSC/D678552) Avail: NTIS HC A03/MF A01 CSCL 06K

Contaminants to be used in qualification and development tests of the add-on charcoal bed scrubber were established, along with rates and methods for their introduction. The contaminant levels to be achieved were predicted and test results were analyzed. K.L.

N79-33850# Pacer Systems, Inc., Arlington, Va.
WORKLOAD AND THE CERTIFICATION OF HELICOPTERS FOR IFR OPERATION Final Report, Jul. 1978 - Jun. 1979
A. G. DeLucien, D. L. Green, S. W. Jordan, and J. J. Traybar Jun. 1979 127 p refs
(Contract DOT-FA77WA-3966)
(AD-A072758; FAA-RD-79-64; PAR-508-78-3) Avail: NTIS HC A07/MF A01 CSCL 01/3

A review of publications pertaining to workload definitions and evaluation, applicable to instrument flight rules (IFR) helicopter operations was accomplished. The role of aircrew workload in the IFR certification process was identified and a rationale was developed to allow determination of that portion of a pilot's attention and effort available for aircraft control. Performance objectives for required maneuvers were delineated and the interdependence of performance and workload was identified. Workload/performance implications for single and dual pilot IFR operations are reviewed. A series of flight maneuver patterns for use as IFR certification assessment tools was developed. A flying qualities workload evaluation scheme is offered for use in the FAA certification process for IFR approval of helicopters. R.E.S.

N79-33851*# San Jose State Univ. Foundation, Calif.
THE ROLE OF COGNITIVE SWITCHING IN HEAD-UP DISPLAYS
Edith Fischer May 1979 49 p refs
(Grant NsG-2269)
(NASA-CR-3137; A-7776; HUD-5) Avail: NTIS HC A03/MF A01 CSCL 01D

The pilot's ability to accurately extract information from either one or both of two superimposed sources of information was determined. Static, aerial, color 35 mm slides of external runway environments and slides of corresponding static head-up display (HUD) symbology were used as the sources. A three channel tachistoscope was utilized to show either the HUD alone, the scene alone, or the two slides superimposed. Cognitive performance of the pilots was assessed by determining the percentage of correct answers given to two HUD related questions, two scene related questions, or one HUD and one scene related question. A.W.H.

N79-33852# Army Research Inst. of Environmental Medicine, Natick, Mass.

OPTIMAL METHODS FOR PHYSIOLOGIC RESEARCH ON CLOTHING

Ralph F. Goldman 19 Jun. 1978 8 p
(DA Proj. 3E7-62777-A-845)
(AD-A071855; USARIEM-M-32/78) Avail: NTIS HC A02/MF A01 CSCL 06/17

Comfort is a 'state of contented well being' which depends on the interaction between three factors: (a) the environment, (b) the clothing worn and (c) the body's response to them. Physical, physiological and psychological factors must all be involved in clothing designed for comfort in any environment. Failure to include all three elements in studies of such clothing has frequently led to an unacceptable product. GRA

N79-33853# Defence Research Establishment Suffield, Ralston (Alberta).

A GENERAL MODEL FOR THE TRANSFER OF VAPOUR THROUGH CLOTHED SKIN FROM LIQUID ON AND IN CLOTHING

Stanley B. Mellsen Jun. 1979 58 p refs
(AD-A071577; DRES-TP-495) Avail: NTIS HC A04/MF A01 CSCL 12/1

A mathematical model which was developed by Monaghan at DRES was extended to predict the penetration of vapor through clothed skin for an initial liquid load on or in the clothing. The model and its associated computer program along with some sample calculations are described in this report. GRA

N79-33854*# National Aeronautics and Space Administration, Washington, D. C.

PUBLICATIONS OF THE PLANETARY BIOLOGY PROGRAM FOR 1978: A SPECIAL BIBLIOGRAPHY

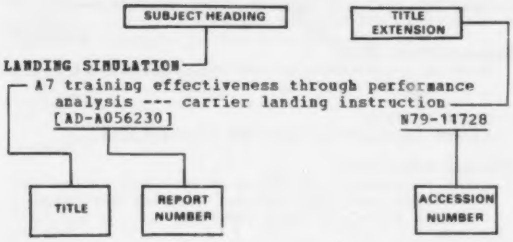
Linda G. Pleasant, comp. and Richard S. Young, comp. Oct. 1979 38 p
(NASA-TM-80745) Avail: NTIS HC A03/MF A01 CSCL 06C

The planetary events which are responsible for, or related to, the origin, evolution, and distribution of life in the universe are investigated. Bibliographies from chemical evolution, organic geochemistry, life detection, biological adaptation, bioinstrumentation, planetary environments, and origin of life studies are presented. A.W.H.

SUBJECT INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 201)* JANUARY 1980

Typical Subject Index Listing



The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABSORPTION SPECTROSCOPY
Iodine imaging using spectral analysis --- radiography for visualization of small blood vessels
A79-51034

ACCELERATION STRESSES (PHYSIOLOGY)
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/
[IAF PAPER 79-87] A79-53290
Third Symposium on Motion Sickness
N79-33814

ACCELERATION TOLERANCE
Technique for simulating G-induced tunnel vision
A79-52286
External respiration and gas exchange reactions of man during rotation on a short-arm centrifuge
N79-33812

ACOUSTICS
Acoustic attitude orientation
N79-33816

ACOUSTO-OPTICS
Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements
A79-51037

ACTIVITY (BIOLOGY)
Immunobiological reactivity of the body under hyperbaric and hypobaric conditions
N79-33790
Effect of restricted activity on vestibular function
N79-33802

ADAPTATION
The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia
A79-51116
Reciprocal interaction between the photopic and scotopic systems of the visual analyzer in man
A79-51327
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
[IAF PAPER 79-76] A79-53285
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] A79-53286

ADRENAL GLAND
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
N79-33798

ADRENAL METABOLISM
Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
A79-54267

ADRENERGICS
Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
A79-54267

AEROBES
Time course of O2-pulse during various tests of aerobic power
A79-52024

AEROBIOLOGY
The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations
A79-52894
Influence of skin temperature on sweating and aerobic performance during severe work
A79-54268

AERONAUTICS
Aerospace highlights and potential medical applications --- in manned space flight
A79-51027

AEROSPACE MEDICINE
Aerospace highlights and potential medical applications --- in manned space flight
A79-51027
Automatic audiometry in the practice of flight-personnel examination
A79-51084
Time course of O2-pulse during various tests of aerobic power
A79-52024
Comparison of physiological effects of head-down tilting and immersion on the human body
A79-52279
Cold water survival suits for aircrew
A79-52282
Passive resistive torques about long bone axes of major human joints
A79-52283
Medical barofunction testing of aviators with otorhinolaryngologic disease
A79-52285
Technique for simulating G-induced tunnel vision
A79-52286
Role of n-aminobenzoic acid in repairing UV and gamma radiation damage
A79-53211
Preliminary selection of candidates for space flights
[IAF PAPER 79-83] A79-53289
Equipment for surgical interventions and childbirth in weightlessness
[IAF PAPER 79-97] A79-53296
Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions
[IAF PAPER 79-99] A79-53297
The biomedical implications of extended duration zero-g extravehicular activities
[IAF PAPER 79-ST-06] A79-53447
Eye torsion in response to a tilted visual stimulus
A79-54254
Evidence for increased intrathoracic fluid volume in man at high altitude
A79-54266

Refinement and validation of a three-dimensional head-spin model
[AD-A062502] N79-32826

Space Biology and Aerospace Medicine, no. 4, 1979
[JPRS-74330] N79-33789

Studies of venous circulation in the crew of the Salyut-5 orbital station
N79-33791

Fluid-electrolyte metabolism in the crew of Salyut-4
N79-33792

Control of vertical position after flights aboard the Salyut-4 orbital station
N79-33793

Effects on lipid metabolism in man of some factors that simulate space flight conditions
N79-33794

Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite
N79-33795

Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
N79-33796

Development of electrophysiological indices of neurological toxicity for organosphate pesticides and depressant drugs
[AD-A070299] N79-33821

The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces
[AD-A069865] N79-33829

The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress
[AD-A069952] N79-33845

AIR
Evaluation of oxidizability of air in closed areas
N79-33808

AIR TO AIR REFUELING
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view
[AD-A070231] N79-32832

AIRCRAFT ACCIDENTS
Effect of fiber and dye degradation products /FDP/ on burn wound healing
A79-52277

AIRCRAFT LANDING
Undergraduate pilot training: Visual discrimination pretraining for land task
[AD-A068141] N79-33844

AIRCRAFT PILOTS
Medical barofunction testing of aviators with otorhinolaryngologic disease
A79-52285

ALDOSTERONE
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
A79-52023

ALL-WEATHER LANDING SYSTEMS
Manual landings in Category 3 conditions
A79-52055

ALTITUDE ACCLIMATIZATION
Evidence for increased intrathoracic fluid volume in man at high altitude
A79-54266

Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] N79-33788

AMINO ACIDS
Role of n-aminobenzoic acid in repairing UV and gamma radiation damage
A79-53211

AMPHETAMINES
Effects of amphetamine on response selection and response execution processes in choice reaction tasks
[IZF-1978-8] N79-32839

ANGIOGRAPHY
Computer quantitation of angiocardiographic images
A79-51028

Computer quantitation of coronary angiograms
A79-51030

The development of a digital video subtraction system for intravenous angiography
A79-51033

ANGULAR ACCELERATION
Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations
N79-33800

ANOXIA
Temporal relation between onset of cell anoxia and ischemic contractile failure
A79-52895

ANTIRADIATION DRUGS
Role of n-aminobenzoic acid in repairing UV and gamma radiation damage
A79-53211

APPROACH CONTROL
Manual landings in Category 3 conditions
A79-52055

APPROACH INDICATORS
Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators
A79-52276

ARTERIES
Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements
A79-51037

ARTERIOSCLEROSIS
The development of a digital video subtraction system for intravenous angiography
A79-51033

ARTIFICIAL INTELLIGENCE
Visual motion perception by intelligent systems
A79-52691

ASCORBIC ACID
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs
N79-33803

ASSESS PROGRAM
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] A79-53291

ASTRONAUT PERFORMANCE
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] A79-53291

Thoughts about man-machine interrelations in space flights applied to Spacelab missions
[IAF PAPER 79-95] A79-53295

Communication problems of international crews
[IAF PAPER 79-A-23] A79-53425

ASTRONAUT TRAINING
Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions
[IAF PAPER 79-99] A79-53297

Psychological training - One of the most important factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] A79-53426

ASTRONAUTS
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight
[IAF PAPER 79-80] A79-53288

Considerations associated with the introduction of female crewmembers in spacecraft and space stations
[IAF PAPER 79-A-22] A79-53424

ATAXIA
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
[AD-A069375] N79-33819

AUDIOMETRY
Automatic audiometry in the practice of flight-personnel examination
A79-51084

AUDITORY PERCEPTION
Effects of acute noise traumata on whole-nerve and single-unit activity
[IZF-1978-23] N79-32829

AUTOCLAVES
  A system for sterilizing objects --- such as water systems on the space shuttle using ethylene oxide
  [NASA-CASE-KSC-11085-1] N79-33848
AUTOMATIC TEST EQUIPMENT
  Automatic audiometry in the practice of flight-personnel examination
  A79-51084
AUTOMOBILES
  Car driving as a cybernetic task
  [IZF-1979-6] N79-32838
AVIONICS
  Manual landings in Category 3 conditions
  A79-52055
AXIAL COMPRESSION LOADS
  Analytical modelling of load-deflection behavior of intervertebral discs subjected to axial compression
  [AD-A071019] N79-33830

B

BACTERIA
  Minute tubular forms in soil
  A79-51698
  Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates
  A79-51701
BACTERIOLOGY
  Energy transduction in Halobacterium halobium
  A79-53000
BED REST
  Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
  N79-33797
BIBLIOGRAPHIES
  Hypothermia. A bibliography with abstracts
  [NTIS/PS-79/0533/4] N79-32830
  Hyperbaric oxygenation. A bibliography with abstracts
  [NTIS/PS-79/0744/7] N79-33837
  Human memory. A bibliography with abstracts
  [NTIS/PS-79/0640/7] N79-33847
  Publications of the planetary biology program for 1978: A special bibliography
  [NASA-TM-80745] N79-33854
BIOASSAY
  Clinical usefulness of radiopaque markers in left ventricular function
  A79-51029
  A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles
  A79-51038
  Bioassay of thermal protection afforded by candidate flight suit fabrics
  A79-52280
  Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
  N79-33798
BIOASTRONAUTICS
  Ultrastructural development of the vestibular system under conditions of simulated weightlessness
  A79-52284
  Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
  [IAF PAPER 79-76] A79-53285
  Early cardiovascular adaptation to zero gravity simulated by head-down tilt
  [IAF PAPER 79-77] A79-53286
  Ultrastructural development of the vestibular system of frog larvae in 0g simulation
  [IAF PAPER 79-78] A79-53287
  Equipment for surgical interventions and childbirth in weightlessness
  [IAF PAPER 79-97] A79-53296
BIOCHEMISTRY
  Mechanisms of oxygen toxicity at the cellular level
  [AD-A070026] N79-32823
BIODYNAMICS
  Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle
  A79-51111
  Passive resistive torques about long bone axes of major human joints
  A79-52283
  A spherical representation of a human body for visualizing movement
  A79-53096
  Theoretical foundations of cardiovascular processes --- Book
  A79-53531
  Basic biomechanics equations for cardiovascular flow
  A79-53534
  Equations on biotransport mechanisms
  A79-53535
  Refinement and validation of a three-dimensional head-spin model
  [AD-A062502] N79-32826
BIOELECTRICITY
  Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations
  N79-33800
  Methods for localization of electrical sources in the human brain and applications to the visual system
  N79-33815
  Development of electrophysiological indices of neurological toxicity for organosphate pesticides and depressant drugs
  [AD-A070299] N79-33821
  Experimental and theoretical investigations concerning a frequency filter behavior of the human retina regarding electric pulse currents
  [NASA-TM-75372] N79-33822
BIOENGINEERING
  Refinement and validation of a three-dimensional head-spin model
  [AD-A062502] N79-32826
BIOGEOCHEMISTRY
  Publications of the planetary biology program for 1978: A special bibliography
  [NASA-TM-80745] N79-33854
BIOINSTRUMENTATION
  Tremometry as a method of evaluating the functional state of the nervous system of a pilot
  A79-53065
  Continuous long-duration recording of the heart rate by means of a noncontact technique
  A79-53068
  Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
  [IAF PAPER 79-88] A79-53291
  Publications of the planetary biology program for 1978: A special bibliography
  [NASA-TM-80745] N79-33854
BIOLOGICAL EFFECTS
  Protection standards for microwave and radiofrequency radiations
  A79-52878
  Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency
  [CONF-780541-1] N79-32827
  Immunobiological reactivity of the body under hyperbaric and hypobaric conditions
  N79-33790
  Biological effects of nonionizing electromagnetic radiation, volume 3, number 4
  [AD-A070242] N79-33826
  Metabolic and physical scaling in microwave/radiofrequency bioeffects studies
  [UR-3490-1561] N79-33831
  Feasibility of an epidemiological study of workers occupationally exposed to high voltage electric fields in the electric power industry
  [EPRI-EA-1020] N79-33832
  Effects on populations of exposure to low levels of ionizing radiation: Implications for nuclear energy and medical radiation
  [LBL-9084] N79-33833

BIOLOGICAL EVOLUTION
Publications of the planetary biology program for 1978: A special bibliography
[NASA-TM-80745] N79-33854

BIOLOGY
Some of the problems involved in planning biological experiments
N79-33805

BIOMAGNETISM
Biomagnetic instrumentation and measurement
A79-51043
Clinical magnetocardiography
A79-51044

BIOMETRICS
Theoretical foundations of cardiovascular processes --- Book
A79-53531
Methods for localization of electrical sources in the human brain and applications to the visual system
N79-33815

BIONICS
A spherical representation of a human body for visualizing movement
A79-53096
Bio-heat transfer processes, for human thermoregulatory and circulatory characteristics measurements
A79-53536
Refinement and validation of a three-dimensional head-spin model
[AD-A062502] N79-32826

BIOPHYSICS
The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia
A79-51116
Theoretical foundations of cardiovascular processes --- Book
A79-53531
The theory of the magnetocardiogram
A79-53533
Fundamental biophysical aspects of decompression sickness
[AD-A069998] N79-33827

BIOSATELLITES
Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite
N79-33795

BIOSYNTHESIS
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
N79-33796

BIOTECHNOLOGY
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] A79-53294

BIRTH
Equipment for surgical interventions and childbirth in weightlessness
[IAF PAPER 79-97] A79-53296

BLOOD
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
N79-33797

BLOOD CIRCULATION
Application of an isolated heart model to investigate blood-oxygen delivery
A79-51112
The role of lesser circulation hemodynamic changes in pulmonary gas exchange
A79-53066
Bio-heat transfer processes, for human thermoregulatory and circulatory characteristics measurements
A79-53536

BLOOD COAGULATION
Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
N79-33813

BLOOD FLOW
Clinical usefulness of radiopaque markers in left ventricular function
A79-51029
Cardiac blood flow measurement - A component of the comprehensive cardiac examination
A79-51041
Quantitative flow estimation with transcutaneous Doppler ultrasound
A79-51042
Application of an isolated heart model to investigate blood-oxygen delivery
A79-51112
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
N79-32825

BLOOD PLASMA
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
A79-52023
Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite
N79-33795
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
N79-33798

BLOOD PRESSURE
Noninvasive cardiovascular measurements --- Book
A79-51026
A study of noninvasive blood pressure measurement techniques
A79-51036
Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements
A79-51037
A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles
A79-51038
Cardiac blood flow measurement - A component of the comprehensive cardiac examination
A79-51041

BLOOD VESSELS
Iodine imaging using spectral analysis --- radiography for visualization of small blood vessels
A79-51034
Quantitative flow estimation with transcutaneous Doppler ultrasound
A79-51042

BLOOD VOLUME
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] A79-53286

BODY FLUIDS
Evidence for increased intrathoracic fluid volume in man at high altitude
A79-54266
Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] N79-33788
Fluid-electrolyte metabolism in the crew of Salyut-4
N79-33792

BODY TEMPERATURE
Bio-heat transfer processes, for human thermoregulatory and circulatory characteristics measurements
A79-53536
Hypothermia. A bibliography with abstracts
[NTIS/PS-79/0533/4] N79-32830

BONES
Passive resistive torques about long bone axes of major human joints
A79-52283

BRAIN
The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
A79-51113
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
A79-52475
Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] N79-33788

Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations
N79-33800
Methods for localization of electrical sources in the human brain and applications to the visual system
N79-33815

BURNS (INJURIES)
Effect of fiber and dye degradation products /FDP/ on burn wound healing
A79-52277

C

CALORIC STIMULI
Effect of restricted activity on vestibular function
N79-33802

CARBOHYDRATE METABOLISM
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
N79-33797

CARDIAC VENTRICLES
Clinical usefulness of radiopaque markers in left ventricular function
A79-51029
Temporal relation between onset of cell anoxia and ischemic contractile failure
A79-52895

CARDIOGRAPHY
Real-time computerized fluoroscopic cardiac imaging
A79-51035

CARDIOLOGY
Noninvasive cardiovascular measurements --- Book
A79-51026
Computer quantitation of angiocardiographic images
A79-51028
Computer quantitation of coronary angiograms
A79-51030
Clinical applications of new echocardiographic techniques
A79-51040
Biomagnetic instrumentation and measurement
A79-51043
Clinical magnetocardiography
A79-51044
Application of an isolated heart model to investigate blood-oxygen delivery
A79-51112
Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics
A79-51118
The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations
A79-52894
Temporal relation between onset of cell anoxia and ischemic contractile failure
A79-52895

CARDIOVASCULAR SYSTEM
Noninvasive cardiovascular measurements --- Book
A79-51026
Current status of cardiovascular imaging by transmission computed tomography
A79-51032
A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles
A79-51038
Clinical applications of new echocardiographic techniques
A79-51040
Cardiac blood flow measurement - A component of the comprehensive cardiac examination
A79-51041
Time course of O2-pulse during various tests of aerobic power
A79-52024
Theoretical foundations of cardiovascular processes --- Book
A79-53531
Basic biomechanics equations for cardiovascular flow
A79-53534
The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress
[AD-A069952] N79-33845

CELLS (BIOLOGY)
Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates
A79-51701
Energy transduction in Halobacterium halobium
A79-53000

CENTRIFUGING
Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations
N79-33800

CENTRIPETAL FORCE
Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations
N79-33800

CEREBRAL CORTEX
The visual cortex of normal and deprived monkeys
A79-51174

CHEMICAL EFFECTS
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
A79-52475

CHEMICAL EVOLUTION
Publications of the planetary biology program for 1978: A special bibliography
[NASA-TM-80745] N79-33854

CHEMISORPTION
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs
N79-33803

CINEMATOGRAPHY
A cinematographic technique for investigating some aspects of visual recognition
A79-53067

CLINICAL MEDICINE
Noninvasive cardiovascular measurements --- Book
A79-51026
Computer quantitation of coronary angiograms
A79-51030
Clinical applications of new echocardiographic techniques
A79-51040
Cardiac blood flow measurement - A component of the comprehensive cardiac examination
A79-51041
Biomagnetic instrumentation and measurement
A79-51043
Clinical magnetocardiography
A79-51044

CLOSED ECOLOGICAL SYSTEMS
Evaluation of oxidizability of air in closed areas
N79-33808

CLOTTING
Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
N79-33813

COCHLEA
Effects of acute noise traumata on whole-nerve and single-unit activity
[IZF-1978-23] N79-32829

COGNITION
Shalit Perceptual Organization and Reduction Questionnaire (SPORQ). Report 2: Characteristics and reliability
[FOA-C-55031-H6] N79-32836

COGNITIVE PSYCHOLOGY
The role of cognitive switching in head-up displays --- to determine pilot ability to accurately extract information from either of two sources
[NASA-CR-3137] N79-33851

COLD TOLERANCE
Bimodal relationship of human tremor and shivering on introduction to cold exposure
A79-52278

COLD WATER
Cold water survival suits for aircrew
A79-52282

COLOR VISION
Contribution to the theory of photopic vision: Retinal phenomena
[NASA-TM-75507] N79-33823
COMMAND AND CONTROL
Combined discrete network: Continuous control modeling of man-machine systems
[AD-A071574] N79-32842
COMPUTER GRAPHICS
Real-time computerized fluoroscopic cardiac imaging
A79-51035
Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators
A79-52276
A spherical representation of a human body for visualizing movement
A79-53096
COMPUTER PROGRAMS
Computer quantitation of angiocardiographic images
A79-51028
Review of unfolding methods used in the US and their standardization for dosimetry
[BNWL-SA-6503] N79-32828
COMPUTER TECHNIQUES
Computer quantitation of coronary angiograms
A79-51030
Visual motion perception by intelligent systems
A79-52691
COMPUTERIZED SIMULATION
A spherical representation of a human body for visualizing movement
A79-53096
Models of human operators in vision dependent tasks
[NASA-CP-2103] N79-33838
A survey of Applied Psychological Services' models of the human operator
N79-33839
SAINT: A combined simulation language for modeling man-machine systems
N79-33842
CONDITIONED REFLEXES
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] A79-53286
Ultrastructural development of the vestibular system of frog larvae in 0g simulation
[IAF PAPER 79-78] A79-53287
CONFERENCES
Third Symposium on Motion Sickness
N79-33814
Ultrasonic tissue characterization II
[PB-296356/9] N79-33836
CONTROL CONFIGURED VEHICLES
A theoretical investigation of power and control configurations for a high g-onset centrifuge drive system
[AD-A070912] N79-32841
CONTROL EQUIPMENT
A theoretical investigation of power and control configurations for a high g-onset centrifuge drive system
[AD-A070912] N79-32841
CORONARY ARTERY DISEASE
Computer quantitation of coronary angiograms
A79-51030
CORONARY CIRCULATION
Clinical usefulness of radiopaque markers in left ventricular function
A79-51029
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
N79-32825
CORTICOSTEROIDS
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
A79-52023
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
N79-33798
COSMONAUTS
Preliminary selection of candidates for space flights
[IAF PAPER 79-83] A79-53289
Psychological training - One of the most important factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] A79-53426
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
A79-53486
COSMOS 782 SATELLITE
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
N79-33796
COSMOS 936 SATELLITE
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
A79-52475
CRASH INJURIES
Passive resistive torques about long bone axes of major human joints
A79-52283
CULTURE TECHNIQUES
Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates
A79-51701
CYBERNETICS
Car driving as a cybernetic task
[IZF-1979-6] N79-32838
CYTOLOGY
Energy transduction in Halobacterium halobium
A79-53000

D

DARK ADAPTATION
Changes in critical duration during dark-adaptation
A79-54252
Influence of light adaptation on dark adaptation time for pattern recognition tasks
[PB-31] N79-33835
DATA PROCESSING
A study of noninvasive blood pressure measurement techniques
A79-51036
DECISION MAKING
Effects of amphetamine on response selection and response execution processes in choice reaction tasks
[IZF-1978-8] N79-32839
DECOMPRESSION SICKNESS
Fundamental biophysical aspects of decompression sickness
[AD-A069998] N79-33827
DEOXYRIBONUCLEIC ACID
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
N79-33796
DIAGNOSIS
Computerized positron emission tomography /PET/ for the assessment of myocardial integrity
A79-51031
Signal processing in ultrasound --- for diagnostic medicine
A79-51039
Clinical applications of new echocardiographic techniques
A79-51040
DIFFRACTION PATTERNS
The retinal resolving power measured by laser interference fringes
A79-54091
DIGESTING
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs
N79-33803
DIGITAL SIMULATION
Combined discrete network: Continuous control modeling of man-machine systems
[AD-A071574] N79-32842
DIGITAL TECHNIQUES
The development of a digital video subtraction system for intravenous angiography
A79-51033
DISPLAY DEVICES
Real-time computerized fluoroscopic cardiac imaging
A79-51035
Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators
A79-52276

- Target redundancy in visual search - Do repetitions of the target within the display impair processing A79-52540
- Analysis of visual estimation of system state from arbitrary displays N79-33843

DOSIMETERS
- Review of unfolding methods used in the US and their standardization for dosimetry [BNWL-SA-6503] N79-32828

DYES
- Effect of fiber and dye degradation products /FDP/ on burn wound healing A79-52277

DYNAMIC MODELS
- Car driving as a cybernetic task [IZF-1979-6] N79-32838

E

ECHOCARDIOGRAPHY
- Clinical applications of new echocardiographic techniques A79-51040

ELASTIC PROPERTIES
- Basic biomechanics equations for cardiovascular flow A79-53534

ELECTRIC FIELDS
- Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency [CONF-780541-1] N79-32827
- Feasibility of an epidemiological study of workers occupationally exposed to high voltage electric fields in the electric power industry [EPRI-EA-1020] N79-33832

ELECTRIC POWER TRANSMISSION
- A theoretical investigation of power and control configurations for a high g-onset centrifuge drive system [AD-A070912] N79-32841

ELECTROCARDIOGRAPHY
- Non-invasive information on the P-R segment of the cardiac cycle - An assessment of the clinical potential of the electric and magnetic methods A79-51045
- Continuous long-duration recording of the heart rate by means of a noncontact technique A79-53068
- Theoretical foundations of cardiovascular processes --- Book A79-53531
- Fundamentals of electrical processes in the electrophysiology of the heart A79-53532
- A nonlinear mapping approach to discrimination of sleep stages from the human electroencephalogram N79-33817

ELECTROLYTE METABOLISM
- Fluid-electrolyte metabolism in the crew of Salyut-4 N79-33792
- Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite N79-33795

ELECTROMAGNETIC RADIATION
- Biological effects of nonionizing electromagnetic radiation, volume 3, number 4 [AD-A070242] N79-33826

ELECTROMYOGRAPHY
- Frequency and amplitude analysis of the EMG during exercise on the bicycle ergometer A79-52022
- Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time A79-52025

ELECTROPHYSIOLOGY
- Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time A79-52025
- Fundamentals of electrical processes in the electrophysiology of the heart A79-53532

ELECTROPLETHYSMOGRAPHY
- Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics A79-51118

ELECTRORETINOGRAPHY
- Reciprocal interaction between the photopic and scotopic systems of the visual analyzer in man A79-51327

ENERGY DISSIPATION
- Energy expenditures of man during long exposure to a periodically changing atmosphere N79-33799

ENZYME ACTIVITY
- Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects A79-52023

EPIDEMIOLOGY
- Feasibility of an epidemiological study of workers occupationally exposed to high voltage electric fields in the electric power industry [EPRI-EA-1020] N79-33832

ERGOMETERS
- Frequency and amplitude analysis of the EMG during exercise on the bicycle ergometer A79-52022

ERYTHROCYTES
- Effect of impact accelerations on chemical resistance of rat erythrocytes N79-33811
- Studies of metabolism, function and mechanism of destruction of red cells [AD-A070240] N79-33828

ETHYL ALCOHOL
- Evaluation of oxidizability of air in closed areas N79-33808

ETHYLENE OXIDE
- A system for sterilizing objects --- such as water systems on the space shuttle using ethylene oxide [NASA-CASE-KSC-11085-1] N79-33848

EVOKED RESPONSE (PSYCHOPHYSIOLOGY)
- Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time A79-52025

EXOBIOLOGY
- Space Biology and Aerospace Medicine, no. 4, 1979 [JPRS-74330] N79-33789
- Aerospace medicine and biology: A continuing bibliography with indexes, supplement 197, September 1979 [NASA-SP-7011(197)] N79-33818

EXPERIMENTAL DESIGN
- Some of the problems involved in planning biological experiments N79-33805

EXPOSURE
- Effects on populations of exposure to low levels of ionizing radiation: Implications for nuclear energy and medical radiation [LBL-9084] N79-33833

EXTRATERRESTRIAL LIFE
- Publications of the planetary biology program for 1978: A special bibliography [NASA-TM-80745] N79-33854

EXTRAVEHICULAR ACTIVITY
- The biomedical implications of extended duration zero-g extravehicular activities [IAF PAPER 79-ST-06] A79-53447
- Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/ A79-53486

EYE (ANATOMY)
- Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye A79-53163
- Changes in critical duration during dark-adaptation A79-54252
- Contribution to the theory of photopic vision: Retinal phenomena [NASA-TM-75507] N79-33823
- Measurements in the laser irradiated eye [AD-A069842] N79-33825

EYE EXAMINATIONS
- Advanced transport operation effects on pilot scan patterns A79-51098
- Lightweight helmet-mounted eye movement measurement system A79-53516
- The retinal resolving power measured by laser interference fringes A79-54091

EYE MOVEMENTS
Lightweight helmet-mounted eye movement measurement system A79-53516
Optokinetic reactions in man elicited by localized retinal motion stimuli A79-54251
Eye torsion in response to a tilted visual stimulus A79-54254

F

F-16 AIRCRAFT
Application of a structured decision process for proper inclusion of human resources in the design of a power unit support stand [AD-A069978] N79-32840
FABRICS
Bioassay of thermal protection afforded by candidate flight suit fabrics A79-52280
FEMALES
Considerations associated with the introduction of female crewmembers in spacecraft and space stations [IAF PAPER 79-A-22] A79-53424
FIRE DAMAGE
Effect of fiber and dye degradation products /FDP/ on burn wound healing A79-52277
FLAME RETARDANTS
Effect of fiber and dye degradation products /FDP/ on burn wound healing A79-52277
FLIGHT CLOTHING
Bioassay of thermal protection afforded by candidate flight suit fabrics A79-52280
Cold water survival suits for aircrew A79-52282
FLIGHT CREWS
Automatic audiometry in the practice of flight-personnel examination A79-51084
Cold water survival suits for aircrew A79-52282
FLIGHT FITNESS
Automatic audiometry in the practice of flight-personnel examination A79-51084
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight [IAF PAPER 79-80] A79-53288
Preliminary selection of candidates for space flights [IAF PAPER 79-83] A79-53289
FLIGHT SAFETY
Psychological training - One of the most important factors of enhancing the safety of space flights [IAF PAPER 79-A-24] A79-53426
FLIGHT SIMULATION
Technique for simulating G-induced tunnel vision A79-52286
Lightweight helmet-mounted eye movement measurement system A79-53516
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view [AD-A070231] N79-32832
A theoretical investigation of power and control configurations for a high g-onset centrifuge drive system [AD-A070912] N79-32841
FLIGHT STRESS (BIOLOGY)
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life [IAF PAPER 79-76] A79-53285
FLIGHT TRAINING
Development of an objective grading system along with procedures and aids for its effective implementation in flight [AD-A071106] N79-33846
FLOW MEASUREMENT
Quantitative flow estimation with transcutaneous Doppler ultrasound A79-51042
FLOW VELOCITY
Quantitative flow estimation with transcutaneous Doppler ultrasound A79-51042
FLUOROSCOPY
Real-time computerized fluoroscopic cardiac imaging A79-51035
FOG
Manual landings in Category 3 conditions A79-52055
FOVEA
Contribution to the theory of photopic vision: Retinal phenomena [NASA-TM-75507] N79-33823
FREQUENCY RESPONSE
A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles A79-51038
FROGS
Ultrastructural development of the vestibular system of frog larvae in 0g simulation [IAF PAPER 79-78] A79-53287

G

GAMMA RAYS
Role of n-aminobenzoic acid in repairing UV and gamma radiation damage A79-53211
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation N79-33804
GAS DENSITY
The effect of the reduction of inspired gas density on external respiration A79-51115
GAS EXCHANGE
The role of lesser circulation hemodynamic changes in pulmonary gas exchange A79-53066
Energy expenditures of man during long exposure to a periodically changing atmosphere N79-33799
Adaptive optimization of exchange of gases in plants in a sealed phytotron N79-33806
External respiration and gas exchange reactions of man during rotation on a short-arm centrifuge N79-33812
GLANDS (ANATOMY)
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation N79-33804
GLIDE LANDINGS
Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators A79-52276
GNOTOBIOTICS
Microbiological evaluation of the mobile biological isolator system [NASA-CR-162293] N79-32822
GRAVITATIONAL EFFECTS
Radiographic comparison of human lung shape during normal gravity and weightlessness A79-54269
GUNFIRE
Tentative evaluation of annoyance caused by noise from gunfire [IZF-1978-21] N79-32843
GYRATION
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs N79-33803

H

HEAD MOVEMENT
A comparison of oculomotor and motion parallax cues of egocentric distance A79-54253
HEAD-UP DISPLAYS
The role of cognitive switching in head-up displays --- to determine pilot ability to accurately extract information from either of two sources [NASA-CR-3137] N79-33851

HEALTH PHYSICS
Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency
[CONF-780541-1] N79-32827
Biological effects of nonionizing electromagnetic radiation, volume 3, number 4
[AD-A070242] N79-33826
Health effects of low-level ionizing radiation
[LBL-9018] N79-33834

HEART
The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations
A79-52894
Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations
N79-33800

HEART DISEASES
Noninvasive cardiovascular measurements --- Book
A79-51026
Computer quantitation of angiocardiographic images
A79-51028
Clinical usefulness of radiopaque markers in left ventricular function
A79-51029
Cardiac blood flow measurement - A component of the comprehensive cardiac examination
A79-51041
Clinical magnetocardiography
A79-51044
Temporal relation between onset of cell anoxia and ischemic contractile failure
A79-52895
The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces
[AD-A069865] N79-33829

HEART FUNCTION
Application of an isolated heart model to investigate blood-oxygen delivery
A79-51112

HEART RATE
Similarity in the number of lifespan heartbeats among non-hibernating homeothermic animals
A79-52281
Continuous long-duration recording of the heart rate by means of a noncontact technique
A79-53068

HEAT TOLERANCE
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
A79-52023

HEAT TRANSFER
Bio-heat transfer processes, for human thermoregulatory and circulatory characteristics measurements
A79-53536

HELICOPTER CONTROL
Performance and workload analysis of inflight helicopter missions
[NLR-MP-77013-U] N79-32834

HELICOPTERS
The influence of low frequency vibration on pilot performance /as measured in a fixed base simulator/
A79-52326
Workload and the certification of helicopters for IFR operation
[AD-A072758] N79-33850

HELMETS
Lightweight helmet-mounted eye movement measurement system
A79-53516

HEMODYNAMIC RESPONSES
The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations
A79-52894
Studies of venous circulation in the crew of the Salyut-5 orbital station
N79-33791

HEMODYNAMICS
Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics
A79-51118
The role of lesser circulation hemodynamic changes in pulmonary gas exchange
A79-53066

HEMOGLOBIN
Studies of metabolism, function and mechanism of destruction of red cells
[AD-A070240] N79-33828

HEPARINS
Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
N79-33813

HIBERNATION
Similarity in the number of lifespan heartbeats among non-hibernating homeothermic animals
A79-52281

HIGH ALTITUDE
Evidence for increased intrathoracic fluid volume in man at high altitude
A79-54266

HIGH PRESSURE OXYGEN
Hyperbaric oxygenation. A bibliography with abstracts
[NTIS/PS-79/0744/7] N79-33837

HOMEOTHERMS
Similarity in the number of lifespan heartbeats among non-hibernating homeothermic animals
A79-52281

HUMAN BEHAVIOR
Car driving as a cybernetic task
[IZF-1979-6] N79-32838

HUMAN BEINGS
Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
A79-54267
Influence of skin temperature on sweating and aerobic performance during severe work
A79-54268

HUMAN BODY
Comparison of physiological effects of head-down tilting and immersion on the human body
A79-52279
A spherical representation of a human body for visualizing movement
A79-53096
Radiographic comparison of human lung shape during normal gravity and weightlessness
A79-54269

HUMAN CENTRIFUGES
A theoretical investigation of power and control configurations for a high g-onset centrifuge drive system
[AD-A070912] N79-32841
External respiration and gas exchange reactions of man during rotation on a short-arm centrifuge
N79-33812

HUMAN FACTORS ENGINEERING
Man and machine design for space flight
A79-52696
Thoughts about man-machine interrelations in space flights applied to Spacelab missions
[IAF PAPER 79-95] A79-53295
Considerations associated with the introduction of female crewmembers in spacecraft and space stations
[IAF PAPER 79-A-22] A79-53424
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
A79-53486
Human performance in time-shared verbal and tracking tasks
[AD-A070275] N79-32831
The use of artificial signals during SONAR-watch
[IZF-1978-25] N79-32837
Application of a structured decision process for proper inclusion of human resources in the design of a power unit support stand
[AD-A069978] N79-32840
Acoustic attitude orientation
N79-33816
A nonlinear mapping approach to discrimination of sleep stages from the human electroencephalogram
N79-33817
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
[AD-A069375] N79-33819
Laboratory performance during acute intoxication and hangover
[AD-A069373] N79-33820

Development of electrophysiological indices of neurological toxicity for organosphate pesticides and depressant drugs
[AD-A070299] N79-33821
Models of human operators in vision dependent tasks
[NASA-CP-2103] N79-33838
A survey of Applied Psychological Services' models of the human operator
N79-33839
Visual performance modeling in the human operator simulator
N79-33840
A brief overview of the theory and application of the optimal control model of the human operator
N79-33841
Development of an objective grading system along with procedures and aids for its effective implementation in flight
[AD-A071106] N79-33846
Workload and the certification of helicopters for IFR operation
[AD-A072758] N79-33850
A general model for the transfer of vapour through clothed skin from liquid on and in clothing
[AD-A071577] N79-33853

HUMAN PERFORMANCE
Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance
A79-52327
Human performance in time-shared verbal and tracking tasks
[AD-A070275] N79-32831
Acoustic attitude orientation
N79-33816
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
[AD-A069375] N79-33819
Laboratory performance during acute intoxication and hangover
[AD-A069373] N79-33820
The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress
[AD-A069952] N79-33845
Development of an objective grading system along with procedures and aids for its effective implementation in flight
[AD-A071106] N79-33846
Human memory. A bibliography with abstracts
[NTIS/PS-79/0640/7] N79-33847

HUMAN REACTIONS
Effects of amphetamine on response selection and response execution processes in choice reaction tasks
[IZF-1978-8] N79-32839

HUMAN TOLERANCES
Aerospace highlights and potential medical applications --- in manned space flight
A79-51027
Bimodal relationship of human tremor and shivering on introduction to cold exposure
A79-52278
Tentative evaluation of annoyance caused by noise from gunfire
[IZF-1978-21] N79-32843
Minimum sea surface temperatures and associated survival times
[AD-A070162] N79-33824

HYDROSTATICS
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
N79-33809

HYGIENE
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
A79-53486

HYPERBARIC CHAMBERS
Immunobiological reactivity of the body under hyperbaric and hypobaric conditions
N79-33790

HYPERCAPNIA
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
N79-33798

HYPEROXIA
The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
A79-51113
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] N79-32823
Hyperbaric oxygenation. A bibliography with abstracts
[NTIS/PS-79/0744/7] N79-33837

HYPERTHERMIA
Hypothermia. A bibliography with abstracts
[NTIS/PS-79/0533/4] N79-32830

HYPOBARIC ATMOSPHERES
Medical barofunction testing of aviators with otorhinolaryngologic disease
A79-52285
Immunobiological reactivity of the body under hyperbaric and hypobaric conditions
N79-33790

HYPODYNAMIA
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
[IAF PAPER 79-76] A79-53285

HYPOKINESIA
Effects on lipid metabolism in man of some factors that simulate space flight conditions
N79-33794
Effect of restricted activity on vestibular function
N79-33802
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
N79-33809
Vertical orientation of man during 5-day antiorthostatic hypokinesia (-4, -8 and -12 deg head down position)
N79-33810
Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
N79-33813

HYPOXEMIA
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
A79-51114

HYPOXIA
Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle
A79-51111
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
A79-51114
The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia
A79-51116
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
N79-32825
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
N79-33798

I

IMAGE PROCESSING
Computer quantitation of coronary angiograms
A79-51030
Visual motion perception by intelligent systems
A79-52691

IMAGE RESOLUTION
The retinal resolving power measured by laser interference fringes
A79-54091

IMAGES
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology
[AD-A069983] N79-32833
IMAGING TECHNIQUES
Current status of cardiovascular imaging by transmission computed tomography
A79-51032
Iodine imaging using spectral analysis --- radiography for visualization of small blood vessels
A79-51034
Real-time computerized fluoroscopic cardiac imaging
A79-51035
IMMUNITY
Immunobiological reactivity of the body under hyperbaric and hypobaric conditions
N79-33790
IMPACT ACCELERATION
Significance of the vibration component to the deleterious effect of impact accelerations
N79-33801
Effect of impact accelerations on chemical resistance of rat erythrocytes
N79-33811
INFORMATION SYSTEMS
The role of cognitive switching in head-up displays --- to determine pilot ability to accurately extract information from either of two sources
[NASA-CR-3137] N79-33851
INFRARED RADIATION
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
A79-53163
INSTRUMENT FLIGHT RULES
Workload and the certification of helicopters for IFR operation
[AD-A072758] N79-33850
INTERFEROMETRY
The retinal resolving power measured by laser interference fringes
A79-54091
INTERNATIONAL COOPERATION
Communication problems of international crews
[IAF PAPER 79-A-23] A79-53425
INTESTINES
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs
N79-33803
INTOXICATION
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
[AD-A069375] N79-33819
Laboratory performance during acute intoxication and hangover
[AD-A069373] N79-33820
IODINE
Iodine imaging using spectral analysis --- radiography for visualization of small blood vessels
A79-51034
IONIZING RADIATION
Effects on populations of exposure to low levels of ionizing radiation: Implications for nuclear energy and medical radiation
[LBL-9084] N79-33833
Health effects of low-level ionizing radiation
[LBL-9018] N79-33834
ISCHEMIA
Temporal relation between onset of cell anoxia and ischemic contractile failure
A79-52895

J

JOINTS (ANATOMY)
Passive resistive torques about long bone axes of major human joints
A79-52283

L

LABYRINTH
Effect of restricted activity on vestibular function
N79-33802
LANDING SIMULATION
Manual landings in Category 3 conditions
A79-52055
Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators
A79-52276
LASER APPLICATIONS
The retinal resolving power measured by laser interference fringes
A79-54091
LASER DOPPLER VELOCIMETERS
Quantitative flow estimation with transcutaneous Doppler ultrasound
A79-51042
LASERS
Measurements in the laser irradiated eye
[AD-A069842] N79-33825
LEARNING
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology
[AD-A069983] N79-32833
Human memory. A bibliography with abstracts
[NTIS/PS-79/0640/7] N79-33847
LIFE SPAN
Similarity in the number of lifespan heartbeats among non-hibernating homeothermic animals
A79-52281
LIGHT ADAPTATION
Effect of adaptation level on certain visual functions in man
A79-51328
Influence of light adaptation on dark adaptation time for pattern recognition tasks
[FB-31] N79-33835
LIGHT TRANSMISSION
Measurements in the laser irradiated eye
[AD-A069842] N79-33825
LIPID METABOLISM
Effects on lipid metabolism in man of some factors that simulate space flight conditions
N79-33794
LIPOPROTEINS
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
N79-33797
LIVER
The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
A79-51113
LOW FREQUENCIES
The influence of low frequency vibration on pilot performance /as measured in a fixed base simulator/
A79-52326
LUMINANCE
Upper-velocity threshold for detection of movement
A79-52541
LUNG MORPHOLOGY
Radiographic comparison of human lung shape during normal gravity and weightlessness
A79-54269
LUNGS
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
A79-51114
The physiological role of surface-active substances in the lung
A79-51117
The role of lesser circulation hemodynamic changes in pulmonary gas exchange
A79-53066
Evidence for increased intrathoracic fluid volume in man at high altitude
A79-54266
LYMPH
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation
N79-33804

M

MAGNETIC FIELDS
The theory of the magnetocardiogram
A79-53533

MAGNETOCARDIOGRAPHY
Biomagnetic instrumentation and measurement A79-51043
Clinical magnetocardiography A79-51044
Non-invasive information on the P-R segment of the cardiac cycle - An assessment of the clinical potential of the electric and magnetic methods A79-51045
Theoretical foundations of cardiovascular processes --- Book A79-53531
The theory of the magnetocardiogram A79-53533

MAGNETOMETERS
Biomagnetic instrumentation and measurement A79-51043

MAMMALS
The visual cortex of normal and deprived monkeys A79-51174

MAN ENVIRONMENT INTERACTIONS
Shalit Perceptual Organization and Reduction Questionnaire (SPORQ). Report 2: Characteristics and reliability [FOA-C-55031-H6] N79-32836

MAN MACHINE SYSTEMS
Man and machine design for space flight A79-52696
Thoughts about man-machine interrelations in space flights applied to Spacelab missions [IAF PAPER 79-95] A79-53295
Human performance in time-shared verbal and tracking tasks [AD-A070275] N79-32831
Combined discrete network: Continuous control modeling of man-machine systems [AD-A071574] N79-32842
Models of human operators in vision dependent tasks [NASA-CP-2103] N79-33838
A survey of Applied Psychological Services' models of the human operator N79-33839
Visual performance modeling in the human operator simulator N79-33840
A brief overview of the theory and application of the optimal control model of the human operator N79-33841
SAINT: A combined simulation language for modeling man-machine systems N79-33842
Analysis of visual estimation of system state from arbitrary displays N79-33843
The role of cognitive switching in head-up displays --- to determine pilot ability to accurately extract information from either of two sources [NASA-CR-3137] N79-33851

MANEUVERS
Car driving as a cybernetic task [IZF-1979-6] N79-32838

MANNED SPACE FLIGHT
Aerospace highlights and potential medical applications --- in manned space flight A79-51027
Man and machine design for space flight A79-52696
Thoughts about man-machine interrelations in space flights applied to Spacelab missions [IAF PAPER 79-95] A79-53295

MANOMETERS
Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements A79-51037

MANUAL CONTROL
Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance A79-52327
A theoretical and experimental analysis of the outside world perception process [NLR-MP-78020-U] N79-32835

MATHEMATICAL LOGIC
Some of the problems involved in planning biological experiments N79-33805

MATHEMATICAL MODELS
Fundamentals of electrical processes in the electrophysiology of the heart A79-53532
Basic biomechanics equations for cardiovascular flow A79-53534
Estimation of rate constants in the Michaelis-Menten model [AD-A070360] N79-32824
A theoretical and experimental analysis of the outside world perception process [NLR-MP-78020-U] N79-32835
Analytical modelling of load-deflection behavior of intervertebral discs subjected to axial compression [AD-A071019] N79-33830
A general model for the transfer of vapour through clothed skin from liquid on and in clothing [AD-A071577] N79-33853

MEDICAL ELECTRONICS
The development of a digital video subtraction system for intravenous angiography A79-51033

MEDICAL EQUIPMENT
Noninvasive cardiovascular measurements --- Book A79-51026

MEDICAL SCIENCE
Signal processing in ultrasound --- for diagnostic medicine A79-51039

MEMBRANES
Energy transduction in Halobacterium halobium A79-53000

MEMORY
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology [AD-A069983] N79-32833
Human memory. A bibliography with abstracts [NTIS/PS-79/0640/7] N79-33847

MENTAL PERFORMANCE
Human performance in time-shared verbal and tracking tasks [AD-A070275] N79-32831

METABOLISM
Studies of metabolism, function and mechanism of destruction of red cells [AD-A070240] N79-33828

MICHAELIS THEORY
Estimation of rate constants in the Michaelis-Menten model [AD-A070360] N79-32824

MICROBIOLOGY
Immunobiological reactivity of the body under hyperbaric and hypobaric conditions N79-33790

MICROORGANISMS
Minute tubular forms in soil A79-51698

MICROPROCESSORS
Non-invasive information on the P-R segment of the cardiac cycle - An assessment of the clinical potential of the electric and magnetic methods A79-51045

MICROWAVE EMISSION
Protection standards for microwave and radiofrequency radiations A79-52878

MICROWAVES
Metabolic and physical scaling in microwave/radiofrequency bioeffects studies [UR-3490-1561] N79-33831

MOTION PERCEPTION
Visual motion perception by intelligent systems A79-52691

MOTION SICKNESS
Third Symposium on Motion Sickness N79-33814

MUSCLES
Tremometry as a method of evaluating the functional state of the nervous system of a pilot A79-53065
Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite N79-33795

MUSCULAR FATIGUE
Frequency and amplitude analysis of the EMG during exercise on the bicycle ergometer
A79-52022
Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time
A79-52025

MUSCULAR FUNCTION
Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle
A79-51111
The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia
A79-51116
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
[IAF PAPER 79-76] A79-53285

MYOCARDIAL INFARCTION
Computerized positron emission tomography /PET/ for the assessment of myocardial integrity
A79-51031

MYOCARDIUM
Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle
A79-51111
Temporal relation between onset of cell anoxia and ischemic contractile failure
A79-52895
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
N79-32825

N

NERVES
Effects of acute noise traumata on whole-nerve and single-unit activity
[IZF-1978-23] N79-32829

NERVOUS SYSTEM
Tremometry as a method of evaluating the functional state of the nervous system of a pilot
A79-53065

NEUROPHYSIOLOGY
The visual cortex of normal and deprived monkeys
A79-51174
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
A79-52475
Experimental and theoretical investigations concerning a frequency filter behavior of the human retina regarding electric pulse currents
[NASA-TM-75372] N79-33822

NOISE INJURIES
Effects of acute noise traumata on whole-nerve and single-unit activity
[IZF-1978-23] N79-32829

NOISE POLLUTION
Tentative evaluation of annoyance caused by noise from gunfire
[IZF-1978-21] N79-32843

NONLINEAR OPTICS
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
A79-53163

NUCLEAR ENERGY
Effects on populations of exposure to low levels of ionizing radiation: Implications for nuclear energy and medical radiation
[LBL-9084] N79-33833

O

OCEAN SURFACE
Minimum sea surface temperatures and associated survival times
[AD-A070162] N79-33824

OPERATOR PERFORMANCE
Models of human operators in vision dependent tasks
[NASA-CP-2103] N79-33838
A survey of Applied Psychological Services' models of the human operator
N79-33839
Visual performance modeling in the human operator simulator
N79-33840
A brief overview of the theory and application of the optimal control model of the human operator
N79-33841
Analysis of visual estimation of system state from arbitrary displays
N79-33843

OPERATORS (PERSONNEL)
The use of artificial signals during SONAR-watch
[IZF-1978-25] N79-32837

OPHTHALMOLOGY
The retinal resolving power measured by laser interference fringes
A79-54091

OPTICAL MEASURING INSTRUMENTS
Lightweight helmet-mounted eye movement measurement system
A79-53516

OPTIMAL CONTROL
Performance and workload analysis of inflight helicopter missions
[NLR-MP-77013-U] N79-32834
A brief overview of the theory and application of the optimal control model of the human operator
N79-33841

OPTIMIZATION
Adaptive optimization of exchange of gases in plants in a sealed phytotron
N79-33806

ORBITAL SPACE STATIONS
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
A79-53486

ORGANS
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
N79-33796

ORIENTATION
Vertical orientation of man during 5-day antiorthostatic hypokinesia (-4, -8 and -12 deg head down position)
N79-33810

ORTHOSTATIC TOLERANCE
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/
[IAF PAPER 79-87] A79-53290
Control of vertical position after flights aboard the Salyut-4 orbital station
N79-33793
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
N79-33809

OTOLARYNGOLOGY
Medical barofunction testing of aviators with otorhinolaryngologic disease
A79-52285

OXIDATION
Evaluation of oxidizability of air in closed areas
N79-33808

OXYGEN
Application of an isolated heart model to investigate blood-oxygen delivery
A79-51112

OXYGEN CONSUMPTION
The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
A79-51113
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
A79-51114
Frequency and amplitude analysis of the EMG during exercise on the bicycle ergometer
A79-52022
Time course of O2-pulse during various tests of aerobic power
A79-52024
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
N79-32825

OXYGEN METABOLISM
The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations
A79-52894
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
N79-32825

OXYGEN TENSION
The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia
A79-51116

OXYGENATION
Evaluation of oxidizability of air in closed areas
N79-33808

OXYHEMOGLOBIN
Application of an isolated heart model to investigate blood-oxygen delivery
A79-51112

P

PARALLAX
A comparison of oculomotor and motion parallax cues of egocentric distance
A79-54253

PARANASAL SINUSES
Medical barofunction testing of aviators with otorhinolaryngologic disease
A79-52285

PATHOGENESIS
Third Symposium on Motion Sickness
N79-33814

PATHOLOGICAL EFFECTS
Effect of impact accelerations on chemical resistance of rat erythrocytes
N79-33811

PATTERN RECOGNITION
Influence of light adaptation on dark adaptation time for pattern recognition tasks
[FB-31] N79-33835

PENETRATION
A general model for the transfer of vapour through clothed skin from liquid on and in clothing
[AD-A071577] N79-33853

PERFORMANCE PREDICTION
Performance and workload analysis of inflight helicopter missions
[NLR-MP-77013-U] N79-32834

PERIPHERAL VISION
Technique for simulating G-induced tunnel vision
A79-52286

PERSONNEL SELECTION
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight
[IAF PAPER 79-80] A79-53288
Preliminary selection of candidates for space flights
[IAF PAPER 79-83] A79-53289
Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions
[IAF PAPER 79-99] A79-53297

PERSPIRATION
Influence of skin temperature on sweating and aerobic performance during severe work
A79-54268

PH
Quality of water reclaimed from urine as related to pH of initial product
N79-33807

PHOTOPEAK
Reciprocal interaction between the photopic and scotopic systems of the visual analyzer in man
A79-51327

PHOTOSENSITIVITY
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
A79-53163

PHOTOSYNTHESIS
Adaptive optimization of exchange of gases in plants in a sealed phytotron
N79-33806

PHYSICAL EXAMINATIONS
Automatic audiometry in the practice of flight-personnel examination
A79-51084

PHYSICAL EXERCISE
Frequency and amplitude analysis of the EMG during exercise on the bicycle ergometer
A79-52022
Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
A79-54267

PHYSICAL FITNESS
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
N79-33809
The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces
[AD-A069865] N79-33829

PHYSICAL WORK
Influence of skin temperature on sweating and aerobic performance during severe work
A79-54268

PHYSIOCHEMISTRY
Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
A79-54267

PHYSIOLOGICAL EFFECTS
Comparison of physiological effects of head-down tilting and immersion on the human body
A79-52279
Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] N79-33788
Space Biology and Aerospace Medicine, no. 4, 1979
[JPRS-74330] N79-33789
Control of vertical position after flights aboard the Salyut-4 orbital station
N79-33793
Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite
N79-33795
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
N79-33798
Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations
N79-33800
Significance of the vibration component to the deleterious effect of impact accelerations
N79-33801
Effect of restricted activity on vestibular function
N79-33802
Fundamental biophysical aspects of decompression sickness
[AD-A069998] N79-33827
Optimal methods for physiologic research on clothing
[AD-A071855] N79-33852

PHYSIOLOGICAL FACTORS
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
A79-53486

PHYSIOLOGICAL RESPONSES
The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
A79-51113
The physiological role of surface-active substances in the lung
A79-51117
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] A79-53286
Ultrastructural development of the vestibular system of frog larvae in 0g simulation
[IAF PAPER 79-78] A79-53287
Eye torsion in response to a tilted visual stimulus
A79-54254
Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
N79-33813

PHYSIOLOGICAL TESTS
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
A79-51114
The effect of the reduction of inspired gas density on external respiration
A79-51115
A cinematographic technique for investigating some aspects of visual recognition
A79-53067

Continuous long-duration recording of the heart rate by means of a noncontact technique A79-53068
Changes in critical duration during dark-adaptation A79-54252
Effects of acute noise traumata on whole-nerve and single-unit activity [IZF-1978-23] N79-32829
Effects of amphetamine on response selection and response execution processes in choice reaction tasks [IZF-1978-8] N79-32839

PHYTOTRONS
Adaptive optimization of exchange of gases in plants in a sealed phytotron N79-33806

PILOT PERFORMANCE
Advanced transport operation effects on pilot scan patterns A79-51098
Technique for simulating G-induced tunnel vision A79-52286
The influence of low frequency vibration on pilot performance /as measured in a fixed base simulator/ A79-52326
Lightweight helmet-mounted eye movement measurement system A79-53516
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view [AD-A070231] N79-32832
Performance and workload analysis of inflight helicopter missions [NLR-MP-77013-U] N79-32834
Undergraduate pilot training: Visual discrimination pretraining for land task [AD-A068141] N79-33844
The role of cognitive switching in head-up displays --- to determine pilot ability to accurately extract information from either of two sources [NASA-CR-3137] N79-33851

PILOT SELECTION
Medical barofunction testing of aviators with otorhinolaryngologic disease A79-52285

PILOT TRAINING
Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators A79-52276
Undergraduate pilot training: Visual discrimination pretraining for land task [AD-A068141] N79-33844

PILOTS (PERSONNEL)
Tremometry as a method of evaluating the functional state of the nervous system of a pilot A79-53065

PLANETARY ENVIRONMENTS
Publications of the planetary biology program for 1978: A special bibliography [NASA-TM-80745] N79-33854

PLANNING
Some of the problems involved in planning biological experiments N79-33805

PLANTS (BOTANY)
Adaptive optimization of exchange of gases in plants in a sealed phytotron N79-33806

POLYSACCHARIDES
Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates A79-51701

PORTABLE LIFE SUPPORT SYSTEMS
Microbiological evaluation of the mobile biological isolator system [NASA-CR-162293] N79-32822

POSTURE
Control of vertical position after flights aboard the Salyut-4 orbital station N79-33793

PRESSURE BREATHING
Hyperbaric oxygenation. A bibliography with abstracts [NTIS/PS-79/0744/7] N79-33837

PRESSURE CHAMBERS
Energy expenditures of man during long exposure to a periodically changing atmosphere N79-33799

PRESSURE EFFECTS
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids) N79-33798
Energy expenditures of man during long exposure to a periodically changing atmosphere N79-33799

PRESSURE MEASUREMENTS
Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements A79-51037
A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles A79-51038

PRESSURE SUITS
Evolution of space suit technology [IAF PAPER 79-92] A79-53293
Microbiological evaluation of the mobile biological isolator system [NASA-CR-162293] N79-32822

PROBLEM SOLVING
Some of the problems involved in planning biological experiments N79-33805

PROTECTIVE CLOTHING
Bioassay of thermal protection afforded by candidate flight suit fabrics A79-52280
Cold water survival suits for aircrew A79-52282
Optimal methods for physiologic research on clothing [AD-A071855] N79-33852

PROTEINS
Energy transduction in Halobacterium halobium A79-53000

PROTOPLASM
Ultrastructural development of the vestibular system under conditions of simulated weightlessness A79-52284

PSYCHOLOGICAL FACTORS
Psychological training - One of the most important factors of enhancing the safety of space flights [IAF PAPER 79-A-24] A79-53426

PSYCHOLOGICAL TESTS
Shalit Perceptual Organization and Reduction Questionnaire (SPORQ). Report 2: Characteristics and reliability [FOA-C-55031-H6] N79-32836

PULMONARY FUNCTIONS
Evidence for increased intrathoracic fluid volume in man at high altitude A79-54266

PULSE DURATION
Changes in critical duration during dark-adaptation A79-54252

PURSUIT TRACKING
Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance A79-52327
Optokinetic reactions in man elicited by localized retinal motion stimuli A79-54251

Q

QUANTITATIVE ANALYSIS
Computer quantitation of angiocardiographic images A79-51028

R

RADIATION DAMAGE
Role of n-aminobenzoic acid in repairing UV and gamma radiation damage A79-53211

Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation N79-33804

RADIATION DOSAGE
Metabolic and physical scaling in microwave/radiofrequency bioeffects studies [UR-3490-1561] N79-33831
Health effects of low-level ionizing radiation [LBL-9018] N79-33834

RADIATION EFFECTS
Space Biology and Aerospace Medicine, no. 4, 1979 [JPRS-74330] N79-33789
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation N79-33804
Biological effects of nonionizing electromagnetic radiation, volume 3, number 4 [AD-A070242] N79-33826

RADIATION HAZARDS
Protection standards for microwave and radiofrequency radiations A79-52878

RADIATION MEASUREMENT
Review of unfolding methods used in the US and their standardization for dosimetry [BNWL-SA-6503] N79-32828

RADIATION MEDICINE
Computerized positron emission tomography /PET/ for the assessment of myocardial integrity A79-51031

RADIATION PROTECTION
Protection standards for microwave and radiofrequency radiations A79-52878

RADIATION SPECTRA
Review of unfolding methods used in the US and their standardization for dosimetry [BNWL-SA-6503] N79-32828

RADIO EMISSION
Protection standards for microwave and radiofrequency radiations A79-52878

RADIO PROBING
Computerized positron emission tomography /PET/ for the assessment of myocardial integrity A79-51031

RADIOBIOLOGY
Role of n-aminobenzoic acid in repairing UV and gamma radiation damage A79-53211

RADIOGRAPHY
Iodine imaging using spectral analysis --- radiography for visualization of small blood vessels A79-51034
Radiographic comparison of human lung shape during normal gravity and weightlessness A79-54269

RATES (PER TIME)
Estimation of rate constants in the Michaelis-Menten model [AD-A070360] N79-32824

REACTION KINETICS
Estimation of rate constants in the Michaelis-Menten model [AD-A070360] N79-32824

REACTION TIME
Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time A79-52025
Target redundancy in visual search - Do repetitions of the target within the display impair processing A79-52540

REPETITION
Target redundancy in visual search - Do repetitions of the target within the display impair processing A79-52540

RESPIRATION
The effect of the reduction of inspired gas density on external respiration A79-51115
Influence of skin temperature on sweating and aerobic performance during severe work A79-54268
Energy expenditures of man during long exposure to a periodically changing atmosphere N79-33799
External respiration and gas exchange reactions of man during rotation on a short-arm centrifuge N79-33812

RESPIRATORY PHYSIOLOGY
The physiological role of surface-active substances in the lung A79-51117
Time course of O2-pulse during various tests of aerobic power A79-52024
The role of lesser circulation hemodynamic changes in pulmonary gas exchange A79-53066

RESPONSES
Effects of amphetamine on response selection and response execution processes in choice reaction tasks [IZF-1978-8] N79-32839

RETENTION (PSYCHOLOGY)
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology [AD-A069983] N79-32833

RETINA
Orientation relative to the retina determines perceptual organization A79-52539
Experimental and theoretical investigations concerning a frequency filter behavior of the human retina regarding electric pulse currents [NASA-TM-75372] N79-33822

RETINAL IMAGES
Optokinetic reactions in man elicited by localized retinal motion stimuli A79-54251

RHEOMETERS
Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics A79-51118

RISK
The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces [AD-A069865] N79-33829

ROTATION
External respiration and gas exchange reactions of man during rotation on a short-arm centrifuge N79-33812

S

SACCADIC EYE MOVEMENTS
Upper-velocity threshold for detection of movement A79-52541

SAFETY MANAGEMENT
Protection standards for microwave and radiofrequency radiations A79-52878

SALYUT SPACE STATION
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/ A79-53486
Studies of venous circulation in the crew of the Salyut-5 orbital station N79-33791
Fluid-electrolyte metabolism in the crew of Salyut-4 N79-33792
Control of vertical position after flights aboard the Salyut-4 orbital station N79-33793

SCENE ANALYSIS
Visual motion perception by intelligent systems A79-52691

SCORING
Development of an objective grading system along with procedures and aids for its effective implementation in flight [AD-A071106] N79-33846

SCRUBBERS
Spacelab scrubber analysis and test support [NASA-CR-161309] N79-33849

SEASAT PROGRAM
Aerospace highlights and potential medical applications --- in manned space flight A79-51027

SENSORIMOTOR PERFORMANCE
Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time A79-52025

A theoretical and experimental analysis of the outside world perception process
[NLR-MP-78020-U] N79-32835

SENSORY DEPRIVATION
The visual cortex of normal and deprived monkeys
A79-51174

SEX FACTOR
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight
[IAF PAPER 79-80] A79-53288
A new application of LBNP to measure orthostatic tolerance before and after O-G simulation /water immersion/
[IAF PAPER 79-87] A79-53290

SIGNAL DETECTION
The use of artificial signals during SONAR-watch
[IZF-1978-25] N79-32837

SIGNAL PROCESSING
Signal processing in ultrasound --- for diagnostic medicine
A79-51039

SIMULATORS
Visual performance modeling in the human operator simulator
N79-33840

SITTING POSITION
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
N79-33797
Vertical orientation of man during 5-day antiorthostatic hypokinesia (-4, -8 and -12 deg head down position)
N79-33810

SKIN TEMPERATURE (BIOLOGY)
Influence of skin temperature on sweating and aerobic performance during severe work
A79-54268

SLEEP
A nonlinear mapping approach to discrimination of sleep stages from the human electroencephalogram
N79-33817

SODIUM
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
A79-52023

SOIL SCIENCE
Minute tubular forms in soil
A79-51698
Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates
A79-51701

SONAR
The use of artificial signals during SONAR-watch
[IZF-1978-25] N79-32837

SPACE ENVIRONMENT SIMULATION
A new application of LBNP to measure orthostatic tolerance before and after O-G simulation /water immersion/
[IAF PAPER 79-87] A79-53290
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] A79-53291

SPACE FLIGHT FEEDING
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] A79-53294

SPACE FLIGHT STRESS
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
A79-52475
Psychological training - One of the most important factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] A79-53426
Space Biology and Aerospace Medicine, no. 4, 1979
[JPRS-74330] N79-33789
Studies of venous circulation in the crew of the Salyut-5 orbital station
N79-33791
Effects on lipid metabolism in man of some factors that simulate space flight conditions
N79-33794
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
N79-33796

SPACE PERCEPTION
A comparison of oculomotor and motion parallax cues of egocentric distance
A79-54253

SPACE SHUTTLE ORBITERS
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] A79-53294
Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions
[IAF PAPER 79-99] A79-53297

SPACE SHUTTLES
A system for sterilizing objects --- such as water systems on the space shuttle using ethylene oxide
[NASA-CASE-KSC-11085-1] N79-33848

SPACE SUITS
Evolution of space suit technology
[IAF PAPER 79-92] A79-53293

SPACECRAFT CONTAMINATION
Spacelab scrubber analysis and test support
[NASA-CR-161309] N79-33849

SPACECRAFT DESIGN
Man and machine design for space flight
A79-52696

SPACECRAFT STERILIZATION
A system for sterilizing objects --- such as water systems on the space shuttle using ethylene oxide
[NASA-CASE-KSC-11085-1] N79-33848

SPACECREWS
Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions
[IAF PAPER 79-99] A79-53297
Considerations associated with the introduction of female crewmembers in spacecraft and space stations
[IAF PAPER 79-A-22] A79-53424
Communication problems of international crews
[IAF PAPER 79-A-23] A79-53425
Fluid-electrolyte metabolism in the crew of Salyut-4
N79-33792

SPACELAB
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] A79-53291
Thoughts about man-machine interrelations in space flights applied to Spacelab missions
[IAF PAPER 79-95] A79-53295
Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions
[IAF PAPER 79-99] A79-53297
Spacelab scrubber analysis and test support
[NASA-CR-161309] N79-33849

SPECTRUM ANALYSIS
Iodine imaging using spectral analysis --- radiography for visualization of small blood vessels
A79-51034

SPHYGMOGRAPHY
Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements
A79-51037

SPINAL CORD
Analytical modelling of load-deflection behavior of intervertebral discs subjected to axial compression
[AD-A071019] N79-33830

STANDARDIZATION
Review of unfolding methods used in the US and their standardization for dosimetry
[BNWL-SA-6503] N79-32828

STANDARDS
Protection standards for microwave and radiofrequency radiations
A79-52878

STORAGE TANKS
A system for sterilizing objects --- such as water systems on the space shuttle using ethylene oxide
[NASA-CASE-KSC-11085-1] N79-33848

STRESS (PHYSIOLOGY)
The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress [AD-A069952] N79-33845

STRUCTURAL DESIGN
Application of a structured decision process for proper inclusion of human resources in the design of a power unit support stand [AD-A069978] N79-32840

SUBMERGED BODIES
Minimum sea surface temperatures and associated survival times [AD-A070162] N79-33824

SUBMERGING
Comparison of physiological effects of head-down tilting and immersion on the human body A79-52279

SUBZERO TEMPERATURE
Bimodal relationship of human tremor and shivering on introduction to cold exposure A79-52278

SURGERY
Equipment for surgical interventions and childbirth in weightlessness [IAF PAPER 79-97] A79-53296

SURVIVAL
Minimum sea surface temperatures and associated survival times [AD-A070162] N79-33824

SURVIVAL EQUIPMENT
Cold water survival suits for aircrew A79-52282

SYSTEMS ANALYSIS
SAINT: A combined simulation language for modeling man-machine systems N79-33842

SYSTEMS ENGINEERING
Application of a structured decision process for proper inclusion of human resources in the design of a power unit support stand [AD-A069978] N79-32840

T

TARGET RECOGNITION
Target redundancy in visual search - Do repetitions of the target within the display impair processing A79-52540

TASK COMPLEXITY
Performance and workload analysis of inflight helicopter missions [NLR-MP-77013-U] N79-32834

TECHNOLOGY ASSESSMENT
Current status of cardiovascular imaging by transmission computed tomography A79-51032
Evolution of space suit technology [IAF PAPER 79-92] A79-53293

TERMINAL CONFIGURED VEHICLE PROGRAM
Advanced transport operation effects on pilot scan patterns A79-51098

THERMAL COMFORT
Bimodal relationship of human tremor and shivering on introduction to cold exposure A79-52278

THERMAL DEGRADATION
Effect of fiber and dye degradation products /FDP/ on burn wound healing A79-52277

THERMAL PROTECTION
Bioassay of thermal protection afforded by candidate flight suit fabrics A79-52280

THERMODYNAMIC EQUILIBRIUM
Equations on biotransport mechanisms A79-53535

THERMOREGULATION
Bimodal relationship of human tremor and shivering on introduction to cold exposure A79-52278
Bio-heat transfer processes, for human thermoregulatory and circulatory characteristics measurements A79-53536
Influence of skin temperature on sweating and aerobic performance during severe work A79-54268

THREE DIMENSIONAL MOTION
A spherical representation of a human body for visualizing movement A79-53096

THRESHOLDS (PERCEPTION)
Effect of adaptation level on certain visual functions in man A79-51328
Upper-velocity threshold for detection of movement A79-52541

THYROID GLAND
Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle A79-51111

TIME LAG
Influence of light adaptation on dark adaptation time for pattern recognition tasks [PB-31] N79-33835

TISSUES (BIOLOGY)
Ultrasonic tissue characterization II [PB-296356/9] N79-33836

TOMOGRAPHY
Computerized positron emission tomography /PET/ for the assessment of myocardial integrity A79-51031
Current status of cardiovascular imaging by transmission computed tomography A79-51032

TORQUE
Passive resistive torques about long bone axes of major human joints A79-52283

TOXICITY
Mechanisms of oxygen toxicity at the cellular level [AD-A070026] N79-32823
Development of electrophysiological indices of neurological toxicity for organosphate pesticides and depressant drugs [AD-A070299] N79-33821

TRANSDUCERS
A study of noninvasive blood pressure measurement techniques A79-51036

TRANSPORT PROPERTIES
Equations on biotransport mechanisms A79-53535

TREMORS
Tremometry as a method of evaluating the functional state of the nervous system of a pilot A79-53065

U

U.S.S.R.
Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency [CONF-780541-1] N79-32827

U.S.S.R. SPACE PROGRAM
Space Biology and Aerospace Medicine, no. 4, 1979 [JPRS-74330] N79-33789

ULTRAHIGH FREQUENCIES
The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia A79-51116

ULTRASONIC TESTS
Signal processing in ultrasound --- for diagnostic medicine A79-51039
Quantitative flow estimation with transcutaneous Doppler ultrasound A79-51042
Ultrasonic tissue characterization II [PB-296356/9] N79-33836

ULTRASONICS
Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements A79-51037

ULTRAVIOLET RADIATION
Role of m-aminobenzoic acid in repairing UV and gamma radiation damage A79-53211

URINE
Quality of water reclaimed from urine as related to pH of initial product
N79-33807

V

VAPORS
A general model for the transfer of vapour through clothed skin from liquid on and in clothing
[AD-A071577] N79-33853

VASCULAR SYSTEM
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] A79-53286

VEINS
Studies of venous circulation in the crew of the Salyut-5 orbital station
N79-33791

VERBAL COMMUNICATION
Communication problems of international crews
[IAF PAPER 79-A-23] A79-53425

VERTEBRAE
Analytical modelling of load-deflection behavior of intervertebral discs subjected to axial compression
[AD-A071019] N79-33830

VERTICAL PERCEPTION
Vertical orientation of man during 5-day antiorthostatic hypokinesia (-4, -8 and -12 deg head down position)
N79-33810

VESTIBULAR NYSTAGMUS
Effect of restricted activity on vestibular function
N79-33802

VESTIBULAR TESTS
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight
[IAF PAPER 79-80] A79-53288

VESTIBULES
Ultrastructural development of the vestibular system under conditions of simulated weightlessness
A79-52284

Ultrastructural development of the vestibular system of frog larvae in 0g simulation
[IAF PAPER 79-78] A79-53287

VIBRATION EFFECTS
The influence of low frequency vibration on pilot performance /as measured in a fixed base simulator/
A79-52326

Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance
A79-52327

Significance of the vibration component to the deleterious effect of impact accelerations
N79-33801

VIBRATION SIMULATORS
The influence of low frequency vibration on pilot performance /as measured in a fixed base simulator/
A79-52326

Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance
A79-52327

VIDEO DATA
The development of a digital video subtraction system for intravenous angiography
A79-51033

VISION
The visual cortex of normal and deprived monkeys
A79-51174

VISUAL ACUITY
The retinal resolving power measured by laser interference fringes
A79-54091

VISUAL DISCRIMINATION
Upper-velocity threshold for detection of movement
A79-52541

Undergraduate pilot training: Visual discrimination pretraining for land task
[AD-A068141] N79-33844

The role of cognitive switching in head-up displays --- to determine pilot ability to accurately extract information from either of two sources
[NASA-CR-3137] N79-33851

VISUAL OBSERVATION
Advanced transport operation effects on pilot scan patterns
A79-51098

VISUAL PERCEPTION
Reciprocal interaction between the photopic and scotopic systems of the visual analyzer in man
A79-51327

Effect of adaptation level on certain visual functions in man
A79-51328

Orientation relative to the retina determines perceptual organization
A79-52539

Target redundancy in visual search - Do repetitions of the target within the display impair processing
A79-52540

Visual motion perception by intelligent systems
A79-52691

A cinematographic technique for investigating some aspects of visual recognition
A79-53067

Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
A79-53163

A theoretical and experimental analysis of the outside world perception process
[NLR-MP-78020-U] N79-32835

Analysis of visual estimation of system state from arbitrary displays
N79-33843

VISUAL STIMULI
Orientation relative to the retina determines perceptual organization
A79-52539

Optokinetic reactions in man elicited by localized retinal motion stimuli
A79-54251

A comparison of oculomotor and motion parallax cues of egocentric distance
A79-54253

Eye torsion in response to a tilted visual stimulus
A79-54254

Methods for localization of electrical sources in the human brain and applications to the visual system
N79-33815

VISUAL TASKS
A cinematographic technique for investigating some aspects of visual recognition
A79-53067

VITAMINS
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs
N79-33803

W

WASTE DISPOSAL
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] A79-53294

WATER BALANCE
Fluid-electrolyte metabolism in the crew of Salyut-4
N79-33792

WATER QUALITY
Quality of water reclaimed from urine as related to pH of initial product
N79-33807

A system for sterilizing objects --- such as water systems on the space shuttle using ethylene oxide
[NASA-CASE-KSC-11085-1] N79-33848

WATER RECLAMATION
Quality of water reclaimed from urine as related to pH of initial product
N79-33807

WATER TEMPERATURE
Minimum sea surface temperatures and associated survival times
[AD-A070162] N79-33824

WEIGHTLESSNESS
Man and machine design for space flight
A79-52696

A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/
[IAF PAPER 79-87] A79-53290
Equipment for surgical interventions and childbirth in weightlessness
[IAF PAPER 79-97] A79-53296
The biomedical implications of extended duration zero-g extravehicular activities
[IAF PAPER 79-ST-06] A79-53447
Radiographic comparison of human lung shape during normal gravity and weightlessness
A79-54269
Studies of venous circulation in the crew of the Salyut-5 orbital station
N79-33791
Effects on lipid metabolism in man of some factors that simulate space flight conditions
N79-33794

WEIGHTLESSNESS SIMULATION
Comparison of physiological effects of head-down tilting and immersion on the human body
A79-52279
Ultrastructural development of the vestibular system under conditions of simulated weightlessness
A79-52284
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] A79-53286
Ultrastructural development of the vestibular system of frog larvae in 0g simulation
[IAF PAPER 79-78] A79-53287

WORKLOADS (PSYCHOPHYSIOLOGY)
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] A79-53291
Performance and workload analysis of inflight helicopter missions
[NLR-MP-77013-U] N79-32834

WOUND HEALING
Effect of fiber and dye degradation products /FDP/ on burn wound healing
A79-52277

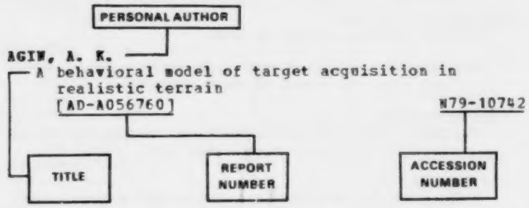
X

X RAY ANALYSIS
The development of a digital video subtraction system for intravenous angiography
A79-51033
Radiographic comparison of human lung shape during normal gravity and weightlessness
A79-54269

PERSONAL AUTHOR INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 201)* JANUARY 1980

Typical Personal Author Index Listing



The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABE, H.
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
[IAF PAPER 79-76] A79-53285
AGADZHANYAN, N. A.
Energy expenditures of man during long exposure to a periodically changing atmosphere
N79-33799
AGANEZOV, S. A.
The role of lesser circulation hemodynamic changes in pulmonary gas exchange
A79-53066
ALEKSANDROVA, E. A.
Comparison of physiological effects of head-down tilting and immersion on the human body
A79-52279
ALLEN, C. L.
The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces
[AD-A069865] N79-33829
ANASHKIN, O. D.
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
N79-33809
ANDERSON, D. Z.
A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles
A79-51038
ANGELL, J. B.
A study of noninvasive blood pressure measurement techniques
A79-51036
AUST, G.
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight
[IAF PAPER 79-80] A79-53288

B

BADLER, N. I.
A spherical representation of a human body for visualizing movement
A79-53096
BAKER, D. W.
Cardiac blood flow measurement - A component of the comprehensive cardiac examination
A79-51041
BALKWILL, D. L.
Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates
A79-51701
BARANOV, V. M.
Energy expenditures of man during long exposure to a periodically changing atmosphere
N79-33799
BARANSKI, S.
Preliminary selection of candidates for space flights
[IAF PAPER 79-83] A79-53289
BARER, A. S.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
A79-53486
BARKER, N. D.
Application of an isolated heart model to investigate blood-oxygen delivery
A79-51112
BARLOW, C. H.
Temporal relation between onset of cell anoxia and ischemic contractile failure
A79-52895
BARNES, J. A.
Lightweight helmet-mounted eye movement measurement system
A79-53516
BEDNENKO, V. S.
Studies of venous circulation in the crew of the Salyut-5 orbital station
N79-33791
BELICH, A. I.
Continuous long-duration recording of the heart rate by means of a noncontact technique
A79-53068
BELLENKES, A. H.
The biomedical implications of extended duration zero-g extravehicular activities
[IAF PAPER 79-ST-06] A79-53447
BELYTSCHKO, T.
Refinement and validation of a three-dimensional head-spin model
[AD-A062502] N79-32826
BERBERICH, J. J.
Evidence for increased intrathoracic fluid volume in man at high altitude
A79-54266
BEREGOVOI, G. T.
Psychological training - One of the most important factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] A79-53426
BEREZOVSKII, V. A.
The physiological role of surface-active substances in the lung
A79-51117
BERKOVICH, Y. A.
Adaptive optimization of exchange of gases in plants in a sealed phytotron
N79-33806
BESPALOVA, L. A.
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation
N79-33804
BIRK, J.
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/
[IAF PAPER 79-87] A79-53290
BLAAUW, G. J.
Car driving as a cybernetic task
[IZF-1979-6] N79-32838
BLANKENHORN, D. H.
Computer quantitation of coronary angiograms
A79-51030

BLOMQVIST, C. G.
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] A79-53286

BOKHOV, B. B.
Vertical orientation of man during 5-day antiorthostatic hypokinesia (-4, -8 and -12 deg head down position)
N79-33810

BOLSHOV, V. M.
Studies of venous circulation in the crew of the Salyut-5 orbital station
N79-33791

BORGER, H. J.
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/
[IAF PAPER 79-87] A79-53290

BRANDENBERGER, G.
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
A79-52023

BRENNECKE, R.
Computer quantitation of angiocardiographic images
A79-51028

BRODY, W. R.
Current status of cardiovascular imaging by transmission computed tomography
A79-51032
Quantitative flow estimation with transcutaneous Doppler ultrasound
A79-51042

BROOKE, J. D.
Bimodal relationship of human tremor and shivering on introduction to cold exposure
A79-52278

BROWER, R. W.
Clinical usefulness of radiopaque markers in left ventricular function
A79-51029

BROWN, A. D.
Manual landings in Category 3 conditions
A79-52055

BROWN, J. L.
Changes in critical duration during dark-adaptation
A79-54252

BROWN, J. W.
Considerations associated with the introduction of female crewmembers in spacecraft and space stations
[IAF PAPER 79-A-22] A79-53424

BROWN, O. R.
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] N79-32823

BROWN, T. E.
The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces
[AD-A069865] N79-33829

BRYAN, C. J.
A system for sterilizing objects
[NASA-CASE-KSC-11085-1] N79-33848

BUERSCH, J. H.
Computer quantitation of angiocardiographic images
A79-51028

BUGLIARELLO, G.
Basic biomechanics equations for cardiovascular flow
A79-53534

BURNS, M. L.
Analytical modelling of load-deflection behavior of intervertebral discs subjected to axial compression
[AD-A071019] N79-33830

BYCHKOV, V. P.
Effects on lipid metabolism in man of some factors that simulate space flight conditions
N79-33794
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
N79-33798

BYSTROVA, A. G.
Third Symposium on Motion Sickness
N79-33814

C

CALVET, H.
Contribution to the theory of photopic vision: Retinal phenomena
[NASA-TM-75507] N79-33823

CAPP, M. P.
The development of a digital video subtraction system for intravenous angiography
A79-51033

CARBONE, D.
Real-time computerized fluoroscopic cardiac imaging
A79-51035

CASIDA, L. E., JR.
Minute tubular forms in soil
A79-51698
Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates
A79-51701

CHEREDNICHENKO, O. B.
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
A79-53163

CHESTUKHIN, V. V.
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
N79-33797

CHIGOLEV, V. V.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
A79-53486

CHILDS, J. M.
Development of an objective grading system along with procedures and aids for its effective implementation in flight
[AD-A071106] N79-33846

CHILES, W. D.
Laboratory performance during acute intoxication and hangover
[AD-A069373] N79-33820

CHIZHOV, S. V.
Quality of water reclaimed from urine as related to pH of initial product
N79-33807

COHEN, J.
Studies of metabolism, function and mechanism of destruction of red cells
[AD-A070240] N79-33828

COLLEWIJN, H.
Optokinetic reactions in man elicited by localized retinal motion stimuli
A79-54251

COLLINS, W. E.
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
[AD-A069375] N79-33819
Laboratory performance during acute intoxication and hangover
[AD-A069373] N79-33820

CRUMMY, A.
Real-time computerized fluoroscopic cardiac imaging
A79-51035

CYMERMAN, A.
Evidence for increased intrathoracic fluid volume in man at high altitude
A79-54266

D

DANILOV, L. N.
The role of lesser circulation hemodynamic changes in pulmonary gas exchange
A79-53066

DARCEY, T. M.
Methods for localization of electrical sources in the human brain and applications to the visual system
N79-33815

DAVIES, C. T. M.
Influence of skin temperature on sweating and aerobic performance during severe work
A79-54268

DAVNICHENKO, L. S.
Role of m-aminobenzoic acid in repairing UV and gamma radiation damage
A79-53211

DAVYDOV, G. A.
Energy expenditures of man during long exposure to a periodically changing atmosphere
N79-33799

DAVYDOV, I. V.
Psychological training - One of the most important factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] A79-53426

DE VRIES, H. A.
Time course of O2-pulse during various tests of aerobic power
A79-52024

DEGTIAR, U. N.
The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia
A79-51116

DEGTYAREV, V. A.
Studies of venous circulation in the crew of the Salyut-5 orbital station
N79-33791

DELUCIEN, A. G.
Workload and the certification of helicopters for IFR operation
[AD-A072758] N79-33850

DEMIN, N. N.
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
A79-52475

DENNISTON, J. C.
Evidence for increased intrathoracic fluid volume in man at high altitude
A79-54266

DINNAR, U.
Bio-heat transfer processes, for human thermoregulatory and circulatory characteristics measurements
A79-53536

DMITRIEV, V. G.
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
A79-53163

DOLOMAN, L. B.
Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics
A79-51118

DOROKHOVA, B. R.
Fluid-electrolyte metabclism in the crew of Salyut-4
N79-33792

DUBOIS, M. F. W.
Optokinetic reactions in man elicited by localized retinal motion stimuli
A79-54251

E

EARLES, J. A.
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology
[AD-A069983] N79-32833

ECKERLEY, J. S.
A study of noninvasive blood pressure measurement techniques
A79-51036

EDWARDS, B. J.
Undergraduate pilot training: Visual discrimination pretraining for land task
[AD-A068141] N79-33844

ELIVANOV, V. A.
Significance of the vibration component to the deleterious effect of impact accelerations
N79-33801

ELKINS, W.
Evolution of space suit technology
[IAF PAPER 79-92] A79-53293

EMELIANOV, V. M.
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
A79-53163

EMERY, J. C.
Medical barofunction testing of aviators with otorhinolaryngologic disease
A79-52285

ENGIN, A. E.
Passive resistive torques about long bone axes of major human joints
A79-52283

ERGUN, D. L.
Real-time computerized fluoroscopic cardiac imaging
A79-51035

ERIKSEN, B. A.
Target redundancy in visual search - Do repetitions of the target within the display impair processing
A79-52540

ERIKSEN, C. W.
Target redundancy in visual search - Do repetitions of the target within the display impair processing
A79-52540

EVANS, J. N.
The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress
[AD-A069952] N79-33845

F

FABRIKANT, J. I.
Effects on populations of exposure to low levels of ionizing radiation: Implications for nuclear energy and medical radiation
[LBL-9084] N79-33833
Health effects of low-level ionizing radiation
[LBL-9018] N79-33834

FARRELL, D.
Non-invasive information on the P-R segment of the cardiac cycle - An assessment of the clinical potential of the electric and magnetic methods
A79-51045

FAYTELBERG, R. P.
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs
N79-33803

FENCL, V.
Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] N79-33788

FILIPENKOV, S. N.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
A79-53486

FISCHER, E.
The role of cognitive switching in head-up displays
[NASA-CR-3137] N79-33851

FISHER, H. D.
The development of a digital video subtraction system for intravenous angiography
A79-51033

FLANDROIS, R.
Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
A79-54267

FOLLENIUS, M.
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
A79-52023

FORSTER, L. D.
Measurements in the laser irradiated eye
[AD-A069842] N79-33825

FOUDIN, L.
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] N79-32823

FRIEDMAN, P. J.
Radiographic comparison of human lung shape during normal gravity and weightlessness
A79-54269

FROST, M. M.
The development of a digital video subtraction system for intravenous angiography
A79-51033

FROWEIN, H. W.
Effects of amphetamine on response selection and response execution processes in choice reaction tasks
[IZF-1978-8] N79-32839

FURRY, D. E.
Medical barofunction testing of aviators with otorhinolaryngologic disease
A79-52285

G

GABEL, R. A.
Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] N79-33788

GAINER, P. A.
Analysis of visual estimation of system state from arbitrary displays
N79-33843

GAMMELL, P. M.
Signal processing in ultrasound
A79-51039

GAZENKO, O. G.
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
A79-52475
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
A79-53486

GEBHARDT, U.
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/
[IAF PAPER 79-87] A79-53290

GEORGIYEVSKIY, V. S.
Control of vertical position after flights aboard the Salyut-4 orbital station
N79-33793

GERZBERG, L.
Quantitative flow estimation with transcutaneous Doppler ultrasound
A79-51042

GHISTA, D. N.
Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements
A79-51037
Theoretical foundations of cardiovascular processes
A79-53531

GIEROWSKI, Z.
Preliminary selection of candidates for space flights
[IAF PAPER 79-83] A79-53289

GILLAM, B.
Orientation relative to the retina determines perceptual organization
A79-52539

GILLILAND, P.
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] N79-32823

GLADKIY, T. V.
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs
N79-33803

GOGEL, W. C.
A comparison of oculomotor and motion parallax cues of egocentric distance
A79-54253

GOGOLEV, K. I.
Comparison of physiological effects of head-down tilting and immersion on the human body
A79-52279

GOLDMAN, R. F.
Optimal methods for physiologic research on clothing
[AD-A071855] N79-33852

GOLIKOVA, N. A.
Quality of water reclaimed from urine as related to pH of initial product
N79-33807

GOLOVKIN, L. G.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
A79-53486

GOLOVKINA, O. L.
External respiration and gas exchange reactions of man during rotation on a short-arm centrifuge
N79-33812

GOODENOUGH, D. R.
Eye torsion in response to a tilted visual stimulus
A79-54254

GORCHAKOV, V. IU.
The physiological role of surface-active substances in the lung
A79-51117

GORDON, R. M.
Computer quantitation of coronary angiograms
A79-51030

GORGILADZE, G. I.
Effect of restricted activity on vestibular function
N79-33802

GOVORUKHA, T. N.
The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
A79-51113

GREEN, D. L.
Workload and the certification of helicopters for IFR operation
[AD-A072758] N79-33850

GRIFFIN, M. J.
Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance
A79-52327

GRIGORYEV, A. I.
Fluid-electrolyte metabolism in the crew of Salyut-4
N79-33792

GRINEVSKAIA, Y. I.
Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
N79-33813

GUREVICH, M. I.
Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics
A79-51118

GURNEY, D. J.
Manual landings in Category 3 conditions
A79-52055

GUSEYNOV, F. T.
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
N79-33796

H

HAASE, W. C.
Quantitative flow estimation with transcutaneous Doppler ultrasound
A79-51042

HARDEN, W. R., III
Temporal relation between onset of cell anoxia and ischemic contractile failure
A79-52895

HARKEN, A. H.
Temporal relation between onset of cell anoxia and ischemic contractile failure
A79-52895

HARLEN, F.
Protection standards for microwave and radiofrequency radiations
A79-52878

HARRIS, R. L., SR.
Advanced transport operation effects on pilot scan patterns
A79-51098

HARRIS, S. D.
Human performance in time-shared verbal and tracking tasks
[AD-A070275] N79-32831

HARRISON, D. C.
Noninvasive cardiovascular measurements
A79-51026

HARRISON, R. A.
Hypothermia. A bibliography with abstracts
[NTIS/PS-79/0533/4] N79-32830
Hyperbaric oxygenation. A bibliography with abstracts
[NTIS/PS-79/0744/7] N79-33837

HEINTZEN, P. H.
Computer quantitation of angiocardiographic images
A79-51028

HERRMANN, R.
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] A79-53291

HILLS, B. A.
Fundamental biophysical aspects of decompression sickness
[AD-A069998] N79-33827

HORDINSKY, J. R.
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight
[IAF PAPER 79-80] A79-53288
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/
[IAF PAPER 79-87] A79-53290
HOTTINGER, C. F.
Quantitative flow estimation with transcutaneous Doppler ultrasound
A79-51042
HOUK, T. L.
Real-time computerized fluoroscopic cardiac imaging
A79-51035
HUBEL, D. H.
The visual cortex of normal and deprived monkeys
A79-51174
HUGENHOLTZ, P. G.
Clinical usefulness of radiopaque markers in left ventricular function
A79-51029
HUNG, T.-K.
Basic biomechanics equations for cardiovascular flow
A79-53534
HUNT, S. R.
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] A79-53294

I

ILIANOK, V. A.
Reciprocal interaction between the photopic and scotopic systems of the visual analyzer in man
A79-51327
INCHINA, V. I.
Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
N79-33813
IRISH, P. A., III
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view
[AD-A070231] N79-32832
IUFER, E. J.
Biomagnetic instrumentation and measurement
A79-51043

J

JAEGER, J. J.
Evidence for increased intrathoracic fluid volume in man at high altitude
A79-54266
JANICKI, J. S.
The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations
A79-52894
JEFFREYS, R. T.
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view
[AD-A070231] N79-32832
JOHNSON, R. L., JR.
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] A79-53286
JOHNSTONE, J. R.
Upper-velocity threshold for detection of movement
A79-52541
JONES, T. J.
A theoretical investigation of power and control configurations for a high g-onset centrifuge drive system
[AD-A070912] N79-32841
JORDAN, S. W.
Workload and the certification of helicopters for IFR operation
[AD-A072758] N79-33850

K

KALANDAROV, S.
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
N79-33798
KANENKOVICH, V. M.
Effect of adaptation level on certain visual functions in man
A79-51328
KAPADIA, A. S.
Medical barofunction testing of aviators with otorhinolaryngologic disease
A79-52285
KAPLANSKIY, A. S.
Immunobiological reactivity of the body under hyperbaric and hypobaric conditions
N79-33790
KARPOVA, L. D.
Evaluation of oxidizability of air in closed areas
N79-33808
KASATKINA, A. G.
Effects on lipid metabolism in man of some factors that simulate space flight conditions
N79-33794
KASHINTSEV, M. A.
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
A79-53163
KATKOV, V. Y.
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
N79-33797
KAZANSKAYA, G. S.
Effect of restricted activity on vestibular function
N79-33802
KHOKHLOVA, O. S.
Effects on lipid metabolism in man of some factors that simulate space flight conditions
N79-33794
KLIMOVSKAYA, L. D.
Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations
N79-33800
KLUKOWSKI, K.
Preliminary selection of candidates for space flights
[IAF PAPER 79-83] A79-53289
KNAPP, C. F.
The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress
[AD-A069952] N79-33845
KNAPP, S. C.
Effect of fiber and dye degradation products /FDP/ on burn wound healing
A79-52277
KNOX, F. S., III
Effect of fiber and dye degradation products /FDP/ on burn wound healing
A79-52277
Bioassay of thermal protection afforded by candidate flight suit fabrics
A79-52280
KOBZEV, Y. A.
Studies of venous circulation in the crew of the Salyut-5 orbital station
N79-33791
KOLIAGIN, V. IA.
Tremometry as a method of evaluating the functional state of the nervous system of a pilot
A79-53065
KOLTSOV, A. N.
Tremometry as a method of evaluating the functional state of the nervous system of a pilot
A79-53065
KOMENDANTOV, G. L.
Third Symposium on Motion Sickness
N79-33814

KONOLOVA, G. S.
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
N79-33796

KORBUT, V. L.
Adaptive optimization of exchange of gases in plants in a sealed phytotron
N79-33806

KOZERENKO, O. P.
Control of vertical position after flights aboard the Salyut-4 orbital station
N79-33793

KOZYREVSKAYA, G. I.
Fluid-electrolyte metabolism in the crew of Salyut-4
N79-33792

KRUGER, R. A.
Real-time computerized fluoroscopic cardiac imaging
A79-51035

KRYLOVA, N. V.
Psychological training - One of the most important factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] A79-53426

KUBAL, W.
Real-time computerized fluoroscopic cardiac imaging
A79-51035

KUBOZONO, A.
Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions
[IAF PAPER 79-99] A79-53297

KUEHN, L. A.
Similarity in the number of lifespan heartbeats among non-hibernating homeothermic animals
A79-52281

KUKUSHKIN, IU. A.
Tremometry as a method of evaluating the functional state of the nervous system of a pilot
A79-53065

KULIKOV, O. B.
Studies of venous circulation in the crew of the Salyut-5 orbital station
N79-33791

KULIKOV, V. V.
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
A79-53163

L

LACELLE, P. L.
Studies of metabolism, function and mechanism of destruction of red cells
[AD-A070240] N79-33828

LACOMBE, E. H.
Application of an isolated heart model to investigate blood-oxygen delivery
A79-51112

LANYI, J. K.
Energy transduction in Halobacterium halobium
A79-53000

LASKIN, G. M.
The role of lesser circulation hemodynamic changes in pulmonary gas exchange
A79-53066

LE CROISSETTE, D. H.
Signal processing in ultrasound
A79-51039

LEBEDEVA, E. S.
The role of lesser circulation hemodynamic changes in pulmonary gas exchange
A79-53066

LEDEL, J. L.
The development of a digital video subtraction system for intravenous angiography
A79-51033

LEDBETTER, D. C.
Computer quantitation of coronary angiograms
A79-51030

LEVKOVICH, IU. I.
A cinematographic technique for investigating some aspects of visual recognition
A79-53067

LEWIS, C. H.
Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance
A79-52327

LEWIS, M. F.
Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators
A79-52276

LICHTMAN, M. A.
Studies of metabolism, function and mechanism of destruction of red cells
[AD-A070240] N79-33828

LINZER, M.
Ultrasonic tissue characterization II
[PB-296356/9] N79-33836

LIU, K.-C.
Minute tubular forms in soil
A79-51698

LIVINGSTONE, S. D.
Similarity in the number of lifespan heartbeats among non-hibernating homeothermic animals
A79-52281

LONGRIDGE, T. M., JR.
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view
[AD-A070231] N79-32832

LOUVIERE, A. J.
Man and machine design for space flight
A79-52696

LU, S. T.
Metabolic and physical scaling in microwave/radiofrequency bioeffects studies
[UR-3490-1561] N79-33831

M

MACOVSKI, A.
Iodine imaging using spectral analysis
A79-51034

MAHER, J. T.
Evidence for increased intrathoracic fluid volume in man at high altitude
A79-54266

MATZ, B. J.
Acoustic attitude orientation
N79-33816

MAYET, M. H.
Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
A79-54267

MC-CAHAN, G. R., JR.
Effect of fiber and dye degradation products /FDP/ on burn wound healing
A79-52277

MCCAHAN, G. R., JR.
Bioassay of thermal protection afforded by candidate flight suit fabrics
A79-52280

MCGRATH, D.
Orientation relative to the retina determines perceptual organization
A79-52539

MEESTER, G. T.
Clinical usefulness of radiopaque markers in left ventricular function
A79-51029

MEIER-KOLL, A.
Experimental and theoretical investigations concerning a frequency filter behavior of the human retina regarding electric pulse currents
[NASA-TM-75372] N79-33822

MEINDL, J. D.
Quantitative flow estimation with transcutaneous Doppler ultrasound
A79-51042

MELLSEN, S. B.
A general model for the transfer of vapour through clothed skin from liquid on and in clothing
[AD-A071577] N79-33853

MERTENS, H. W.
Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators
A79-52276

MERTZ, H.
Eye torsion in response to a tilted visual stimulus
A79-54254

MICHELS, D. B.
Radiographic comparison of human lung shape during normal gravity and weightlessness
A79-54269

MICHELSON, S. M.
Metabolic and physical scaling in microwave/radiofrequency bioeffects studies
[UR-3490-1561] N79-33831

MIKHAYLOV, V. M.
Control of vertical position after flights aboard the Salyut-4 orbital station
N79-33793

MILLER, H. A.
Noninvasive cardiovascular measurements
A79-51026

MIROLYUBOV, G. P.
Significance of the vibration component to the deleterious effect of impact accelerations
N79-33801

MISTRETTA, C. A.
Real-time computerized fluoroscopic cardiac imaging
A79-51035

MITCHELL, J. H.
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] A79-53286

MIXON, R. W.
Advanced transport operation effects on pilot scan patterns
A79-51098

MOKHOV, L. A.
Evaluation of oxidizability of air in closed areas
N79-33808

MONTELLESE, S.
Changes in critical duration during dark-adaptation
A79-54252

MORELLI, F.
Microbiological evaluation of the mobile biological isolator system
[NASA-CR-162293] N79-32822

MOROZOV, Y. A.
Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency
[CONF-780541-1] N79-32827

MOYERS, C. V.
A system for sterilizing objects
[NASA-CASE-KSC-11085-1] N79-33848

MURPHY, G. L.
Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions
[IAF PAPER 79-99] A79-53297

MURRAY, R. W.
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] A79-53294

MUTKE, H. G.
Equipment for surgical interventions and childbirth in weightlessness
[IAF PAPER 79-97] A79-53296

MYASNIKOV, V. I.
Control of vertical position after flights aboard the Salyut-4 orbital station
N79-33793

MYLES, W. S.
The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces
[AD-A069865] N79-33829

N

NAKAPKIN, O. A.
Automatic audiometry in the practice of flight-personnel examination
A79-51084

NAKAYA, M.
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
[IAF PAPER 79-76] A79-53285

NAZARENKO, A. I.
The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
A79-51113

NAZAROV, N. M.
Quality of water reclaimed from urine as related to pH of initial product
N79-33807

NEIDERHEISER, W.
Microbiological evaluation of the mobile biological isolator system
[NASA-CR-162293] N79-32822

NEKHAYEV, A. S.
Studies of venous circulation in the crew of the Salyut-5 orbital station
N79-33791

NELSEN, T. S.
Quantitative flow estimation with transcutaneous Doppler ultrasound
A79-51042

NELSON, C. V.
Application of an isolated heart model to investigate blood-oxygen delivery
A79-51112

NESTEROV, V. P.
Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite
N79-33795

NEUBERT, J.
Ultrastructural development of the vestibular system under conditions of simulated weightlessness
A79-52284
Ultrastructural development of the vestibular system of frog larvae in 0g simulation
[IAF PAPER 79-78] A79-53287

NEWGARD, P. M.
A study of noninvasive blood pressure measurement techniques
A79-51036

NIKONOVA, K. V.
Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency
[CONF-780541-1] N79-32827

NIXON, J. V.
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] A79-53286

NORGREN, R.
Non-invasive information on the P-R segment of the cardiac cycle - An assessment of the clinical potential of the electric and magnetic methods
A79-51045

NORTH, R. A.
Human performance in time-shared verbal and tracking tasks
[AD-A070275] N79-32831

NUDELMAN, S.
The development of a digital video subtraction system for intravenous angiography
A79-51033

O

OLTMAN, P. K.
Eye torsion in response to a tilted visual stimulus
A79-54254

OROURKE, J.
A spherical representation of a human body for visualizing movement
A79-53096

OSTER, C. A.
Review of unfolding methods used in the US and their standardization for dosimetry
[BNWL-SA-6503] N79-32828

OSTROFSKY, B.
Application of a structured decision process for proper inclusion of human resources in the design of a power unit support stand
[AD-A069978] N79-32840

OVITT, T. W.
The development of a digital video subtraction system for intravenous angiography
A79-51033

OWENS, J. M.
Human performance in time-shared verbal and tracking tasks
[AD-A070275] N79-32831

P

PALACIOS, I.
Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle
A79-51111

PANFILOV, V. E.
Comparison of physiological effects of head-down tilting and immersion on the human body
A79-52279

PANOV, A. N.
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
A79-52475

PEQUIGNOT, J. M.
Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
A79-54267

PETROFSKY, J. S.
Frequency and amplitude analysis of the EMG during exercise on the bicycle ergometer
A79-52022

PEYRIN, L.
Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
A79-54267

PIRONE, L. A.
Application of an isolated heart model to investigate blood-oxygen delivery
A79-51112

PLEASANT, L. G.
Publications of the planetary biology program for 1978: A special bibliography
[NASA-TM-80745] N79-33854

PLONSEY, R.
Fundamentals of electrical processes in the electrophysiology of the heart
A79-53532

POPP, R. L.
Clinical applications of new echocardiographic techniques
A79-51040

POWELL, W. J., JR.
Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle
A79-51111

POZHAROV, V. P.
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
A79-51114

PRIVITZER, E.
Refinement and validation of a three-dimensional head-spin model
[AD-A062502] N79-32826

PRUETT, R.
A nonlinear mapping approach to discrimination of sleep stages from the human electroencephalogram
N79-33817

Q

QUEVEDO, C. E.
Basic biomechanics equations for cardiovascular flow
A79-53534

R

RADCHENKO, N. D.
Fluid-electrolyte metabolism in the crew of Salyut-4
N79-33792

RAND, P. W.
Application of an isolated heart model to investigate blood-oxygen delivery
A79-51112

RANDALL, D. R.
The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress
[AD-A069952] N79-33845

RAPOPORT, I. A.
Role of n-aminobenzoic acid in repairing UV and gamma radiation damage
A79-53211

RASHEVSKAIA, D. A.
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
A79-52475

RASSOW, B.
The retinal resolving power measured by laser interference fringes
A79-54091

RATLIFF, F. R.
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology
[AD-A069983] N79-32833

RATLIFF, J. D.
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology
[AD-A069983] N79-32833

REINHARDT, B.
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
A79-52023

REMEK, V.
Communication problems of international crews
[IAF PAPER 79-A-23] A79-53425

REUL, H.
Theoretical foundations of cardiovascular processes
A79-53531

REVA, F. V.
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
N79-33809

REVZIN, A. M.
Development of electrophysiological indices of neurological toxicity for organosphate pesticides and depressant drugs
[AD-A070299] N79-33821

RIEDERER, S. J.
Real-time computerized fluoroscopic cardiac imaging
A79-51035

RIGGS, L. A.
Upper-velocity threshold for detection of movement
A79-52541

ROBINSON, J.
A study of noninvasive blood pressure measurement techniques
A79-51036

ROEHRIG, H.
The development of a digital video subtraction system for intravenous angiography
A79-51033

ROMANOV, V. S.
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation
N79-33804

ROSSO, J.
Eye torsion in response to a tilted visual stimulus
A79-54254

ROTH, H. J.
Cold water survival suits for aircrew
A79-52282

ROZOVA, E. V.
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
A79-51114
The effect of the reduction of inspired gas density on external respiration
A79-51115

RUBINSKAIA, N. L.
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
A79-52475

RUDOMETKIN, N. M.
Control of vertical position after flights aboard the Salyut-4 orbital station
N79-33793

RUSTAGI, J. S.
Estimation of rate constants in the Michaelis-Menten model
[AD-A070360] N79-32824

S

SACKS, E. J.
Medical barofunction testing of aviators with otorhinolaryngologic disease
A79-52285

SAGAR, K.
Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle
A79-51111

SAIKI, H.
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
[IAF PAPER 79-76] A79-53285

SAMARIN, G. I.
Effect of restricted activity on vestibular function
N79-33802

SANDERS, A. F.
The use of artificial signals during SONAR-watch
[IZF-1978-25] N79-32837
SANMARCO, M. E.
Computer quantitation of coronary angiograms
A79-51030
SAUER, R. L.
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] A79-53294
SAVIN, B. M.
Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency
[CONF-780541-1] N79-32827
SCACCHI, W.
Visual motion perception by intelligent systems
A79-52691
SCHELKOPF, J. D.
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] A79-53294
SCHMELZER, B.
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight
[IAF PAPER 79-80] A79-53288
SCHMIDT, E. V.
Noninvasive cardiovascular measurements
A79-51026
SCHNEIDER, M. F.
Bimodal relationship of human tremor and shivering on introduction to cold exposure
A79-52278
SCHROEDER, D. J.
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
[AD-A069375] N79-33819
SCHUBERT, E.
Influence of light adaptation on dark adaptation time for pattern recognition tasks
[FB-31] N79-33835
SCULLY, M. O.
A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles
A79-51038
SEID-GUSEYNOV, A. A.
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
N79-33797
SEIFERT, D. J.
Combined discrete network: Continuous control modeling of man-machine systems
[AD-A071574] N79-32842
SAINT: A combined simulation language for modeling man-machine systems
N79-33842
SEITHER, R.
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] N79-32823
SELZER, R. H.
Computer quantitation of coronary angiograms
A79-51030
SEREDENKO, M. M.
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
A79-51114
The effect of the reduction of inspired gas density on external respiration
A79-51115
SERGIYENKO, A. V.
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
N79-33798
SERRUYS, P. W.
Clinical usefulness of radiopaque markers in left ventricular function
A79-51029
SEVERIN, G. I.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
A79-53486
SHALIT, B.
Shalit Perceptual Organization and Reduction Questionnaire (SPORQ). Report 2: Characteristics and reliability
[FOA-C-55031-H6] N79-32836
SHANDALA, M. G.
Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency
[CONF-780541-1] N79-32827
SHARPE, L. T.
Changes in critical duration during dark-adaptation
A79-54252
SHATUNINA, T. P.
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
N79-33809
SHAW, C. G.
Real-time computerized fluoroscopic cardiac imaging
A79-51035
SHEFTER, L. I.
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
N79-33797
SHIKHODYROV, V. V.
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation
N79-33804
SHUINOVA, N. Y.
Evaluation of oxidizability of air in closed areas
N79-33808
SHULZHENKO, E. B.
Comparison of physiological effects of head-down tilting and immersion on the human body
A79-52279
SIEGEL, A. I.
A survey of Applied Psychological Services' models of the human operator
N79-33839
SIGMAN, E.
Eye torsion in response to a tilted visual stimulus
A79-54254
SIMEONI, M.
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
A79-52023
SIMONOV, Y. Y.
Effect of impact accelerations on chemical resistance of rat erythrocytes
N79-33811
SIMSON, M. B.
Temporal relation between onset of cell anoxia and ischemic contractile failure
A79-52895
SINYAK, Y. Y.
Quality of water reclaimed from urine as related to pH of initial product
N79-33807
SMITH, B. A.
Undergraduate pilot training: Visual discrimination pretraining for land task
[AD-A068141] N79-33844
SMOLENSKY, M. H.
Medical barofunction testing of aviators with otorhinolaryngologic disease
A79-52285
SMOORENBURG, G. F.
Effects of acute noise traumata on whole-nerve and single-unit activity
[IZF-1978-23] N79-32829
Tentative evaluation of annoyance caused by noise from gunfire
[IZF-1978-21] N79-32843
SOKOLOV, Y. A.
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
N79-33797
SOLOVEV, A. A.
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
A79-53163

SOLOVEV, A. I.
Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics
A79-51118

SOLOVEVA, I. B.
Psychological training - One of the most important factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] A79-53426

SONG, D.
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] N79-32823

SPASSKII, Y. A.
Energy expenditures of man during long exposure to a periodically changing atmosphere
N79-33799

SPEED, W. C.
A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles
A79-51038

STAMPFL, P.
Thoughts about man-machine interrelations in space flights applied to Spacelab missions
[IAF PAPER 79-95] A79-53295

STAVE, A. M.
The influence of low frequency vibration on pilot performance /as measured in a fixed base simulator/
A79-52326

STEENBERGEN, C.
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
N79-32825

STELMAKH, M. F.
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
A79-53163

STRIEB, M. I.
Visual performance modeling in the human operator simulator
N79-33840

STUPAKOV, G. P.
Significance of the vibration component to the deleterious effect of impact accelerations
N79-33801

SUDOH, M.
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
[IAF PAPER 79-76] A79-53285

SUIRIDKINA, L. P.
Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
N79-33813

SUSLOVA, O. N.
Adaptive optimization of exchange of gases in plants in a sealed phytotron
N79-33806

SYLVESTER, J. T.
Evidence for increased intrathoracic fluid volume in man at high altitude
A79-54266

SYVERTSON, C. A.
Aerospace highlights and potential medical applications
A79-51027

T

TARANENKO, Y. N.
Vertical orientation of man during 5-day antiorthostatic hypokinesia (-4, -8 and -12 deg head down position)
N79-33810

TAYLOR, D. M.
Microbiological evaluation of the mobile biological isolator system
[NASA-CR-162293] N79-32822

TER-POGOSSIAN, M. M.
Computerized positron emission tomography /PET/ for the assessment of myocardial integrity
A79-51031

TERRY, S. C.
A study of noninvasive blood pressure measurement techniques
A79-51036

TIETZ, J. D.
A comparison of oculomotor and motion parallax cues of egocentric distance
A79-54253

TIGRANIAN, R. A.
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
A79-52475

TIGRANYAN, R. A.
Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite
N79-33795

Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
N79-33796

TOLTZIS, H.
A spherical representation of a human body for visualizing movement
A79-53096

TRATZ, W. M.
Microbiological evaluation of the mobile biological isolator system
[NASA-CR-162293] N79-32822

TRAYBAR, J. J.
Workload and the certification of helicopters for IFR operation
[AD-A072758] N79-33850

TRIPP, J.
Non-invasive information on the P-R segment of the cardiac cycle - An assessment of the clinical potential of the electric and magnetic methods
A79-51045

TRIPP, J. H.
The theory of the magnetocardiogram
A79-53533

TRUSHINSKII, Z. K.
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
N79-33809

TSVETKOV, A. A.
Studies of venous circulation in the crew of the Salyut-5 orbital station
N79-33791

U

UTIDJIAN, H. M. D.
Feasibility of an epidemiological study of workers occupationally exposed to high voltage electric fields in the electric power industry
[EPRI-EA-1020] N79-33832

V

VACKAR, M. I.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
A79-53486

VAN VOLLENHOVEN, E.
Theoretical foundations of cardiovascular processes
A79-53531

VANHEUSDEN, E.
Effects of acute noise traumata on whole-nerve and single-unit activity
[IZF-1978-23] N79-32829

VARFOLOMEEV, V. A.
Tremometry as a method of evaluating the functional state of the nervous system of a pilot
A79-53065

VASILEVA, S. V.
Role of n-aminobenzoic acid in repairing UV and gamma radiation damage
A79-53211

VATULYA, N. M.
Fluid-electrolyte metabolism in the crew of Salyut-4
N79-33792

VERIGO, V. V.
Some of the problems involved in planning biological experiments
N79-33805

VYTCHIKOVA, M. A.
Energy expenditures of man during long exposure to a periodically changing atmosphere
N79-33799

W

WACHTEL, T. L.
Effect of fiber and dye degradation products /FDP/ on burn wound healing
A79-52277
Bioassay of thermal protection afforded by candidate flight suit fabrics
A79-52280
WAGENAAR, W. A.
The use of artificial signals during SONAR-watch
[IZF-1978-25] N79-32837
WALLER, M. C.
Models of human operators in vision dependent tasks
[NASA-CP-2103] N79-33838
WARNKE, C. T.
A study of noninvasive blood pressure measurement techniques
A79-51036
WEAVER, C. S.
A study of noninvasive blood pressure measurement techniques
A79-51036
WEBBER, K. T.
The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations
A79-52894
WEED, R. I.
Studies of metabolism, function and mechanism of destruction of red cells
[AD-A070240] N79-33828
WEGMANN, H. M.
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] A79-53291
WELCH, A. J.
Measurements in the laser irradiated eye
[AD-A069842] N79-33825
WEST, J. B.
Radiographic comparison of human lung shape during normal gravity and weightlessness
A79-54269
WEWERINKE, P. H.
Performance and workload analysis of inflight helicopter missions
[NLR-MP-77013-U] N79-32834
A theoretical and experimental analysis of the outside world perception process
[NLR-MP-78020-U] N79-32835
WEYER, D.
Undergraduate pilot training: Visual discrimination pretraining for land task
[AD-A068141] N79-33844
WHEELER, G. L.
Minimum sea surface temperatures and associated survival times
[AD-A070162] N79-33824
WHINNERY, J. E.
Technique for simulating G-induced tunnel vision
A79-52286
WHITE, G. E.
Cold water survival suits for aircrew
A79-52282
WIKSWO, J. P., JR.
Clinical magnetocardiography
A79-51044
WINGET, C. M.
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] A79-53291
WISSMAN, D.
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology
[AD-A069983] N79-32833
WISWELL, R. A.
Time course of O2-pulse during various tests of aerobic power
A79-52024
WOLF, J. J.
A survey of Applied Psychological Services' models of the human operator
N79-33839
WOLFE, C.
Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] N79-33788
WOOD, G. A.
Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time
A79-52025
WOODRUFF, R. R.
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view
[AD-A070231] N79-32832
WRIGHT, E. E.
A system for sterilizing objects
[NASA-CASE-KSC-11085-1] N79-33848

Y

YAKIMOVA, I. V.
Quality of water reclaimed from urine as related to pH of initial product
N79-33807
YANG, J.
Estimation of rate constants in the Michaelis-Menten model
[AD-A070360] N79-32824
YANG, W.-J.
Theoretical foundations of cardiovascular processes
A79-53531
Equations on biotransport mechanisms
A79-53535
YEGOROV, I. A.
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
N79-33796
YEIN, F.
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] N79-32823
YOUNG, M. E.
Human memory. A bibliography with abstracts
[NTIS/PS-79/0640/7] N79-33847
YOUNG, R. S.
Publications of the planetary biology program for 1978: A special bibliography
[NASA-TM-80745] N79-33854

Z

ZAKHAROVA, N. S.
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
N79-33797
ZINCHENKO, V. P.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
A79-53486
ZWIEBEL, W.
Real-time computerized fluoroscopic cardiac imaging
A79-51035

1. Report No.
NASA SP-7011 (201)

2. Government Accession No.

3. Recipient's Catalog No.

4. Title and Subtitle
AEROSPACE MEDICINE AND BIOLOGY
A Continuing Bibliography (Supplement 201)

5. Report Date
January 1980

6. Performing Organization Code

7. Author(s)

8. Performing Organization Report No.

9. Performing Organization Name and Address
National Aeronautics and Space Administration
Washington, D. C. 20546

10. Work Unit No.

11. Contract or Grant No.

12. Sponsoring Agency Name and Address

13. Type of Report and Period Covered

14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This bibliography lists 191 reports, articles, and other documents introduced into the NASA scientific and technical information system in December 1979.

17. Key Words (Suggested by Author(s))
Aerospace Medicine
Bibliographies
Biological Effects

18. Distribution Statement
Unclassified - Unlimited

19. Security Classif. (of this report)
Unclassified

20. Security Classif. (of this page)
Unclassified

21. No. of Pages
70

22. Price*
E03
$6.25 HC

*For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1980

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to ten special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley
COLORADO
University of Colorado, Boulder
DISTRICT OF COLUMBIA
Library of Congress
GEORGIA
Georgia Institute of Technology, Atlanta
ILLINOIS
The John Crerar Library, Chicago
MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge
MISSOURI
Linda Hall Library, Kansas City
NEW YORK
Columbia University, New York
PENNSYLVANIA
Carnegie Library of Pittsburgh
WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library
COLORADO
Denver Public Library
CONNECTICUT
Hartford Public Library
MARYLAND
Enoch Pratt Free Library, Baltimore
MASSACHUSETTS
Boston Public Library
MICHIGAN
Detroit Public Library
MINNESOTA
Minneapolis Public Library
MISSOURI
Kansas City Public Library
St. Louis Public Library
NEW JERSEY
Trenton Public Library
NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library
OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library
OKLAHOMA
Oklahoma County Libraries, Oklahoma City
TENNESSEE
Memphis Public Library
TEXAS
Dallas Public Library
Fort Worth Public Library
WASHINGTON
Seattle Public Library
WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 750 Third Avenue, New York, New York, 10017.

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy or microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESRO/ELDO Space Documentation Service, European Space Research Organization, 114, av. Charles de Gaulle, 92-Neuilly-sur-Seine, France.

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

U.S.MAIL

NASA

POSTMASTER: If Undeliverable (Section 158
Postal Manual) Do Not Return

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP-7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP-7037	AERONAUTICAL ENGINEERING Engineering, design, and operation of aircraft and aircraft components	Monthly
NASA SP-7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP-7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP-7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP-7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Washington, D.C. 20546

7011 (202)

NASA

Aerospace Medicine and Biology
1979 Cumulative
Index

NASA SP-7011 (202)
January 1980

NEWARK PUBLIC LIBRARY

MAY 16 1980

U. S. GOVT. PUBS.
DEPOSITORY 376

National Aeronautics and
Space Administration

y Aerospace Medicine & Biology
e & Biology Aerospace Medicine &
Medicine & Biology Aerospace M
rospace Medicine & Biology Aero
ology Aerospace Medicine & Biol
icine & Biology Aerospace Medic
ace Medicine & Biology Aerospa
y Aerospace Medicine & Biology
e & Biology Aerospace Medicine &
Medicine & Biology Aerospace M
rospace Medicine & Biology Aero
ology Aerospace Medicine & Biol

NAS 1.21:

SUPPLEMENTS COVERED IN THIS INDEX

Document	*Page Range*	*Date*	*Coverage*
NASA SP-7037(190)	1-34	February 1979	January 1979
NASA SP-7037(191)	35-59	March 1979	February 1979
NASA SP-7037(192)	61-95	April 1979	March 1979
NASA SP-7037(193)	97-125	May 1979	April 1979
NASA SP-7037(194)	127-157	June 1979	May 199
NASA SP-7037(195)	159-179	July 1979	June 1979
NASA SP-7037(196)	181-197	August 1979	July 1979
NASA SP-7037(197)	199-224	September 1979	August 1979
NASA SP-7037(198)	225-249	October 1979	September 1979
NASA SP-7037(199)	251-263	November 1979	October 1979
NASA SP-7037(200)	265-292	December 1979	November 1979
NASA SP-7037(201)	293-319	January 1980	December 1979

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by Informatics Information Systems Company.

SPECIAL NOTICE

The abstract sections of the monthly supplements of *Aerospace Medicine and Biology* can be bound separately. Individual abstracts can be located readily by means of the page numbers given at each entry, e.g., p0239 N79-26762. To assist the user in binding Supplements SP-7011(190) through SP-7011(201), a title page is included in the back of this Cumulative index.

NASA SP-7011 (202)

A CUMULATIVE INDEX
TO
A CONTINUING BIBLIOGRAPHY ON

AEROSPACE MEDICINE
AND BIOLOGY

This Cumulative Index supersedes the indexes contained in supplements [SP-7011 (190) through SP-7011 (201)], published by NASA during 1979.

NASA Scientific and Technical Information Branch 1980
National Aeronautics and Space Administration
Washington, DC

This Index is available from the National Technical Information Service (NTIS), Springfield, Virginia 22161 for $11.00 domestic; $22.00 foreign.

INTRODUCTION

WHAT THIS CUMULATIVE INDEX IS

This publication is a cumulative index to the abstracts contained in NASA SP-7011(190) through NASA SP-7011(201) of *Aerospace Medicine and Biology: A Continuing Bibliography*. NASA SP-7011, by means of supplements, serves as a current abstracting and announcement journal for references on bioscience and biotechnology. It has been compiled through the cooperative efforts of the American Institute of Aeronautics and Astronautics (AIAA), and the National Aeronautics and Space Administration (NASA). Entries prepared by the two contributing organizations are identified as follows:

1. NASA entries by their *STAR* accession numbers (N79-10000 series)
2. AIAA entries by their *IAA* accession numbers (A79-10000 series)

HOW THIS CUMULATIVE INDEX IS ORGANIZED

This Cumulative Index includes a subject index, a personal author index, and a corporate source index.

HOW TO USE THE SUBJECT INDEX

Two types of cross-references appear in the subject index:

1. Use (U) references indicate that the subject term is not "postable," i.e., not a valid term, and that the following term or terms are used instead. For example:

   DOSE
   U DOSAGE
   AIRLINERS
   U COMMERCIAL AIRCRAFT
   U PASSENGER AIRCRAFT

2. Narrower Term (NT) references refer the user to more specific headings in the same subject area, under which additional material on the subject may be found. For example:

   FATIGUE (BIOLOGY)
   NT AUDITORY FATIGUE
   NT FLIGHT FATIGUE
   NT MUSCULAR FATIGUE

In addition, a searcher may use the title or title and title extension in the index to narrow further his quest for particular items, this is because subject terms can readily include more than one class of document. For example:

BIOLOGICAL EFFECT
Vibratory force effect upon
biological systems, particularly
human organism.
Biological effect of cosmic and
solar radiations on human
body at high altitudes.

illustrates a case where two references on different topics are listed under the same subject term.

HOW TO USE THE PERSONAL AUTHOR INDEX

All personal authors used in the abstract-section citations in the individual Supplements appear in the index. Differences in translation schemes may require multiple searching of the index for variants of an author's name. For example:

EMELIANOV, M. D.
and
YEMELYANOV, M. D.

HOW TO USE THE CORPORATE SOURCE INDEX

The corporate source index entries are abridged versions of the corporate sources used in the abstract-section citations in the individual Supplements. The corporate source supplementary (organizational component) does not appear in the index. For example:

NEW MEXICO STATE UNIV., LAS CRUCES. DEPT. OF BIOLOGY.	(Source citation entry)
NEW MEXICO STATE UNIV., LAS CRUCES.	(Source index entry)

IDENTIFICATION OF DESIRED SUPPLEMENT

The abstract and descriptive cataloging for any accession number selected from the indexes may be found in the appropriate Supplement. The page-number range of each Supplement appears on the inside front cover of this index. Once the range of page numbers containing the selected accession number is located in the second column, the desired Supplement number will be found in the first column. For example:

Page 191 will be found in Supplement 196.

AVAILABILITY OF DOCUMENTS

Information concerning the availability of documents announced in *Aerospace Medicine and Biology* supplements is found in the introduction to the most currently issued monthly supplement.

TABLE OF CONTENTS

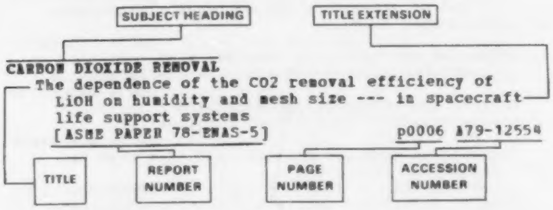
Page
Subject Index A-1
Personal Author Index B-1
Corporate Source Index C-1

SUBJECT INDEX

AEROSPACE MEDICINE AND BIOLOGY / *a continuing bibliography* JANUARY 1980

1979 Cumulative Index

Typical Subject Index Listing


SUBJECT HEADING
TITLE EXTENSION
CARBON DIOXIDE REMOVAL
The dependence of the CO2 removal efficiency of LiOH on humidity and mesh size --- in spacecraft life support systems
[ASME PAPER 78-ENAS-5] p0006 A79-12554
TITLE
REPORT NUMBER
PAGE NUMBER
ACCESSION NUMBER

The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

A-7 AIRCRAFT
- A7 training effectiveness through performance analysis --- carrier landing instruction [AD-A056230] p0031 N79-11728

ABILITIES
- Time-sharing is not a unitary ability [AD-A056632] p0019 N79-10739
- Psychophysiological effects of aging: Developing a functional age index for pilots. 2: Taxonomy of psychological factors [FAA-AM-78-16] p0054 N79-13685

ABIOGENESIS
- On the reality of extraterrestrial biogenesis [IAF PAPER 78-A-51] p0003 A79-11344
- Lifecloud: The origin of life in the universe --- Book p0061 A79-17123
- Porphyrin-like compounds genesis under simulated abiotic conditions p0099 A79-22078
- Photochemical synthesis of amino acids from aqueous solutions of ethyl alcohol, ammonia/nitrogen under varied conditions p0105 A79-24520
- HCN did not condense to give heteropolypeptides on the primitive earth p0133 A79-26542
- Prebiotic nucleotide oligomerization in a fluctuating environment - Effects of kaolinite and cyanamide p0162 A79-29938
- A review of recent concepts of the problem of the origin of life p0221 A79-36041
- Origin of life; Proceedings of the Second ISSOL Meeting and Fifth ICOL Meeting, Kyoto, Japan, April 5-10, 1977 p0203 A79-37919
- Prebiotic molecular evolution p0203 A79-37928
- Synthesis of amino acids under primitive earth conditions in the presence of clay p0203 A79-37930
- Prebiotic condensation reactions using cyanamide p0203 A79-37932
- Experimental approach to the chemical evolution in the primeval sea. I - Formation of amino acids and amino acid polymers in modified sea mediums p0203 A79-37935
- Prebiotic synthesis of amino acids by carboxylation of amines in oxidative atmosphere p0203 A79-37937
- Prebiotic condensation of oligonucleotide p0204 A79-37945
- An approach to the origin of self-replicating system. I - Intermolecular interactions p0204 A79-37948
- Quantitative aspects of the effect of weak interaction during chemical evolution p0204 A79-37959
- Coacervate drops as a model for precellular structures p0204 A79-37960
- Coacervate drops - Primitive forms of precells p0204 A79-37962
- Takeover mechanisms and early biochemical evolution p0205 A79-37965
- Some characteristic features of the origin and evolution of the amino acid composition of proteins - A theoretical consideration p0206 A79-37973
- Nucleotide-binding site data and the origin of the genetic code p0206 A79-37974
- The study of the origin of life - Results and prospects p0206 A79-37981
- The importance of the physical laws on the origin and evolution of life p0207 A79-37983
- A critical assessment of the origin of life p0207 A79-37985
- Inverse assimilation - A general principle of evolution of planetary surfaces p0207 A79-37989
- A proposal concerning the origin of life on the planet earth p0253 A79-45641
- Polymers produced by heating an amino acid mixture in sea water enriched with transition elements p0254 A79-46461
- Exobiology and the origin of life --- organic compounds in planetary atmospheres and interstellar matter [NASA-CR-157988] p0081 N79-14782

ABNORMALITIES
- NT PSYCHOSES

ABSORBENTS
- Molecular sieve oxygen generating system - The argon question /A brief review/ --- effects of 5 percent Ar in breathing gas p0274 A79-49994
- Human compatibility testing of a 2-man molecular sieve oxygen generator [AD-A058248] p0053 N79-12710
- Environmental test and evaluation of a molecular sieve on-board oxygen generation system [AD-A061531] p0125 N79-17559

ABSORBERS (EQUIPMENT)
- Electrochemically regenerable carbon dioxide absorber [NASA-CR-152099] p0262 N79-29794

ABSORPTION BANDS
- U ABSORPTION SPECTRA

ABSORPTION SPECTRA
- Photochemical transformations of the visual pigment rhodopsin p0181 A79-32319

ABSORPTION SPECTROSCOPY
- Iodine imaging using spectral analysis --- radiography for visualization of small blood vessels p0294 A79-51038

ABUNDANCE
- The evolution of the environment and its influence on the evolution of life

p0099 A79-22076
Abundance of organic compounds photochemically produced in the atmospheres of the Outer Planets
p0210 A79-39075

ACCELERATION (PHYSICS)
NT ANGULAR ACCELERATION
NT HIGH ACCELERATION
NT HIGH GRAVITY ENVIRONMENTS
NT IMPACT ACCELERATION
A numerical method of film analysis with differentiation --- curve fitting with harmonic analysis
p0061 A79-17585
Evaluation of assisted positive-pressure breathing on +Gz tolerance
p0266 A79-47336
Helmet weight simulator
[NASA-CASE-LAR-12320-1] p0223 N79-25761
Animal endurance to recurrent impact accelerations
p0246 N79-27833
Frequency response of cardiovascular regulation in canines to sinusoidal acceleration at frequencies below 1 Hz (basis for biodynamic modeling)
p0286 N79-31915
A head injury model
p0286 N79-31918

ACCELERATION STRESSES (PHYSIOLOGY)
NT CENTRIFUGING STRESS
Blood volume and cardiorespiratory responses to lower body negative pressure
p0010 A79-12864
Regional coronary blood flow at rest and during high sustained +Gz in a miniature swine with subclinical, ischemic, coronary heart disease due to coronary stenosis
p0010 A79-12865
Development of space biology experiments for the Space Shuttle - A student's perspective
[AAS PAPER 78-134] p0099 A79-21252
Cardiovascular regulatory response to lower body negative pressure following blood volume loss
p0101 A79-23470
Mitral prolapse and acceleration --- in aircraft pilots
p0103 A79-23951
Central and cerebral hemodynamics and metabolism of the healthy man during head-down tilting
p0127 A79-24634
Head acceleration and psychomotor performance --- related to crash accident survival rates
p0135 A79-27559
Cardiac responses of dogs to nonsynchronous and heart synchronous whole-body vibration
p0162 A79-29728
Oculogravic illusion in response to straight-ahead acceleration of a CF-104 aircraft
p0164 A79-30660
Cerebral accident subsequent to G-force loading - A case report
p0165 A79-30664
Positive pressure breathing as a protective technique in +Gz acceleration
p0201 A79-37132
Motion sickness in cats - A symptom rating scale used in laboratory and flight tests
p0202 A79-37711
Concurrent loss of consciousness and sino-atrial block during +Gz stress
p0202 A79-37714
Thermoregulation in unrestrained rats during and after exposure to 1.5-4 G
p0227 A79-41185
Determination of cerebral and neck subcutaneous tissue PO2 with 3 and 4 +Gz in M. mulatta
p0234 A79-43205
+Gz tolerance correlation with clinical parameters
p0235 A79-43213
Heat and acute dehydration effects on acceleration response
p0237 A79-43705
Reproducibility of +Gz tolerance testing
p0267 A79-47337
Modeling human tracking performance in a high G-stress environment
p0269 A79-48012
Functional anatomy of vertebral column with reference to load bearing areas
p0272 A79-49732
Biodynamics of aviation stresses on the vertebral column
p0272 A79-49733
Assessment of spinal disabilities in relation to flying
p0272 A79-49736
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/
[IAF PAPER 79-87] p0302 A79-53290
Cardiac arrhythmia following postimmersion +G sub z accelerations
p0015 N79-10710
A method of evaluating the pupillary reaction to vestibular stimuli
p0016 N79-10717
Effect of accelerations combined with radiation on occurrence of gene mutations in the drosophila
p0016 N79-10720
Medical qualification procedures for hazardous-duty aeromedical research
p0026 N79-11695
Engineering test and evaluation during high G. Volume 3: Anti-G suits
[AD-A059122] p0052 N79-12706
Role of vestibular system in behavior of animals submitted to prolonged slow rotation
p0074 N79-14734
Modeling the effects of high-G stress on pilots in a tracking task
p0087 N79-15593
Specialized physiological studies in support of manned space flight
[NASA-CR-151876] p0111 N79-16542
Stress factors on pilot performance. A bibliography with abstracts
[NTIS/PS-78/1289/4] p0145 N79-18589
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819
A lower body negative pressure box for +Gz simulation in the upright seated position
[AD-A069326] p0259 N79-28868
Third Symposium on Motion Sickness
p0313 N79-33814

ACCELERATION TOLERANCE
Relaxed +Gz tolerance in healthy men - Effect of age
p0067 A79-18956
Hemodynamic indices under orthostatic and vestibular effects
p0098 A79-20692
Incapacitation time for +Gz-induced loss of consciousness
p0102 A79-23475
Cardiac reactions in tests on the wearing of the Yankee Escape System harness during minus G accelerations in the z direction
p0103 A79-23953
Cardiorespiratory assessment of decongestant-antihistamine effects on altitude, +Gz, and fatigue tolerances
p0127 A79-24628
Tolerance of domestic fowl to high sustained +Gz
p0127 A79-24630
Effects of brief exposure of domestic fowl to very intense acceleration fields
p0127 A79-24631
Better definition of eye to aortic valve distance in high acceleration cockpit /HAC/ seating geometries
p0183 A79-33632
Pathophysiology of overloads: Bibliography of Soviet publications --- Russian book
p0200 A79-36385
Physiological effect of high, sustained +Gz forces on man
p0229 A79-41711
Prophylactic effects of intermittent acceleration against physiological deconditioning in simulated weightlessness
p0229 A79-41712
Influence of the ambient acceleration field upon acute acceleration tolerance in chickens
p0230 A79-41715
+Gz tolerance correlation with clinical parameters
p0235 A79-43213

Heat and acute dehydration effects on acceleration response p0237 A79-43705

Evaluation of assisted positive-pressure breathing on +Gz tolerance p0266 A79-47336

Delayed effects of alcohol ingestion on + Gz tolerance p0272 A79-49730

Effect of microwave radiation on the resistance of rats to transverse acceleration loading p0275 A79-50496

Modification of cardiac function by synchronized oscillating acceleration p0278 A79-50908

Technique for simulating G-induced tunnel vision p0299 A79-52286

An examination of statistical impact acceleration injury prediction models based on -Gx accelerator data from subhuman primates [AD-A057276] p0026 N79-11690

Molecular determinants for the prediction and survival of ischemic anoxic stress pathology p0027 N79-11700

Effect of age on relaxed +G sub z tolerance of aircrewmen p0030 N79-11719

Effects of hyperhydration on human endurance of orthostatic and LBNP tests p0072 N79-14721

Balance training of the equilibrium organ and its effect on flight strategy p0242 N79-27074

The effect of a reclined sitting position on psychomotor performance during exposure to high, sustained +Gsub z acceleration [FPRC-1362] p0248 N79-27856

The effect of acceleration and seat back angle on performance of a reaction time task [FPRC-1364] p0248 N79-27857

The influence of seat back angle on acceleration tolerance [FPRC-1365] p0248 N79-27858

A lower body negative pressure box for +Gz simulation in the upright seated position [AD-A069326] p0259 N79-28868

A subhuman primate restraint system [AD-A069607] p0279 N79-30915

Models and Analogues for the Evaluation of Human Biodynamic Response, Performance and Protection --- conferences, human tolerance of acceleration, vibration, and shock [AGARD-CP-253] p0284 N79-31901

Mathematical modeling of arterial oxygen saturation and eye-level blood pressure during +G sub Z stress p0286 N79-31916

Unsteady-state response of the vascular system to transient and sustained aerospace acceleration profiles p0286 N79-31917

Some human responses to repeated +G sub z pulses p0288 N79-31928

External respiration and gas exchange reactions of man during rotation on a short-arm centrifuge p0313 N79-33812

ACCIDENT INVESTIGATION
NT AIRCRAFT ACCIDENT INVESTIGATION

ACCIDENT PREVENTION
Investigation of techniques to reduce electrostatic discharge susceptibility of EFD's containing plastic plugs [AD-A059982] p0093 N79-15638

Three decades of USAF efforts to reduce human error accidents, 1947-1977 p0290 N79-31943

Human factors in production and prevention of aircraft accidents due to disorientation in flight p0291 N79-31952

ACCIDENT PRONENESS
Current role of alcohol as a factor in civil aircraft accidents p0136 A79-27561

ACCIDENTS
NT AIRCRAFT ACCIDENTS
NT AUTOMOBILE ACCIDENTS
NT BIRD-AIRCRAFT COLLISIONS

ACCLIMATIZATION
NT ALTITUDE ACCLIMATIZATION
NT COLD ACCLIMATIZATION
NT HEAT ACCLIMATIZATION

ACCOMMODATION
NT VISUAL ACCOMMODATION

ACCUMULATORS
NT SOLAR COLLECTORS

ACETIC ACID
Indomethacin-antihistamine combination for gastric ulceration control [NASA-CASE-ARC-11118-2] p0077 N79-14755

ACETYL COMPOUNDS
Effects of aeration on formation and localization of the acetyl coenzyme A synthetases of Saccharomyces cerevisiae p0162 A79-30125

Comparative study of acetylcholinesterase inactivation in warm-blooded animals and insects with substituted vinyl phosphates p0121 N79-17527

ACHIEVEMENT
A construct validation of adaptive achievement testing [AD-A063148] p0173 N79-20742

ACID BASE EQUILIBRIUM
Analysis of Pco2 differences during rebreathing due to slow pH equilibration in blood p0067 A79-18958

Acid-base curve nomogram for chimpanzee blood and comparison with human blood characteristics p0133 A79-27105

Acid-base homeostasis in the human system [NASA-CR-160222] p0212 N79-24640

ACIDS
NT ACETIC ACID
NT AMINO ACIDS
NT ASCORBIC ACID
NT DEOXYRIBONUCLEIC ACID
NT FATTY ACIDS
NT GLUTAMINE
NT HYDROCYANIC ACID
NT LEUCINE
NT NUCLEIC ACIDS
NT PEPTIDES
NT PROTOPROTEINS
NT RIBONUCLEIC ACIDS
NT SULFURIC ACID
NT THYMIDINE
NT TRYPTOPHAN

ACOUSTIC GENERATORS
U SOUND GENERATORS

ACOUSTIC MEASUREMENTS
NT NOISE MEASUREMENT
Techniques of cumulative quantitative characterization of the thorax using audiosonic methods p0240 N79-26769

ACOUSTIC PROPERTIES
NT ACOUSTIC SCATTERING
Guidelines for designing machines and devices for acoustic vibrations from the point of view of the physiological and psychological properties of the human organism p0236 A79-43608

Techniques of cumulative quantitative characterization of the thorax using audiosonic methods p0240 N79-26769

ACOUSTIC RADIATION
U SOUND WAVES

ACOUSTIC SCATTERING
Diffraction-based characterization of biological tissue with ultrasound --- acoustic scattering from liver tissue p0054 N79-13683

An investigation of the pulse-scatter imaging technique for medical ultrasonic imaging and tissue characterization p0211 N79-24628

ACOUSTIC SIMULATION
Startle reactions to simulated sonic booms - Influence of habituation, boom level and background noise p0097 A79-20502

ACOUSTIC VIBRATIONS
U SOUND WAVES

ACOUSTICS
NT BIOACOUSTICS
NT PSYCHOACOUSTICS

Overall loudness of steady sounds according to theory and experiment
[NASA-RP-1001] N79-25753
Acoustic attitude orientation
p0314 N79-33816

ACOUSTO-OPTICS
Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements
p0294 A79-51037

ACQUISITION
NT DATA ACQUISITION
NT TARGET ACQUISITION

ACRYLIC RESINS
Trace contaminant studies of HSC adsorbent
[NASA-CR-160148] p0177 N79-21769

ACTH
U ADRENOCORTICOTROPIN (ACTH)

ACTINIDE SERIES
NT AMERICIUM 241

ACTIVATED CARBON
Mechanisms of activated carbon degradation by perspiration
[AD-A059872] p0080 N79-14777

ACTIVITY (BIOLOGY)
An inductively powered telemetry system for temperature, EKG, and activity monitoring
p0229 A79-41424
Synaptosomal uptake of hypothalamic monoamines and recovery of pituitary-adrenal activity following medial forebrain bundle lesions in rats
p0275 A79-50232
Determination of a generalized output index of a biological experiment after multiple tests
p0076 N79-14744
Suppression of the immune response by ultrasound
p0142 N79-18560
Observability of electrical heart activity studied with singular value decomposition
[TH-78-E-81] p0144 N79-18584
Changes in calcium ion activity due to magnetization of solution as the possible mechanism of biological action of magnetic fields
p0173 N79-20741
Biologically active short-chain peptides
[FOA-C-40063-C1] p0261 N79-29785
Immunobiological reactivity of the body under hyperbaric and hypobaric conditions
p0310 N79-33790
Effect of restricted activity on vestibular function
p0312 N79-33802

ACUITY
NT HYPEROPIA
NT VISUAL ACUITY

ADAPTATION
NT ALTITUDE ACCLIMATIZATION
NT COLD ACCLIMATIZATION
NT DARK ADAPTATION
NT HEAT ACCLIMATIZATION
NT LIGHT ADAPTATION
NT RETINAL ADAPTATION
On the man's adaptation to the operator's work under stressful conditions of space flight
[IAF PAPER 78-A-56] p0003 A79-11345
Voluntary movement control and adaptation to cross-coupled stimulation --- motion sickness avoidance
p0009 A79-12860
Influence of high-altitude conditions on the metabolism of nucleic acids and proteins in the thymocytes of the rat
p0069 A79-19425
3'5'-cyclic AMP content in rat tissues during hypoxic adaptation and gamma irradiation
p0069 A79-19426
Structure of biorhythms as one of the criteria for physiological adaptability of the human organism
p0097 A79-20653
Cyclic nucleotides and adaptation of the organism --- Russian Book
p0133 A79-26500
Early cardiovascular adaptation to simulated zero gravity
p0162 A79-29727
Paradoxical reaction of some intracellular antioxidative defense mechanisms during adaptation of the organism to hypoxia
p0165 A79-30696
Energetic aspects of adaptation --- Russian book on metabolic responses to stress
p0167 A79-31906
Some forms of adaptation to extreme influences in the blood system
p0256 A79-46679
Ecological physiology of animals. I - General ecological physiology and physiology of adaptations --- Russian book
p0275 A79-50474
The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia
p0296 A79-51116
Reciprocal interaction between the photopic and scotopic systems of the visual analyzer in man
p0296 A79-51327
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
[IAF PAPER 79-76] p0301 A79-53285
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] p0301 A79-53286
Problems of human adaption to spaceflight
p0157 N79-19985
Medical science in Siberia: Oxygen exchange in the Far North
[NASA-TM-75391] p0211 N79-24630
Possibilities of preventing adverse reactions in simulating the acute period of adaptation to weightlessness
p0244 N79-27825

ADAPTIVE CONTROL
NT LEARNING MACHINES
Models for automated motor skills training --- computer controlled adaptive instruction
p0035 A79-13182
Communications management by the remote system - An adaptive approach --- modeling of RPV autopilot/operator systems
p0041 A79-13226
How does the saccadic eye movement controller adapt for pathological states
p0046 A79-14961
Adaptive supervisory control of remote manipulation
p0046 A79-14987
Adaptive control of a robotic manipulator
p0046 A79-15001
Robots and artificial intelligence --- Russian book
p0061 A79-17569
Augmented feedback in adaptive motor skill training
p0062 A79-18208
The effects of participatory mode and task workload on the detection of dynamic system failures
p0098 A79-21156
A structural model of the adaptive human pilot
[AIAA 79-1784] p0252 A79-45411
Adaptive estimation schemes for minimizing uncertainty in manual control tasks
p0269 A79-48013
A formal model of the adaptive and discrete control behaviors of human operators
[AD-A059039] p0059 N79-13717
A construct validation of adaptive achievement testing
[AD-A063148] p0173 N79-20742
An adaptive controller which displays human operator limitations for a fighter type aircraft
p0177 N79-21767
An adaptive controller which displays human operator limitations for a fighter type aircraft
[AD-A066193] p0223 N79-25763

ADAPTIVE CONTROL SYSTEMS
U ADAPTIVE CONTROL

ADDITION RESINS
NT ACRYLIC RESINS

ADENINES
NT RIBONUCLEIC ACIDS

ADENOSINES
3'5'-cyclic AMP content in rat tissues during hypoxic adaptation and gamma irradiation
p0069 A79-19426
Prebiotic condensation of oligonucleotide
p0204 A79-37945

ADRENAL GLAND
Beta-adrenoceptor antagonists: Central effects
p0027 N79-11702

Morphological study of adrenals of rats irradiated during flight aboard Kosmos-690 satellite p0108 N79-16517

Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids) p0311 N79-33798

ADRENAL METABOLISM

Effects of fenfluramine administration on activity of the pituitary-adrenal system in the rat p0005 A79-12474

Sustained operations and sleep deprivation - Effects on indices of stress p0009 A79-12859

Inhibition of the pituitary-adrenal response to stress during deprivation-induced feeding p0235 A79-43605

Effect of adaptation to high-altitude hypoxia on cardiac adrenoreactivity and the state of the adenylcyclase and phosphodiesterase systems in the myocardium p0255 A79-46500

Metabolic adrenergic changes during submaximal exercise and in the recovery period in man p0305 A79-54267

Effects of LBNP on catecholamines and adrenal cortex p0110 N79-16532

ADRENERGICS

Norepinephrine uptake by the isolated heart of rats adapted and deadapted to hypoxia p0097 A79-20621

Time for loss of increased cardiac responsiveness to isoproterenol in cold-acclimated rats after removal from cold p0128 A79-24636

Prevention and treatment of space sickness in Shuttle-Orbiter missions p0128 A79-24639

Effect of electroconvulsive shock on monoaminergic receptor binding sites in rat brain p0162 A79-29925

Effect of the blockade of hypothalamic adrenergic structures on thermoregulatory reactions p0167 A79-31950

Relationship between thermogenic drinking and plasma renin activity in the rat p0235 A79-43211

Metabolic adrenergic changes during submaximal exercise and in the recovery period in man p0305 A79-54267

Nonshivering thermogenesis in normal and dystrophic muscle p0054 N79-13680

ADRENOCORTICOTROPIN (ACTH)

Inhibition of the pituitary-adrenal response to stress during deprivation-induced feeding p0235 A79-43605

ADSORPTION

NT CHEMISORPTION

Trace contaminant studies of HSC adsorbent [NASA-CR-160148] p0177 N79-21769

AERATION

Effects of aeration on formation and localization of the acetyl coenzyme A synthetases of Saccharomyces cerevisiae p0162 A79-30125

AERIAL RECONNAISSANCE

Real-time reconnaissance systems simulator p0139 A79-28175

AEROBES

Time course of O2-pulse during various tests of aerobic power p0297 A79-52024

Studies of microbial flora and immunity of Salyut-3 crew p0192 N79-23629

AEROBIOLOGY

Oxygen affinity of blood in altitude Sherpas p0268 A79-47854

The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations p0300 A79-52894

Influence of skin temperature on sweating and aerobic performance during severe work p0305 A79-54268

AERODYNAMIC BUZZ

U FLUTTER

AERODYNAMIC CHARACTERISTICS

NT AERODYNAMIC STABILITY

Aerodynamic forces exerted on an articulated human body subjected to windblast [AD-A059023] p0055 N79-13688

AERODYNAMIC FORCES

Correlation of mechanism of extremity injury and aerodynamic factors in ejections from F-4 aircraft p0284 N79-31904

AERODYNAMIC STABILITY

The influence of vehicle aerodynamic and control response characteristics on driver-vehicle performance p0089 N79-15608

AEROEMBOLISM

Intracardial gas bubbles and decompression sickness while flying at 9,000 m within 12-24 h of diving p0010 A79-12866

Case report - Intracardial gas bubbles in relation to altitude decompression chokes p0011 A79-12871

Application of a bubble formation model to decompression sickness in rats and humans p0102 A79-23073

Doppler detection of thresholds for decompression-induced venous gas emboli in the awake rat p0202 A79-37707

AEROMAGNETO FLUTTER

U FLUTTER

AERONAUTICAL ENGINEERING

Development of aerospace-aviation equipment described p0081 N79-14795

AERONAUTICS

Can man be calculated - Biological models in aeronautical medicine and engineering p0161 A79-29589

Aerospace highlights and potential medical applications --- in manned space flight p0293 A79-51027

Experience with periodic aviation medical examinations p0026 N79-11696

AEROSOLS

NT FOG

Particle deposition due to turbulent diffusion in the upper respiratory system p0270 A79-48251

Characteristics of bacterial aerosol in airtight rooms occupied by humans p0016 N79-10715

AEROSPACE ENGINEERING

NT AERONAUTICAL ENGINEERING

Planetary protection guidelines for Outer Planet missions p0005 A79-12511

Psychologists vs engineers --- flight simulators training requirements p0132 A79-26499

The biomedical implications of engineering in space p0166 A79-31122

Development of aerospace-aviation equipment described p0081 N79-14795

AEROSPACE ENVIRONMENTS

Development capacity of artemia cysts and lettuce seeds flown in Cosmos 936 and directly exposed to cosmic rays p0127 A79-24632

Caloric and exercise requirements of space flight - Biostereometric results from Skylab p0128 A79-24637

Prevention and treatment of space sickness in Shuttle-Orbiter missions p0128 A79-24639

Analysis of climatic data and cockpit thermal conditions at a fighter base in North West India p0201 A79-37135

Closed regenerative life support systems for space travel - Their development poses fundamental questions for ecological science p0228 A79-41702

Closed ecology in space from a bioengineering perspective p0228 A79-41703

Serendipitous solution to the problem of culturing Arabidopsis plants in sealed containers for

spaceflights of long duration
p0229 A79-41704
Response of crown gall tissue to the space
environment: Residual carbohydrates in
supporting tissue --- COSMOS 782
p0020 N79-11653
Responses of crown gall tissue to the space
environment: Tumor development and anatomy ---
cosmos 782
p0020 N79-11654
Responses of crown gall tissue to the space
environment: Glutamine synthetase activity ---
cosmos 782
p0020 N79-11655
Responses to crown gall tissue to the space
environment: Isozyme patterns --- cosmos 782
p0020 N79-11656
Space radiation dosimetry onboard COSMOS 936: US
portion of experiment K-206
p0023 N79-11677
Analysis of body form using biostereometrics
[NASA-CR-160173] p0195 N79-23654
Preparation of guinea pig macrophage for
electrophoretic experiments in space
[NASA-CR-158777] p0243 N79-27814
Space biology and aerospace medicine, v. 13, no.
3, 1979
[JPRS-73784] p0243 N79-27817

AEROSPACE MEDICINE
Medical control in prolonged space flights
[IAF PAPER 78-63] p0003 A79-11226
Space medicine - A prognosis for future research
[IAF PAPER 78-ST-17] p0003 A79-11364
Spacelab and beyond - Bioscience problems in the
use of space
[DGLR PAPER 78-129] p0041 A79-14081
Medical characteristics of the Spacelab life
support system
[DGLR PAPER 78-130] p0041 A79-14082
Joint testing of the RAF high altitude protective
ensemble
p0044 A79-14434
Value and limits of the electrocardiogram in
aviation medicine evaluations
p0048 A79-15495
Experiences of a payload specialist involved with
the simulated Spacelab Mission ASSESS II
[DGLR PAPER 78-183] p0070 A79-20024
Health maintenance and health surveillance
considerations for an SPS space construction
base community
[AAS PAPER 78-176] p0099 A79-21273
The European life sciences experiments onboard the
first Spacelab mission
p0100 A79-22254
The use of aviation pathology and aviation
medicine as proof of liability and damage
p0100 A79-22704
Relations between research and instruction in
physiology and aerospace ergonomy in the
military health services
p0104 A79-23960
Ruptured arteriovenous anomaly in a former woman
astronaut candidate
p0128 A79-24640
Aviation-medicine appraisal as part of the fitness
regulations in transportation
p0129 A79-25373
Space biology and medicine
p0132 A79-26344
Physiological aspects of flight --- Book
p0134 A79-27298
Aeromedical implications of the X-Chrom lens for
improving color vision deficiencies
p0135 A79-27556
Aeromedical aspects of otolaryngology
p0136 A79-27562
Can man be calculated - Biological models in
aeronautical medicine and engineering
p0161 A79-29589
Survey on eye comfort in aircraft. I - Flight
attendants
p0165 A79-30665
The biomedical implications of engineering in space
p0166 A79-31122
Medicobiological research within the framework of
the scientific program 'Intercosmos'
p0181 A79-32658
Incidence of cardiovascular problems among flying
personnel and their evaluation
p0182 A79-33186
Ensuring medical fitness on entry and during
service in aircrew in IAF
p0182 A79-33187
Electrocardiographic abnormalities in Air Force
personnel
p0182 A79-33191
Disability pattern amongst civil aircrew
p0182 A79-33192
Cases of probable Aero Otitis interna
p0183 A79-33194
Biological effects of electromagnetic fields
p0184 A79-33712
Some tests used in the practice of aviation
medical examination for differential diagnosis
of heart diseases
p0188 A79-35136
Pathophysiology of overloads: Bibliography of
Soviet publications --- Russian book
p0200 A79-36385
Aerobiotelemetry from a fighter aircraft
p0200 A79-37131
Positive pressure breathing as a protective
technique in +Gz acceleration
p0201 A79-37132
Incidence of spinal disability amongst IAF pilots
- Follow up of 38 cases
p0201 A79-37133
Vertebral fractures in Gnat ejections
p0201 A79-37134
Correlation of binocular vision test results with
synaptophore evaluation
p0201 A79-37136
Influence of Beta-Blockade on asymptomatic ST-T
wave changes - A follow up study
p0201 A79-37137
Aeromedical aspects of flying training with
special reference to instructor pupil relationship
p0201 A79-37139
Physiologic and performance measurements in
simulated airborne combined stress environments
p0202 A79-37710
Psychiatric education in aerospace medicine
p0202 A79-37712
Frequency analysis of heart rate variability under
flight conditions
p0202 A79-37713
Concurrent loss of consciousness and sino-atrial
block during +Gz stress
p0202 A79-37714
Fighter index of thermal stress /FITS/ - guidance
for hot-weather aircraft operations
p0202 A79-37715
Space biology and aerospace medicine
p0226 A79-40734
The electrocardiogram recorded by telemetry during
a parachute jump, compared to a trace during
stress tests - A preliminary study of 29 cases
p0256 A79-46600
The application of vectorcardiography to aerospace
medicine
p0256 A79-46602
Blood pressure variability of the individual in
orthostatic testing
p0265 A79-47328
Aero Medical Society of India, Annual Meeting,
21st, Bangalore, India, December 15, 16, 1978,
Proceedings
p0271 A79-49726
Aviation and radiation hazards
p0271 A79-49727
Assessment of burns in accident fatalities
p0272 A79-49729
Comparative study of hypoxia and other
non-invasive stress tests for evaluation of
ischaemic heart disease
p0272 A79-49731
Functional anatomy of vertebral column with
reference to load bearing areas
p0272 A79-49732
Biodynamics of aviation stresses on the vertebral
column
p0272 A79-49733
Spinal injury pattern due to ejections
p0272 A79-49734
Radiological diagnosis of spinal injuries and
deformities

p0272 A79-49735
Assessment of spinal disabilities in relation to
flying
p0272 A79-49736
Effects of congener and noncongener alcoholic
beverages on a clinical ataxia test battery
p0273 A79-49984
Estimated body rotation as a predictor of motion
sickness susceptibility
p0273 A79-49990
Aerospace highlights and potential medical
applications --- in manned space flight
p0293 A79-51027
Automatic audiometry in the practice of
flight-personnel examination
p0295 A79-51084
Time course of O2-pulse during various tests of
aerobic power
p0297 A79-52024
Comparison of physiological effects of head-down
tilting and immersion on the human body
p0298 A79-52279
Cold water survival suits for aircrew
p0298 A79-52282
Passive resistive torques about long bone axes of
major human joints
p0298 A79-52283
Medical barofunction testing of aviators with
otorhinolaryngologic disease
p0298 A79-52285
Technique for simulating G-induced tunnel vision
p0299 A79-52286
Role of n-aminobenzoic acid in repairing UV and
gamma radiation damage
p0301 A79-53211
Preliminary selection of candidates for space
flights
[IAF PAPER 79-83] p0302 A79-53289
Equipment for surgical interventions and
childbirth in weightlessness
[IAF PAPER 79-97] p0302 A79-53296
Selection, training, and health care of working
specialists for Shuttle/Spacelab and future
space station missions
[IAF PAPER 79-99] p0303 A79-53297
The biomedical implications of extended duration
zero-g extravehicular activities
[IAF PAPER 79-ST-06] p0303 A79-53447
Eye torsion in response to a tilted visual stimulus
p0305 A79-54254
Evidence for increased intrathoracic fluid volume
in man at high altitude
p0305 A79-54266
Space biology and aerospace medicine, vol. 12, no.
5, 1978
[JPRS-72115] p0013 N79-10698
An examination of statistical impact acceleration
injury prediction models based on -Gx
accelerator data from subhuman primates
[AD-A057276] p0026 N79-11690
Prospective Medicine Opportunities in Aerospace
Medicine --- conferences
[AGARD-CP-231] p0026 N79-11692
The Canadian Forces Life Quality Improvement
Programme
p0026 N79-11693
The role of physical examinations and education in
prospective medicine
p0026 N79-11694
Medical qualification procedures for
hazardous-duty aeromedical research
p0026 N79-11695
Experience with periodic aviation medical
examinations
p0026 N79-11696
A prospective medicine approach to the problem of
ischemic vascular disease in the USAF
p0027 N79-11697
The significance of rhythm disturbances in
asymptomatic persons
p0027 N79-11698
Distinguishing borderline hypertensives from
normotensives: A clinical study of 300 aircrewmen
p0027 N79-11699
Molecular determinants for the prediction and
survival of ischemic anoxic stress pathology
p0027 N79-11700
Psychosocial aspects of syncope and vertigo in
aircrew
p0027 N79-11701
Beta-adrenoceptor antagonists: Central effects
p0027 N79-11702
The prediction of the existence or nonexistence of
coronary artery disease using routine clinical
laboratory measurement
p0028 N79-11703
Comparison of plasma and urinary steroids in men
with type A and type B behavior patterns
p0028 N79-11704
Specific Findings in Cardiology and Pulmonary
Function with Special Emphasis on Assessment
criteria for Flying
[AGARD-CP-232] p0028 N79-11705
Follow-up and transversal study of vital capacity
and FEV sub values among personnel of the
Belgian Army forces
p0028 N79-11706
Detection and supervision of obstructed
respiratory flow in fliers. Advantages of
debit-volume graphs
p0028 N79-11707
Long term pulmonary function patterns in the
aviator: The thousand Aviator study
p0028 N79-11708
Mechanics of breathing during graded exercise
measured with the bodyplethysmograph
p0029 N79-11709
Standardized examination methods in ergometry
p0029 N79-11710
Coronary atherosclerosis and fitness for flying
p0029 N79-11711
Detection of coronary artery disease in apparently
healthy, asymptomatic aircrew members using
thallium-201 myocardial perfusion scintigraphy
p0029 N79-11712
The significance of T wave abnormalities
p0029 N79-11713
Difficulties posed by left axis deviation in the
evaluation of fliers, and their relations to the
concept of left anterior hemiblock
p0029 N79-11714
Left Anterior Hemiblock (LAH): Diagnosis and
aeromedical risk
p0029 N79-11715
Measuring systolic time intervals at rest and
under stress by external methods. Advantages in
the evaluation of fliers
p0030 N79-11717
The advantages of ultrasonic echocardiography in
the cardiological evaluation of fliers
p0030 N79-11718
Effect of age on relaxed +G sub z tolerance of
aircrewmen
p0030 N79-11719
Reproducibility of human cardiovascular responses
to orthostatic stress
p0030 N79-11720
Cardiological findings in 115 pilots: Diagnoses
and assessment of their flying fitness
p0030 N79-11721
Normal and pathological cardiovascular findings in
applicants to the Air Force service
p0031 N79-11722
Evaluation of cardiac risk and subject response to
ameliorative efforts
p0031 N79-11723
The impact of coronary vascular risk factors on
professional aircrew license loss in the United
Kingdom
p0031 N79-11724
Cardiovascular diseases as a cause of unfitness
for flying service in aircrews of Italian Air
Force: Etiopathogenesis, influence of
performance in flight, and prevention
p0031 N79-11725
Cardiovascular fitness of pilots of transport
aircraft
p0031 N79-11726
Space biology and aerospace medicine, vol. 12, no. 6
[JPRS-72487] p0072 N79-14716
The 14th Annual Conference on Manual Control ---
digital simulation of human operator dynamics
[NASA-CP-2060] p0086 N79-15588
Space biology and aerospace medicine, volume 13,
no. 1, 1979
[JPRS-72826] p0107 N79-16514
Man in space and on earth
[NASA-TM-75602] p0122 N79-17533

Operational Helicopter Aviation Medicine [AGARD-CP-255] p0148 N79-19605
A description of the recent neuropsychological selection of pilots for land forces light aircraft p0151 N79-19633
Radiological examination of the Rachis and fitness for employment as a helicopter pilot p0151 N79-19634
Providing an eye separator on a color cathode tube --- enhancing visual acuity p0152 N79-19639
Vertebral pains in helicopter pilots --- symptomology and radiology p0153 N79-19656
Problems of human adaption to spaceflight p0157 N79-19985
Technical evaluation report on the Aerospace Medical Panel London Specialists' Meeting, Fall 1977 --- disease prevention, flight fitness, and findings in cardiology and pulmonary function [AGARD-AR-131] p0171 N79-20729
Prospective medicine opportunities in aerospace medicine p0171 N79-20730
Specific findings in cardiology and pulmonary function with special emphasis on assessment criteria for flying p0171 N79-20731
Space biology and aerospace medicine, no. 2, 1979 [JPRS-73377] p0190 N79-23627
Some problems involved in using mathematical methods for evalnation of pathophysiological changes in the body p0192 N79-23628
Studies of microbial flora and immunity of Salyut-3 crew p0192 N79-23629
Biochemical study of proteins of gastric and intestinal mucosa of rats flown aboard the Kosmos-605 biosatellite --- effects of space flight stress p0192 N79-23631
Biomedical application in space, pilot program in the southern California region [NASA-CR-160171] p0195 N79-23653
Validation of a model for investigating red cell mass changes during weightlessness [NASA-CR-160188] p0211 N79-24634
Systems identification and application systems development for monitoring the physiological and health status of crewmen in space [NASA-CR-160235] p0212 N79-24642
A brief review of space flight calcium metabolism: Results and methodologies [NASA-CR-160198] p0217 N79-25715
Index to FAA Office of Aviation Medicine reports: 1961 through 1978 [AD-A067983] p0240 N79-26773
Space biology and aerospace medicine, v. 13, no. 3, 1979 [JPRS-73784] p0243 N79-27817
Operator performance and localized muscle fatigue in a simulated space vehicle control task [NASA-TM-58220] p0259 N79-28867
BIOSPEX: Biological space experiments, a compendium of life sciences experiments carried on US spacecraft [NASA-TM-58217] p0261 N79-29784
Injury mechanisms analysis in aircraft accidents p0286 N79-31913
Tentative estimation of the injuries likely to occur during the crash of a SA 341 Gazelle helicopter, from a study on mannequins p0287 N79-31925
Human Factors Aspects of Aircraft Accidents and Incidents [AGARD-CP-254] p0290 N79-31942
Medical and operational factors of accidents in advanced fighter aircraft p0290 N79-31944
The psychologist in aircraft accident investigation --- pilot personality and performance p0291 N79-31946
Refinement and validation of a three-dimensional head-spin model [AD-A062502] p0307 N79-32826
Space Biology and Aerospace Medicine, no. 4, 1979 [JPRS-74330] p0310 N79-33789
Studies of venous circulation in the crew of the Salyut-5 orbital station p0310 N79-33791
Fluid-electrolyte metabolism in the crew of Salyut-4 p0311 N79-33792
Control of vertical position after flights aboard the Salyut-4 orbital station p0311 N79-33793
Effects on lipid metabolism in man of some factors that simulate space flight conditions p0311 N79-33794
Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite p0311 N79-33795
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite p0311 N79-33796
Development of electrophysiological indices of neurological toxicity for organophosphate pesticides and depressant drugs [AD-A070299] p0314 N79-33821
The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces [AD-A069865] p0316 N79-33829
The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress [AD-A069952] p0318 N79-33845

AEROSPACE SCIENCES
Life sciences and space research XVII; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 10, 1978, and Symposium on Gravitational Physiology, Innsbruck, Austria, June 2, 3, 1978 p0228 A79-41701

AEROSPACE TECHNOLOGY TRANSFER
Medical technology transfer p0048 A79-16138

AFCS (CONTROL SYSTEM)
U AUTOMATIC FLIGHT CONTROL

AGC (CONTROL)
U AUTOMATIC GAIN CONTROL

AGE FACTOR
Relaxed +Gz tolerance in healthy men - Effect of age p0067 A79-18956
Age trends in the cardiovascular dynamics of aircrewmen p0136 A79-27560
A simple technique for evaluation of vitality loss in aging mice, by testing their muscular coordination and vigor p0274 A79-50205
Psychophysiological effects of aging: Developing a functional age index for pilots. 3: Measurement of pilot performance [FAA-AM-78-27] p0123 N79-17546

AGING (BIOLOGY)
A study of axonal degeneration in the optic nerves of aging mice p0005 A79-12123
Visual acuity of the aging hyperopic eye in the intermediate range p0037 A79-13198
Senescent changes in the ribosomes of animal cells in vivo and in vitro p0134 A79-27226
Ageing and flying fitness p0182 A79-33190
Analysis of population mortality kinetics with application to the longevity followup of the Navy's '1,000 aviators' p0234 A79-43207
Quantitative analysis of mating behavior in aging male Drosophila Melanogaster p0252 A79-44799
A simple technique for evaluation of vitality loss in aging mice, by testing their muscular coordination and vigor p0274 A79-50205
Effects of weightlessness on the embryonic development and aging of Drosophila p0022 N79-11670
Effects of weightlessness on the genetics and aging process of drosophila melanogaster p0023 N79-11673

Effect of age on relaxed +G sub z tolerance of aircrewmen p0030 N79-11719
Psychophysiological effects of aging: Developing a functional age index for pilots. 2: Taxonomy of psychological factors [FAA-AM-78-16] p0054 N79-13685
Psychophysiological effects of aging: Developing a functional age index for pilots. 3: Measurement of pilot performance [FAA-AM-78-27] p0123 N79-17546

AGRICULTURAL AIRCRAFT
Initial training and retraining of technical agricultural flight personnel p0227 A79-41166
Eye-ball control p0270 A79-49225

AGRICULTURE
Short-range movement of major agricultural pests p0148 N79-19594

AIR
NT EXPIRED AIR
Evaluation of oxidizability of air in closed areas p0313 N79-33808

AIR BAG RESTRAINT DEVICES
Development of a solid propellant inflation technique for the subcompact car passenger restraint system, phase 1 [PB-290328/4] p0178 N79-21775

AIR CONDITIONING EQUIPMENT
Physiological requirements for design of environmental control systems - Control of heat stress in high-performance aircraft [ASME PAPER 78-ENAS-22] p0007 A79-12571
Apparatus for supplying conditioned air at a substantially constant temperature and humidity [NASA-CASE-GSC-12191-1] p0156 N79-19688

AIR DEFENSE
AAA gunnermodel based on observer theory --- predicting a gunner's tracking response p0087 N79-15594

AIR NAVIGATION
NT AREA NAVIGATION

AIR POLLUTION
Developmental and hematological responses to low level exposure of carbon monoxide in mice p0048 A79-16099
Response of the rat erythrocyte to ozone exposure p0067 A79-18963
Effects of ozone inhalation on work performance and maximal oxygen uptake p0133 A79-27103
Assessment of human exposures to atmospheric benzene [PB-284203/7] p0051 N79-12701
Human health damages from mobile source air pollution: A delphi method, volume 1 [PB-288319/7] p0145 N79-18585
Human health damages from mobile source air pollution: Additional Delphi data analysis, volume 2 [PB-288320/5] p0145 N79-18586
Effects of oxides on nitrogen, Carbon monoxide and photochemical oxidants on the ECG during exercise and on cardiopulmonary function [PB-291595/7] p0177 N79-21763
Direct exposure of monolayers of mammalian cells to airborne pollutants in a unique culture system [AD-A069822] p0283 N79-31897

AIR PURIFICATION
Technology advancement of an oxygen generation subsystem [NASA-CR-152257] p0261 N79-28883

AIR SAMPLING
New combined aspirator for sampling developed p0170 N79-20722

AIR SICKNESS
U MOTION SICKNESS

AIR TO AIR MISSILES
Subjective motion discrimination in the simulator for air-to-air combat [AD-A059742] p0079 N79-14770

AIR TO AIR REFUELING
Visual system for the Boom Operator Part Task Trainer --- KC-135 aerial refueling task simulator p0137 A79-28162
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view [AD-A070231] p0308 N79-32832

AIR TO AIR ROCKETS
U AIR TO AIR MISSILES

AIR TRAFFIC
A preliminary study of the air traffic controller's 'picture' p0221 A79-36227

AIR TRAFFIC CONTROL
Ergonomic problems regarding the interactive touch input via screens in onboard and ground-based flight control p0061 A79-17695
Detection of conflict states in air traffic control of airport zones p0166 A79-31181
Short-term memory factors in ground controller/pilot communication p0181 A79-32626
The effect of increased monitoring load on vigilance performance using a simulated radar display p0236 A79-43674
Visual search performance during simulated radar observation with and without a sweepline [AD-A068020] p0281 N79-30938

AIR TRAFFIC CONTROLLERS (PERSONNEL)
Morbidity experience of air traffic control personnel - 1967-77 p0101 A79-23466
The next decade - Development, training, supervision p0102 A79-23584
A controller's eye view of color p0102 A79-23596
A preliminary study of the air traffic controller's 'picture' p0221 A79-36227
Frequency analysis of heart rate variability under flight conditions p0202 A79-37713
Development of a performance criterion for air traffic personnel research through air traffic control simulation [AD-A058082] p0031 N79-11727
The morbidity experience of air traffic control personnel, 1967-1977 [AD-A056053] p0051 N79-12696
Perpetual factors involved in performance of air traffic controllers using a microwave landing system p0092 N79-15628
Air traffic controller health change study [FAA-AM-78-39] p0122 N79-17534
Stress in air traffic controllers: A restudy of 32 controllers 5 to 9 years later [FAA-AM-78-40] p0144 N79-18581
The development of the ATC selection battery: A new procedure to make maximum use of available information when correcting correlations for restriction in range due to selection [FAA-AM-78-36] N79-25752
The selection of air traffic control specialists: Two studies demonstrating methods to insure an accurate validity coefficient for selection devices [AD-A068581] p0281 N79-30932
A comparison of the job attitudes and interest patterns of air traffic and airway facility personnel [AD-A067826] p0281 N79-30933

AIRBORNE EQUIPMENT
NT AIRBORNE/SPACEBORNE COMPUTERS
NT LIGHT AIRBORNE MULTIPURPOSE SYSTEM
A Canadian approach to high altitude protection --- fighter pilot garmentry and high pressure masks p0045 A79-14435
Light weight solid state helmet symbol display and position system p0046 A79-15177
U.S. Navy development of an on-board oxygen generation /OBOG/ system p0183 A79-33634
Molecular sieve oxygen generating system - The argon question /A brief review/ --- effects of 5 percent Ar in breathing gas p0274 A79-49994

AIRBORNE/SPACEBORNE COMPUTERS
Man/terminal interaction evaluation of computer operating system command and control service concepts --- in Spacelab

best copy available

p0064 A79-18224
Computer aided control of a mechanical arm
p0275 A79-50334
AIRCRAFT ACCIDENT INVESTIGATION
The use of aviation pathology and aviation medicine as proof of liability and damage
p0100 A79-22704
Human error accidents - Some case studies --- for aircraft
p0183 A79-33193
Assessment of burns in accident fatalities
p0272 A79-49729
The psychologist in aircraft accident investigation --- pilot personality and performance
p0291 N79-31946
The information in aircraft accidents investigation
p0291 N79-31947
AIRCRAFT ACCIDENTS
NT BIRD-AIRCRAFT COLLISIONS
False hypothesis and the pilot --- aircraft accidents due to decision making errors
[SAE PAPER 780528] p0001 A79-10399
An inflatable restraint system --- for helicopter crash protection
p0044 A79-14408
Physiological biorhythm as a correlate of pilot error accidents and incidents
p0065 A79-18228
Current role of alcohol as a factor in civil aircraft accidents
p0126 A79-27561
Accident injuries and flying fitness
p0182 A79-33189
Effect of fiber and dye degradation products /FDP/ on burn wound healing
p0298 A79-52277
Analysis of naval aviation head and neck injuries (1969-1978)
[AD-A057657] p0026 N79-11689
US Army aviation fatigue-related accidents, 1971-1977
[AD-A062486] p0171 N79-20725
Injury mechanisms analysis in aircraft accidents
p0286 N79-31913
Tentative estimation of the injuries likely to occur during the crash of a SA 341 Gazelle helicopter, from a study on mannequins
p0287 N79-31925
Human Factors Aspects of Aircraft Accidents and Incidents
[AGARD-CP-254] p0290 N79-31942
Three decades of USAF efforts to reduce human error accidents, 1947-1977
p0290 N79-31943
Medical and operational factors of accidents in advanced fighter aircraft
p0290 N79-31944
Analysis of the intervention of the human factor as a principal cause or influence in accidents of Mirage aircraft in the Belgian Air Force
p0290 N79-31945
Analyses of midair collisions in German airspace: Methodology and results
p0291 N79-31949
Pilot incapacity in flight
p0291 N79-31950
Geographical disorientation and flight safety
p0291 N79-31951
Human factors in production and prevention of aircraft accidents due to disorientation in flight
p0291 N79-31952
Between incident and accident
p0292 N79-31953
AIRCRAFT BASES
U MILITARY AIR FACILITIES
AIRCRAFT CABINS
U AIRCRAFT COMPARTMENTS
AIRCRAFT CARRIERS
A7 training effectiveness through performance analysis --- carrier landing instruction
[AD-A056230] p0031 N79-11728
AIRCRAFT COMMUNICATION
Effects of phase manipulation on speech intelligibility through communication headsets --- light aircraft radio communication
p0164 A79-30654
Short-term memory factors in ground controller/pilot communication
p0181 A79-32626

AIRCRAFT COMPARTMENTS
A trade-off analysis design tool: Aircraft interior noise-motion/passenger satisfaction model
p0112 N79-16549
AIRCRAFT CONTROL
NT HELICOPTER CONTROL
Investigation of arrangement of multipurpose displays and use of tailored control logic in a fighter aircraft cockpit
p0038 A79-13205
A computer-based simulator simulator --- computer-assisted pilot training
p0039 A79-13215
The assessment of rotary wing aviator precision performance during extended helicopter flights
p0040 A79-13221
Experimental and psychological investigations in aviation and astronautics --- Russian book
p0041 A79-13998
Increasing pilot's performance capacity during flight through use of a control element serving as information carrier
[DGLR PAPER 78-152] p0042 A79-14097
Application of control theory to the investigation of roll motion effects on pilot control behavior
[AD-A054921] p0046 A79-14972
The man-computer division of tasks in the case of the control of complex technical systems --- applied to aircraft
p0061 A79-17683
Pilot performance during flight simulation with peripherally presented visual signals
p0063 A79-18213
Control logic design criteria for multifunction switching devices --- in aircraft
p0064 A79-18223
A comparison of kinesthetic-tactual and visual displays via a critical tracking task --- for aircraft control
p0162 A79-29720
Pilot workload during final approach in congested airspace
p0269 A79-48014
Prediction, evaluation, and specification of flying qualities by means of step target tracking
p0088 N79-15604
The determination of the operating range of a twin-grip control yoke through biomechanical means
p0089 N79-15609
Influences of joystick spring resistance on the execution of simple and complex positioning movements
p0119 N79-17517
AIRCRAFT DESIGN
NT HELICOPTER DESIGN
Factors that affect display size criteria in a cockpit display system
p0063 A79-18212
A trade-off analysis design tool: Aircraft interior noise-motion/passenger satisfaction model
p0112 N79-16549
The design of air combat aircraft
p0114 N79-16566
Ground attack
p0114 N79-16567
Contributions of psychophysiological techniques to aircraft design and other operational problems
[AGARD-AG-244] p0290 N79-31941
AIRCRAFT DETECTION
Predicting aircraft detectability
p0208 A79-38358
The limited range of the human eye for optical aircraft acquisition
p0291 N79-31948
Analyses of midair collisions in German airspace: Methodology and results
p0291 N79-31949
AIRCRAFT EQUIPMENT
NT EJECTION SEATS
Observer performance using a video display --- in simulated air to ground target acquisition tasks
p0039 A79-13217
Oxygen systems for Army helicopters
p0044 A79-14421
Human compatibility testing of a 2-man molecular sieve oxygen generator
[AD-A058248] p0053 N79-12710
Aircrew personnel restraint subsystems definition of deficiencies and requirements

[AD-A058995] p0053 N79-12711
US Navy development of an On-Board Oxygen Generation (OBOG) system
[AD-A063958] p0197 N79-24656

AIRCRAFT HAZARDS
Biodynamic effects of canopy loss in the TF-15 aircraft
p0163 A79-30651
Detection of conflict states in air traffic control of airport zones
p0166 A79-31181
Aviation and radiation hazards
p0271 A79-49727

AIRCRAFT INSTRUMENTS
NT APPROACH INDICATORS
NT AUTOMATIC PILOTS
Contrast enhancement using local area brightness and gain control --- of airborne CRT display
p0037 A79-13199
Four years of color research for visual displays --- human performance consideration for use in aircraft
p0039 A79-13210
Response surface methodology as a manipulator of complex task difficulty --- for computer generated aircraft area navigation control-display systems evaluation
p0039 A79-13211
Transfer of a computer-assisted instrument procedures trainer to flight
p0039 A79-13216
Arrangement of aircraft flight indicators with the help of optimal theoretical models for man as the controller
[DGLR PAPER 78-149] p0042 A79-14094

AIRCRAFT LANDING
NT CRASH LANDING
Flight management research utilizing an oculometer --- pilot scanning behavior during simulated approach and landing
p0001 A79-10389
The effects of prediction, quickening, frequency separation, and percent of pursuit in perspective displays for low-visibility landing
p0063 A79-18210
An investigation of pictorial and symbolic aircraft displays for landing
p0063 A79-18211
Transfer of landing skill after training with supplementary visual cues
p0138 A79-28167
A7 training effectiveness through performance analysis --- carrier landing instruction
[AD-A056230] p0031 N79-11728
Undergraduate pilot training: Visual discrimination pretraining for land task
[AD-A068141] p0317 N79-33844

AIRCRAFT MAINTENANCE
Life cycle costing of simulated vs actual equipment for intermediate maintenance training --- for F-16 avionics
p0064 A79-18217

AIRCRAFT MANEUVERS
An Air Combat Effectiveness Study /ACES/ program
p0040 A79-13222
Development of automated performance measures for introductory air combat maneuvers
p0040 A79-13223
A study of progress in flying performance revealed from daily check sheets in a primary flight training course. III - Comparison of progress between two courses
p0134 A79-27119
Predictive validity of flight simulators as a function of simulator motion
p0181 A79-32627
Measurements of pilot workload during low altitude and high speed maneuvers of F-1 supersonic jet fighter
p0209 A79-38821
RNAV procedural turn anticipation techniques experiment no. 2, GAT-2A. Phase 3: 2 and 4 nmi offset tracking procedures
[AD-A060501] p0085 N79-15583
Flight experience with manually controlled unconventional aircraft motions
p0088 N79-15602
Prediction of pilot reserve attention capacity during air-to-air target tracking
p0116 N79-17488
Changes in the rotary wing aviator's ability to perform an uncommon low altitude rearward hover maneuver as a function of extended flight requirements and aviator fatigue
p0150 N79-19623
Visual effects of helicopter maneuvre on weapon aiming performance
p0150 N79-19626
Oculomotor performance of aviators during an autorotation maneuver in a helicopter simulator
p0151 N79-19638
The relationship between Air Combat Maneuvering Range (ACMR) output measures and initial visual acquisition performance
[AD-A062134] p0173 N79-20744
Estimation of aircraft target motion using pattern recognition orientation measurements
p0177 N79-21764
A study of pilot/observed interaction in aligning a helicopter with a target
[DLR-FB-79-04] p0283 N79-30945

AIRCRAFT NOISE
NT SONIC BOOMS
Responses of teachers to aircraft noise
p0103 A79-23881
Aircraft noise and its effect on man: Methods and results of research, consequences for environmental protection --- German book
p0162 A79-29763
Sources of noise stress on flying personnel
p0227 A79-41169
Temporary threshold shift from transportation noise
p0254 A79-46286
The influence of intermittent aircraft noise on sleep. I
p0255 A79-46599
A trade-off analysis design tool: Aircraft interior noise-motion/passenger satisfaction model
p0112 N79-16549
Aircraft sonic boom: Biological effects. A bibliography with abstracts
[NTIS/PS-79/0190/3] p0214 N79-24650
Effect of helicopter noise on passenger annoyance
[NASA-TM-80106] p0241 N79-26782

AIRCRAFT PERFORMANCE
NT HELICOPTER PERFORMANCE
The effects of ambient illumination, aircraft velocity and feedback on absolute distance judgments during simulated night nap-of-the-earth flight
p0038 A79-13204
Predictive validity of flight simulators as a function of simulator motion
p0181 A79-32627

AIRCRAFT PILOTS
Visual workload of the copilot/navigator during terrain flight
p0038 A79-13206
NASA flight management research
p0040 A79-13218
The helmet protects the aviator's head - Or does it
p0044 A79-14429
Selection and techniques for analysis of indices of visual data reception. II --- aircraft pilot eye movements
p0047 A79-15494
Time estimation as a technique to measure workload --- of aircraft pilot in flight simulation
p0062 A79-18203
On the relationship between pilot rating and pilot dynamics. I - An experimental approach
p0066 A79-1 474
On the relationship between pilot rating and pilot dynamics. II - An analytical approach
p0066 A79-18475
SPH-4 helmet damage and head injury correlation
p0127 A79-24633
Naval aviation training - Perspective and prospects
[SAE PAPER 781004] p0130 A79-25886
Cost analysis of pilot training systems
[SAE PAPER 781005] p0130 A79-25887
Recent studies of simulation training effectiveness
[SAE PAPER 781006] p0130 A79-25888
Universal airborne approach to pilot performance assessment
[SAE PAPER 781009] p0130 A79-25891
A study of progress in flying performance revealed from daily check sheets in a primary flight

training course. III - Comparison of progress between two courses p0134 A79-27119
Methodological considerations of visual workloads of helicopter pilots p0209 A79-38363
Visual workload of the copilot/navigator during terrain flight p0209 A79-38364
Pilot workload in the aircraft of the future p0226 A79-40646
Analysis of population mortality kinetics with application to the longevity followup of the Navy's '1,000 aviators' p0234 A79-43207
+Gz tolerance correlation with clinical parameters p0235 A79-43213
A structural model of the adaptive human pilot [AIAA 79-1784] p0252 A79-45411
Medical barofunction testing of aviators with otorhinolaryngologic disease p0298 A79-52285
Effect of age on relaxed +G sub z tolerance of aircrewmen p0030 N79-11719
Cardiological findings in 115 pilots: Diagnoses and assessment of their flying fitness p0030 N79-11721
The impact of coronary vascular risk factors on professional aircrew license loss in the United Kingdom p0031 N79-11724
Cardiovascular diseases as a cause of unfitness for flying service in aircrews of Italian Air Force: Etiopathogenesis, influence of performance in flight, and prevention p0031 N79-11725
Cardiovascular fitness of pilots of transport aircraft p0031 N79-11726
A model for the pilot's use of roll-axis motion cues in steady-state tracking tasks [AD-A059504] p0079 N79-14772
Speech as a pilot input medium p0119 N79-17519
Changes in the rotary wing aviator's ability to perform an uncommon low altitude rearward hover maneuver as a function of extended flight requirements and aviator fatigue p0150 N79-19623
A description of the recent neuropsychological selection of pilots for land forces light aircraft p0151 N79-19633
Radiological examination of the Rachis and fitness for employment as a helicopter pilot p0151 N79-19634
Oculomotor performance of aviators during an autorotation maneuver in a helicopter simulator p0151 N79-19638
Sensorial aspects of helicopter operations p0152 N79-19644
The effective acoustic environment of helicopter crewmen p0152 N79-19645
Vertebral pains in helicopter pilots --- symptomology and radiology p0153 N79-19656
Airline pilot scan patterns during simulated ILS approaches [NASA-TP-1250] p0155 N79-19682

AIRCRAFT SAFETY
Evolution of the man-machine interface in surveillance radar systems p0001 A79-10322
Heat transfer principles in personal protection applications p0043 A79-14405
High 'G' escape protection --- pilot restraint during high speed ejection p0044 A79-14428
Human factors considerations in establishing aircraft collision avoidance system alert thresholds p0045 A79-14438
Pilot preflight briefing utilizing an interactive computer generated Voice Response System p0167 A79-31887
The fitting of Canadian Forces aircrew helmets - Why the difference p0184 A79-33645
Synthetic training and evaluation - Some current issues p0275 A79-50550
Visual performance assessment through clear and sunscreen-treated windows [AD-A059750] p0080 N79-14775
The use of mathematical modeling in crashworthy helicopter seating systems p0287 N79-31923
Pilot incapacity in flight p0291 N79-31950
Geographical disorientation and flight safety p0291 N79-31951

AIRCRAFT STABILITY
NT HOVERING STABILITY
Prediction of pilot-aircraft stability boundaries and performance contours p0118 N79-17507
Manual control of yaw motion with combined visual and vestibular cues p0119 N79-17513

AIRCREWS
U FLIGHT CREWS
AIRFIELDS
U AIRPORTS
AIRFOILS
NT FIXED WINGS
NT ROTARY WINGS
AIRLINE OPERATIONS
Coordinated crew performance in commercial aircraft operations p0040 A79-13219
Recurrent training/supernumerary system p0041 A79-13283
Survey on eye comfort in aircraft. I - Flight attendants p0165 A79-30665
Soviet civil aviation training programs p0270 A79-49221

AIRPORTS
A new case of autochthonous malaria in the Paris region associated with frequentation of airports - Recommendations of prophylactic procedures p0104 A79-23958
Detection of conflict states in air traffic control of airport zones p0166 A79-31181

AIRSPEED
The behavior of observers in detecting unbriefed targets at different aircraft speeds with side-looking radar [AD-A060908] p0085 N79-15586
ALARMS
U WARNING SYSTEMS
ALBUMINS
RBC-/Cr-51/ half-life and albumin turnover in growing Beagle dogs during chronic radial acceleration p0135 A79-27553
Investigation of albumin and globulin composition of blood of the crew of the Salyut-3 orbital station p0244 N79-27820
Binding of biologically active agents to plasma proteins [CL-1977-22] p0261 N79-29787
ALCOHOLS
NT ETHYL ALCOHOL
The effects of alcohol on driver performance in a decision making situation p0092 N79-15629
A decision model applied to alcohol effects on driver signal light behavior p0092 N79-15630
Analysis of visible spectra and thermodynamic parameters in hemeprotein systems p0144 N79-18579

ALDEHYDES
NT FORMALDEHYDE
ALDOSTERONE
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects p0297 A79-52023

ALERTNESS
Vigilance and electroencephalogram --- human performance in compensatory target tracking p0100 A79-22975

Auditory and visual sustained attention during ozone exposure
p0273 A79-49988

Effects of prolonged unidirectional shift of sleeping-waking cycle on physiological functions, mental productivity and sleep of man
p0109 N79-16526

ALGAE
NT BLUE GREEN ALGAE
NT CHLORELLA
NT SCENEDESMUS

Organic geochemical studies on kerogen precursors in recently deposited algal mats and oozes
p0001 A79-10419

A biogeochemical study of the Abu Dhabi algal mats - A simplified ecosystem
p0132 A79-26373

Algal growth under multiple nutrient limiting conditions
p0013 N79-10692

Impact of large scale aquatic biomass systems
[PB-282617/0] p0013 N79-10697

Effects of electromagnetic field induction on development of the green algae, scenedesmus quadricauda (Turbpin) Breb. and composition of free amino acids in its biomass and medium
p0075 N79-14740

The growth kinetics of freshwater algae
p0174 N79-21740

Citric acid enhancement of copper sulfate toxicity to the blue-green algae ""aphanizomenon flos-aquae'' and ""microcystis aeruginosa''
[PB-291637/7] p0189 N79-22751

ALGAL BLOOM
U ALGAE

ALGEBRA
NT HOMOMORPHISMS
NT LINEAR EQUATIONS
NT MATRICES (MATHEMATICS)

ALGORITHMS

The augmentation algorithm and molecular phylogenetic trees
p0070 A79-20267

An algorithm to ascertain critical regions of human tracking ability
p0163 A79-30218

On investigating the statistical properties of the populous path algorithm by computer simulation - Counterconclusions to those of Tateno and Nei --- for mutational change in protein evolution
p0253 A79-45640

Augmentation algorithm - A reply to Holmquist --- for nucleotide substitutions
p0253 A79-45644

Molecular phylogenetic trees - On the validity of the Goodman-Moore augmentation algorithm
p0253 A79-45645

Design specification for the whole-body algorithm
[NASA-CR-160226] p0212 N79-24641

Study report on interfacing major physiological subsystem models: An approach for developing a whole-body algorithm
[NASA-CR-160232] p0218 N79-25729

The development of a whole-body algorithm
[NASA-CR-160214] p0218 N79-25730

User's instructions for the whole-body algorithms
[NASA-CR-160233] p0219 N79-25735

ALIPHATIC COMPOUNDS
NT ACETIC ACID
NT ACETYL COMPOUNDS
NT ADENOSINES
NT CYANAMIDES
NT ETHYL ALCOHOL
NT ETHYLENE
NT FATTY ACIDS
NT GLUCOSE
NT GLUTAMINE
NT GLYCOGENS
NT HEXOSES
NT HYDRAZINES
NT INOSITOLS
NT ISOPROPYL COMPOUNDS
NT KETONES
NT LACTATES
NT METHANE
NT NUCLEOSIDES
NT POLYSACCHARIDES

ALKALI HALIDES
NT SODIUM CHLORIDES

ALKALI METALS
NT POTASSIUM
NT POTASSIUM 40
NT SODIUM
NT SODIUM ISOTOPES
NT SODIUM 22

ALKALIES
NT LITHIUM HYDROXIDES

ALKALOIDS
NT HYOSCINE
NT NICOTINE

ALKANES
NT METHANE

ALKENES
NT ETHYLENE

ALL-WEATHER LANDING SYSTEMS

Manual landings in Category 3 conditions
p0297 A79-52055

ALLERGIC DISEASES

Allergy to lanolin
[BLL-RTS-11185] p0142 N79-18570

ALLOYS
NT PLATINUM ALLOYS

ALPHANUMERIC CHARACTERS

The effect of active area on the legibility of dot matrix displays
[AD-A058014] p0052 N79-12708

A human engineering specification for legibility of alphanumeric symbology on video monitor displays
[AD-A064960] p0197 N79-23667

ALTERATION
U REVISIONS

ALTITUDE
NT FLIGHT ALTITUDE
NT HIGH ALTITUDE
NT LOW ALTITUDE

ALTITUDE ACCLIMATIZATION

Norepinephrine uptake by the isolated heart of rats adapted and deadapted to hypoxia
p0097 A79-20621

Cerebral gas exchange in rats adapted to hypoxia during inspiration of oxygen-poor mixtures
p0097 A79-20623

Responses of high altitude natives to a standard cold test at sea level
p0164 A79-30658

Immunophysiological aspects of man's adaptation to highland
p0188 A79-35123

Investigation of the content of hemoglobin and its fractions in permanent inhabitants of the Tien Shan and Pamir
p0188 A79-35124

Effect of adaptation to high-altitude hypoxia on cardiac adrenoreactivity and the state of the adenylcyclase and phosphodiesterase systems in the myocardium
p0255 A79-46500

Oxygen affinity of blood in altitude Sherpas
p0268 A79-47854

Composition of cerebral fluids in goats adapted to high altitude
p0277 A79-50902

Evidence for increased intrathoracic fluid volume in man at high altitude
p0305 A79-54266

Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] p0310 N79-33788

ALTITUDE SICKNESS

Case report - Intracardial gas bubbles in relation to altitude decompression chokes
p0011 A79-12871

Prevention and treatment of space sickness in Shuttle-Orbiter missions
p0128 A79-24639

ALTITUDE SIMULATION

Hemoglobinemia in rats exposed to high altitude is not due to an overload of catabolic mechanisms
p0101 A79-23467

Thermal sweat rate response to an acute short exposure at a simulated altitude of 4,600 m
p0102 A79-23474

Response of women mountaineers to maximal exercise during hypoxia
p0234 A79-43201

Effect of physical training at moderate altitude /1850 m/ on hypoxic tolerance

p0235 A79-43210

ALTITUDE TESTS
NT HIGH ALTITUDE TESTS
Intracardial gas bubbles and decompression sickness while flying at 9,000 m within 12-24 h of diving
p0010 A79-12866

ALTITUDE TOLERANCE
Hemoglobinemia in rats exposed to high altitude is not due to an overload of catabolic mechanisms
p0101 A79-23467

Cardiorespiratory assessment of decongestant-antihistamine effects on altitude, +Gz, and fatigue tolerances
p0127 A79-24628

Effects of altitude and two decongestant-antihistamine preparations on physiological functions and performance
p0127 A79-24635

Individual differences in hypoxic responses at high altitudes
p0159 A79-28738

Plasma electrolytes in relation to altitude tolerance in rats
p0163 A79-30652

Effect of physical training at moderate altitude /1850 m/ on hypoxic tolerance
p0235 A79-43210

Effects of propranolol on Time of Useful Function (TUF) in rats --- tolerance to rapid decompression
[AD-A068535/4] p0283 N79-31896

ALUMINUM
Aluminized firefighters' crash-rescue protective hood: Facepiece-visor redesign study
[AD-A066492] p0223 N79-25764

ALUMINUM COMPOUNDS
NT KAOLINITE
NT MONTMORILLONITE

ALUMINUM SILICATES
NT KAOLINITE
NT MONTMORILLONITE

AMBIENT TEMPERATURE
Effect of cockpit temperature gradients on the validity of single-point measurements
p0234 A79-43203

Responses of conscious rabbits to CO2 at ambient temperatures of 5, 20, and 35 C
p0277 A79-50904

Protective approaches in the moderation of the physiological effects of extreme ambient conditions in helicopter operations
p0149 N79-19618

AMBULANCES
Evaluation of the helicopter in aeromedical transfers
p0128 A79-24638

AMERICIUM
NT AMERICIUM 241

AMERICIUM ISOTOPES
NT AMERICIUM 241

AMERICIUM 241
Pacific Northwest Laboratory report for 1977 to the DOE assistant secretary for environment. Part 2: Ecological sciences
[PNL-2500-PT-2] p0053 N79-13677

AMIDES
NT CYANAMIDES
NT UREAS

AMINES
NT AMPHETAMINES
NT CATECHOLAMINE
NT HYOSCINE
NT PROMETHAZINE
NT SEROTONIN
Effect of electroconvulsive shock on monoaminergic receptor binding sites in rat brain
p0162 A79-29925

Experimental approach to the chemical evolution in the primeval sea. I - Formation of amino acids and amino acid polymers in modified sea mediums
p0203 A79-37935

Prebiotic synthesis of amino acids by carboxylation of amines in oxidative atmosphere
p0203 A79-37937

AMINO ACIDS
NT GLUTAMINE
NT LEUCINE
NT PEPTIDES
NT POLYPEPTIDES
NT PROTOPROTEINS
NT TRYPTOPHAN
Coupling of aspartate and serine transport to the transmembrane electrochemical gradient for sodium ions in Halobacterium halobium - Translocation stoichiometries and apparent cooperativity
p0002 A79-10425

In vivo response of ornithine decarboxylase activity to growth hormone as demonstrated by oxidation of L-ornithine-1-/C-14/ in hypophysectomized rats
p0005 A79-12400

Speculations of the evolution of the genetic code. II
p0099 A79-22080

Photochemical synthesis of amino acids from aqueous solutions of ethyl alcohol, ammonia/nitrogen under varied conditions
p0105 A79-24520

Beta-galactosidase and selective neutrality --- amino acid composition of proteins
p0132 A79-26169

The origin of life on earth - Recent studies
p0134 A79-27335

Amino acids in southern Kamchatka hot springs
p0182 A79-33122

Synthesis of amino acids under primitive earth conditions in the presence of clay
p0203 A79-37930

Experimental approach to the chemical evolution in the primeval sea. I - Formation of amino acids and amino acid polymers in modified sea mediums
p0203 A79-37935

Prebiotic synthesis of amino acids by carboxylation of amines in oxidative atmosphere
p0203 A79-37937

Incorporation of sulphur in chemical evolution
p0203 A79-37938

Experimental approach to the chemical evolution in the primeval sea. II - Formation of protocell-like structures 'marigranules' in a modified sea medium
p0204 A79-37964

The point mutation process in proteins
p0205 A79-37972

Some characteristic features of the origin and evolution of the amino acid composition of proteins - A theoretical consideration
p0206 A79-37973

Nucleotide-binding site data and the origin of the genetic code
p0206 A79-37974

Studies of amino acid metabolism in the muscles of rats flown aboard the biosatellite Cosmos 782
p0230 A79-41714

Inadequacy of prebiotic synthesis as origin of proteinous amino acids
p0253 A79-45643

Polymers produced by heating an amino acid mixture in sea water enriched with transition elements
p0254 A79-46461

Gating effects in Halobacterium halobium membrane transport
p0268 A79-47849

Light-driven solute transport in Halobacterium halobium
p0270 A79-49194

Role of n-aminobenzoic acid in repairing UV and gamma radiation damage
p0301 A79-53211

Effects of electromagnetic field induction on development of the green algae, scenedesmus quadricauda (Turbpin) Breb. and composition of free amino acids in its biomass and medium
p0075 N79-14740

AMMONIA
Photochemical synthesis of amino acids from aqueous solutions of ethyl alcohol, ammonia/nitrogen under varied conditions
p0105 A79-24520

Enhancing biological production of ammonia from atmospheric nitrogen and soil nitrate
[PB-286515/2] p0083 N79-15571

AMPHETAMINES
Effects of amphetamine on response selection and response execution processes in choice reaction tasks
[IZF-1978-8] p0309 N79-32839

AMPHIBIA
NT FROGS
AMPLITUDE MODULATION
Classification of amplitude-modulated noise patterns with extended practice
[AD-A066703] p0222 N79-25756
ANAEROBES
Sulfate-reducing bacteria and biochemical evolution
p0205 A79-37967
A biochemical basis of obligate anaerobiosis
p0142 N79-18561
Studies of microbial flora and immunity of Salyut-3 crew
p0192 N79-23629
ANALGESIA
Indomethacin-antihistamine combination for gastric ulceration control
[NASA-CASE-ARC-11118-2] p0077 N79-14755
ANALOG SIMULATION
Various modeling approaches in biomechanics --- analog simulation of impact events
p0005 A79-12407
A three-dimensional mathematical analogue of the spine structure: A comprehensive approach
p0285 N79-31909
ANALYSIS (MATHEMATICS)
NT ERROR ANALYSIS
NT FOURIER ANALYSIS
NT FUNCTIONAL ANALYSIS
NT HARMONIC ANALYSIS
NT LINEAR EQUATIONS
NT MEASURE AND INTPGRATION
NT MONTE CARLO METHOD
NT NUMERICAL ANALYSIS
NT WEIGHTING FUNCTIONS
ANALYSIS OF VARIANCE
A method to evaluate performance reliability of individual subjects in laboratory research applied to work settings
[FAA-AM-78-37] p0123 N79-17547
ANALYTIC GEOMETRY
NT PROLATE SPHEROIDS
The use of biostereometry in helicopter cockpit design --- using a simulator and analytic geometry
p0150 N79-19629
ANATOMY
NT ADRENAL GLAND
NT AORTA
NT ARM (ANATOMY)
NT ARTERIES
NT BLADDER
NT BLOOD VESSELS
NT BONES
NT BRAIN
NT BRONCHI
NT CAPILLARIES (ANATOMY)
NT CARDIAC VENTRICLES
NT CARDIOVASCULAR SYSTEM
NT CARTILAGE
NT CEREBRAL CORTEX
NT CEREBRUM
NT CHEMORECEPTORS
NT CHEST
NT CIRCULATORY SYSTEM
NT COCHLEA
NT COLLAGENS
NT CONNECTIVE TISSUE
NT CORNEA
NT DIAPHRAGM (ANATOMY)
NT EAR
NT ERYTHROCITES
NT EYE (ANATOMY)
NT FEMUR
NT FINGERS
NT FOREARM
NT FOVEA
NT GLANDS (ANATOMY)
NT GRAVIRECEPTORS
NT HAND (ANATOMY)
NT HEAD (ANATOMY)
NT HEART
NT HEMATOPOIESIS
NT HEMATOPOIETIC SYSTEM
NT HIPPOCAMPUS
NT HUMAN BODY
NT JOINTS (ANATOMY)
NT KIDNEYS
NT KNEE (ANATOMY)
NT LABYRINTH
NT LEG (ANATOMY)
NT LIMBS (ANATOMY)
NT LIVER
NT LUNGS
NT LYMPHOCYTES
NT MAMMARY GLANDS
NT MIDDLE EAR
NT MUSCULOSKELETAL SYSTEM
NT MYOCARDIUM
NT NECK (ANATOMY)
NT OCULOMOTOR NERVES
NT ORGANS
NT OTOLITH ORGANS
NT PARATHYROID GLAND
NT PHOTORECEPTORS
NT PINEAL GLAND
NT PITUITARY GLAND
NT PROPRIOCEPTORS
NT PROSTATE GLAND
NT PUPILS
NT RESPIRATORY SYSTEM
NT RETINA
NT SEMICIRCULAR CANALS
NT STOMACH
NT SYSTOLE
NT TESTES
NT THERMORECEPTORS
NT THYMUS GLAND
NT THYROID GLAND
NT TIBIA
NT TRACHEA
NT VASCULAR SYSTEM
NT VEINS
NT VERTEBRAE
NT VERTEBRAL COLUMN
NT VESTIBULES
NT WRIST
Anatomical frames of reference and biomechanics
p0065 A79-18230
Anatomical coordinate systems for human body segments
p0065 A79-18231
Functional anatomy of vertebral column with reference to load bearing areas
p0272 A79-49732
Analysis and validation of human biodynamic models
[AD-A059013] p0058 N79-13714
The lymph nodes and lymph vessels of the white rat
[BLL-RTS-11309] p0141 N79-18554
ANEMOMETERS
NT HOT-FILM ANEMOMETERS
ANEMOMETRY
U VELOCITY MEASUREMENT
ANGIOGRAPHY
Predictive accuracy of Q-X/Q-T ratio, Q-Tc interval, S-T depression and R wave amplitude during stress testing --- heart pathology
p0225 A79-40464
Coronary calcification in the diagnosis of coronary artery disease
p0226 A79-40465
Computer quantitation of angiocardiographic images
p0293 A79-51028
Computer quantitation of coronary angiograms
p0293 A79-51030
The development of a digital video subtraction system for intravenous angiography
p0294 A79-51033
Contour detector and data acquisition system for the left ventricular outline
[NASA-CASE-ARC-10985-1] p0017 N79-10724
ANGULAR ACCELERATION
Computation of rigid-body rotation in three-dimensional space from body-fixed linear acceleration measurements
[ASME PAPER 78-WA/BIO-5] p0069 A79-19759
Nystagmographic characterization of responses to rotation of persons with different vestibular-vegetative stability
p0180 A79-35122
Characteristics of vestibular nystagmus in rats
p0016 N79-10714
An examination of statistical impact acceleration injury prediction models based on -Gx accelerator data from subhuman primates
[AD-A057276] p0026 N79-11690
Vestibular models and thresholds of motion perception. Result of tests in a flight simulator
[VTH-LR-265] p0146 N79-18595

Balance training of the equilibrium organ and its effect on flight strategy
p0242 N79-27074

Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations
p0312 N79-33800

ANGULAR MOTION
U ANGULAR VELOCITY

ANGULAR VELOCITY
Dynamics of an image viewed through a rotating mirror
p0221 A79-36365

ANIMALS
NT ARTEMIA
NT ARTHROPODS
NT CHICKENS
NT CHIMPANZEES
NT DOGS
NT DROSOPHILA
NT FISHES
NT FROGS
NT GOATS
NT HUMAN BEINGS
NT INSECTS
NT INVERTEBRATES
NT MAMMALS
NT MICE
NT MONKEYS
NT PARAMECIA
NT PRIMATES
NT RABBITS
NT RATS
NT SPORES
NT WHALES
NT WORMS
Animal life support transporters for Shuttle/Spacelab
[ASME PAPER 78-ENAS-10] p0006 A79-12559

Ecological physiology of animals. I - General ecological physiology and physiology of adaptations --- Russian book
p0275 A79-50474

Spermatogenesis in dogs during many years of chronic exposure to gamma radiation and in the aftereffect period
p0073 N79-14727

DNA content of animal organs during space flight on Kosmos-690 satellite
p0073 N79-14728

State of blood clotting during prolonged hypokinesia
p0073 N79-14729

The combined effect of carbon monoxide and normobaric hyperoxia on animals
p0073 N79-14730

Blood lipid changes in hypoxic rats
p0074 N79-14731

Effect of intermittent hypoxia on functional activity of peripheral blood neutrophils
p0074 N79-14732

Effect of cerebrocranial trauma on reactive distinctions of hypothalamic and hippocampal vessels in the presence of hypoxia
p0074 N79-14733

Role of vestibular system in behavior of animals submitted to prolonged slow rotation
p0074 N79-14734

Some recent results on the deposition of electromagnetic energy in animals and models of man
p0083 N79-15563

Space biology and aerospace medicine, volume 13, no. 1, 1979
[JPRS-72826] p0107 N79-16514

ANIMATION
U MOTION

ANOMALIES
Digital image anomalies - Static and dynamic --- rastering and aliasing effects and elimination
p0137 A79-28158

ANOXIA
Temporal relation between onset of cell anoxia and ischemic contractile failure
p0300 A79-52895

Molecular determinants for the prediction and survival of ischemic anoxic stress pathology
p0027 N79-11700

ANTENNAS
NT LOOP ANTENNAS

ANTHROPOMETRY
Seating, console and workplace design - Seated operator reach profiles
p0036 A79-13188

Seating, console, and workplace design - Integration of literature and accommodation model
p0036 A79-13189

Estimating percentiles of nonnormal anthropometric populations - Final report
p0065 A79-18226

Anatomical frames of reference and biomechanics
p0065 A79-18230

A theoretical model to estimate some ergonomic parameters from age, height and weight
p0132 A79-26150

Anthropometric source book. Volume 1: Anthropometry for designers
[NASA-RP-1024] p0032 N79-11734

Anthropometric changes in weightlessness
p0032 N79-11735

Variability in human body size
p0032 N79-11736

Anthropometry
p0032 N79-11737

Arm-leg reach and workspace layout
p0033 N79-11739

Range of joint motion
p0033 N79-11740

Human muscular strength
p0033 N79-11741

Anthropometry in sizing and design
p0033 N79-11742

Statistical considerations in man-machine designs
p0033 N79-11743

Reach capability of men and women: A three-dimensional analysis
[AD-A060312] p0081 N79-14779

Editing procedure for anthropometric survey data
[AD-A060393] p0093 N79-15639

The use of biostereometry in helicopter cockpit design --- using a simulator and analytic geometry
p0150 N79-19629

Performance evaluation of test dummies with flesh parts produced with substitute foaming compounds
[PB-289951/6] p0179 N79-21776

Analysis of body form using biostereometrics
[NASA-CR-160173] p0195 N79-23654

Guidelines for fit testing and evaluation of USAF personal-protective clothing and equipment
[AD-A065901] p0197 N79-23668

Procedures used to generate input data sets for the articulated total body model from anthropometric data
p0284 N79-31903

United States Army anthrometry: 1946-1977
[AD-A068095] p0289 N79-31938

Analysis of body size measurements for US Navy women's clothing and pattern design
[AD-A068600] p0290 N79-31939

ANTIADRENERGICS
Effects of propranolol on Time of Useful Function (TUF) in rats --- tolerance to rapid decompression
[AD-A068535/4] p0283 N79-31896

ANTIBIOTICS
Determination of antimicrobial susceptibilities on infected urines without isolation
[NASA-CASE-GSC-12046-1] p0076 N79-14750

ANTIBODIES
NT GAMMA GLOBULIN

ANTIGENS
Design of polymeric immunomicrospheres for cell labelling and cell separation
p0275 A79-50234

Clinical and morphological studies of people in the course of long-term hypokinesia and subsequent readaptation
p0015 N79-10709

Isolation of virus-augmented tumor antigens
p0142 N79-18564

ANTIHISTAMINICS
NT PROMETHAZINE
Cardiorespiratory assessment of decongestant-antihistamine effects on altitude, +Gz, and fatigue tolerances
p0127 A79-24628

Effects of altitude and two decongestant-antihistamine preparations on

physiological functions and performance
p0127 A79-24635
Indomethacin-antihistamine combination for gastric
ulceration control
[NASA-CASE-ARC-11118-2] p0077 N79-14755
ANTIINFECTIVES AND ANTIBACTERIALS
Microbial Check Valve for Shuttle
[ASME PAPER 78-ENAS-27] p0008 A79-12576
ANTIRADIATION DRUGS
Role of n-aminobenzoic acid in repairing UV and
gamma radiation damage
p0301 A79-53211

AORTA
Better definition of eye to aortic valve distance
in high acceleration cockpit /HAC/ seating
geometries
p0183 A79-33632
Aortic blood flow velocity during exercise in man
p0216 N79-25710

APERTURES
On the measurement of hazardous e.m. fields
radiated through an aperture
p0233 A79-42486

APNEA
U RESPIRATION
APOLLO SOYUZ TEST PROJECT
Biological study of tobacco seeds flown in the
joint Apollo-Soyuz test-project
p0006 A79-12519
Genetic effects of cosmic radiation on
bacteriophage T4Br/+/ /On materials of
biological experiment Soyuz-Apollo/
p0229 A79-41708

APPENDAGES
NT ARM (ANATOMY)
NT FOREARM
NT HAND (ANATOMY)
NT KNEE (ANATOMY)
NT LEG (ANATOMY)
APPLICATION
U UTILIZATION
APPROACH
NT INSTRUMENT APPROACH
A safety margin and flight reference system and
display for powered-lift aircraft
p0090 N79-15614
The limited range of the human eye for optical
aircraft acquisition
p0291 N79-31948

APPROACH CONTROL
Manual landings in Category 3 conditions
p0297 A79-52055

APPROACH INDICATORS
Pilot performance during simulated approaches and
landings made with various computer-generated
visual glidepath indicators
p0297 A79-52276

APTITUDE
Relating performance in basic electricity and
electronics and A schools
[AD-A060914] p0085 N79-15584
Some variations on derivations by Primoff and
their extensions
[PB-287298/4] p0112 N79-16548
AQUEOUS SOLUTIONS
Prebiotic condensation of oligonucleotide
p0204 A79-37945

AQUICULTURE
Impact of large scale aquatic biomass systems
[PB-282617/0] p0013 N79-10697
Nitrogen fixation with photosynthetic marine
microorganisms
[PB-286000/5] p0083 N79-15570
ARCTIC REGIONS
Man and materiel in the cold regions, part 1
[AD-A063752] p0178 N79-21771
AREA NAVIGATION
Response surface methodology as a manipulator of
complex task difficulty --- for computer
generated aircraft area navigation
control-display systems evaluation
p0039 A79-13211

ARGON
Molecular sieve oxygen generating system - The
argon question /A brief review/ --- effects of 5
percent Ar in breathing gas
p0274 A79-49994

ARGON-OXYGEN ATMOSPHERES
Tissue gas and blood analyses of human subjects
breathing 80% argon and 20% oxygen
p0164 A79-30655

ARGUMENTS (MATHEMATICS)
U INDEPENDENT VARIABLES
ARIP (IMPACT PREDICTION)
U COMPUTERIZED SIMULATION
ARKANSAS
Distribution of phytoplankton in Arkansas lakes
[PB-292742/4] p0240 N79-26768
ARM (ANATOMY)
NT FOREARM
A prediction model of arm push strength in the
transverse plane
p0037 A79-13195
Arm-leg reach and workspace layout
p0033 N79-11739

ARMED FORCES
NT ARMED FORCES (UNITED STATES)
NT NAVY
ARPA authoring system
[AD-A064723] p0190 N79-22762
ARMED FORCES (UNITED STATES)
Acute toxicity of a number of chemicals of
interest to the Air Force
[AD-A067313] p0220 N79-25742
United States Army anthrometry: 1946-1977
[AD-A068095] p0289 N79-31938
Analysis of body size measurements for US Navy
women's clothing and pattern design
[AD-A068600] p0290 N79-31939
Three decades of USAF efforts to reduce human
error accidents, 1947-1977
p0290 N79-31943

ARRHYTHMIA
+Gz tolerance correlation with clinical parameters
p0235 A79-43213
Cardiac arrhythmia following postimmersion +G sub
z accelerations
p0015 N79-10710
The significance of rhythm disturbances in
asymptomatic persons
p0027 N79-11698

ARTEMIA
Development capacity of artemia cysts and lettuce
seeds flown in Cosmos 936 and directly exposed
to cosmic rays
p0127 A79-24632

ARTERIES
NT AORTA
Effect of exercise on collateral development in
dogs with normal coronary arteries
p0067 A79-18960
Responses of pial arterioles after prolonged
hypercapnia and hypoxia in the awake rabbit
p0101 A79-23075
Circulatory response to arterial hyperoxia
p0221 A79-36048
Norepinephrine action on smooth muscle cells of
coronary arteries
p0208 A79-38149
Analyses for noninvasive monitoring of arterial
blood pressure by /I/ phono
cuff-sphygmomanometry, for discrete measurements
and /II/ arterial ultrasonic imaging, for
continuous measurements
p0294 A79-51037
Regulation of the carbon dioxide tension in
arterial blood during inhalation of carbon
dioxide in birds and mammals
p0169 N79-20713
Mechanics of arterial blood flow
p0247 N79-27846
Mass transport in arteries
p0247 N79-27848

ARTERIOSCLEROSIS
Ruptured arteriovenous anomaly in a former woman
astronaut candidate
p0128 A79-24640
Predicting coronary artery disease with treadmill
stress testing Changes in R-wave amplitude
compared with ST segment depression
p0186 A79-34284
The development of a digital video subtraction
system for intravenous angiography
p0294 A79-51033
Development of high-resolution ultrasonic imaging
techniques for detection and clinical assessment
of cardiovascular disease
[PB-286696/0] p0085 N79-15581

Development and evaluation of instrument systems for noninvasive detection, characterization and quantification of atherosclerotic lesions [PB-286851/1] p0085 N79-15582

Ergometric tests in expert medical certification of flight personnel p0109 N79-16527

Effects of dietary fats on atherosclerosis and thrombosis p0240 N79-26776

Aspects of dietary prevention of arteriosclerosis p0262 N79-29792

ARTHROPODS

NT ARTEMIA

NT DROSOPHILA

NT INSECTS

Selected examples of dispersal of arthropods associated with agricultural crop and animal production p0148 N79-19595

ARTIFICIAL HEART VALVES

Translations on USSR science and technology: Biomedical and behavioral sciences, no. 51 [JPRS-72588] p0076 N79-14745

Functional outcomes of prosthetic cardiac valve replacement p0076 N79-14746

Development of an electrical energy converter for circulatory device [PB-286738/0] p0111 N79-16545

Application of numerical methods to physiological flows --- Navier-stokes equation, prosthetic heart valves and vasoconstriction p0146 N79-18945

Development of an electrical energy converter for driving left heart assist blood pumps [PB-293510/4] p0241 N79-26780

ARTIFICIAL INTELLIGENCE

NT COGNITIVE PSYCHOLOGY

Overview of the use of robots in space missions [DGLR PAPER 78-154] p0042 A79-14099

Robots and artificial intelligence --- Russian book p0061 A79-17569

Multi-PIERRE - A learning robot system p0066 A79-18425

The interpretation of visual motion --- Book p0186 A79-34424

Goal-directed mechanics of controlled manipulators --- Russian book p0275 A79-50447

Visual motion perception by intelligent systems p0300 A79-52691

ARTIFICIAL SATELLITES

NT BIOSATELLITES

NT COSMOS SATELLITES

NT COSMOS 782 SATELLITE

NT COSMOS 936 SATELLITE

NT INTERCOSMOS SATELLITES

NT ORBITAL SPACE STATIONS

NT ORBITAL WORKSHOPS

ARTILLERY

Effects of target motion and image on AAA tracking --- Anti-Aircraft Artillery p0046 A79-14969

ARTS

NT ABILITIES

ASCORBIC ACID

Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs p0312 N79-33803

ASPERGILLUS

The effects of temperature, salinity, and other factors on the growth and formation of UV-absorbing substances by the fungus Aspergillus p0005 A79-12512

ASSAULTING

U ATTACKING (ASSAULTING)

ASSEMBLING

NT ORBITAL ASSEMBLY

General methods to enable robots with vision to acquire, orient, and transport workpieces [PB-287199/4] p0113 N79-16556

Simulated EVA operation of a remote connector assembly test report [NASA-CR-161167] p0156 N79-19687

ASSESS PROGRAM

Experiences of a payload specialist involved with the simulated Spacelab Mission ASSESS II [DGLR PAPER 78-183] p0070 A79-20024

Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II [IAF PAPER 79-88] p0302 A79-53291

ASSESSMENTS

NT TECHNOLOGY ASSESSMENT

ASSIMILATION

Inverse assimilation - A general principle of evolution of planetary surfaces p0207 A79-37989

ASTP

U APOLLO SOYUZ TEST PROJECT

ASTROBIOLOGY

U EXOBIOLOGY

ASTRONAUT LOCOMOTION

Spacesuit mobility knee joints [NASA-CASE-ARC-11058-2] p0214 N79-24651

ASTRONAUT MANEUVERING EQUIPMENT

Manned maneuvering unit: User's guide [NASA-CR-151864] p0113 N79-16553

ASTRONAUT PERFORMANCE

On the man's adaptation to the operator's work under stressful conditions of space flight [IAF PAPER 78-A-56] p0003 A79-11345

Experimental and psychological investigations in aviation and astronautics --- Russian book p0041 A79-13998

Space Sled - A multipurpose apparatus for vestibular research aboard Spacelab [DGLR PAPER 78-132] p0042 A79-14083

Results of tests of the equilibrium organ of candidates for payload expert for the first Spacelab mission [DGLR PAPER 78-134] p0042 A79-14084

Engineering-psychological study of information imaging systems --- manual control of spaceship docking p0099 A79-21404

Caloric and exercise requirements of space flight - Biostereometric results from Skylab p0128 A79-24637

Manual alignment of structural components in space [AIAA PAPER 79-0535] p0129 A79-25855

The physiologist's view of sensory illusions p0255 A79-46597

Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II [IAF PAPER 79-88] p0302 A79-53291

Thoughts about man-machine interrelations in space flights applied to Spacelab missions [IAF PAPER 79-95] p0302 A79-53295

Communication problems of international crews [IAF PAPER 79-A-23] p0303 A79-53425

Psychological selection of Spacelab payload specialists: The evaluation of German applicants [DLR-FB-78-29] p0281 N79-30936

ASTRONAUT TRAINING

From the laboratory to the Spacelab - Training program for Spacelab payload experts [DGLR PAPER 78-182] p0069 A79-20023

Ruptured arteriovenous anomaly in a former woman astronaut candidate p0128 A79-24640

Consciousness alteration in space [AIAA PAPER 79-1430] p0187 A79-34853

Spacelab's payload specialists, their selection and duties on-board p0226 A79-40720

Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions [IAF PAPER 79-99] p0303 A79-53297

Psychological training - One of the most important factors of enhancing the safety of space flights [IAF PAPER 79-A-24] p0303 A79-53426

ASTRONAUTS

Some advances in astronaut radiation dosimetry [IAF PAPER 78-67] p0003 A79-11228

Psychological selection of payload astronauts p0047 A79-15488

Selection of astronaut candidates - Contribution of the exercise ECG and spirography p0047 A79-15489

Special tests for astronaut selection - Study of cardiovascular reactions by the orthostatism test p0047 A79-15490

Special test for astronaut selection - Tests of tolerance in the centrifuge and in flight p0047 A79-15491

Special tests for astronaut selection - Muscular exercise test
p0047 A79-15492
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight
[IAF PAPER 79-80] p0301 A79-53288
Considerations associated with the introduction of female crewmembers in spacecraft and space stations
[IAF PAPER 79-A-22] p0303 A79-53424
Analysis of distribution of sequences of R-R intervals in astronauts: Generalized coordinate method
p0015 N79-10707
Characteristics of bacterial aerosol in airtight rooms occupied by humans
p0016 N79-10715
Man-machine analysis of translation and work tasks of Skylab films
[NASA-CR-151879] p0146 N79-18592

ASTRONOMY
NT SPACEBORNE ASTRONOMY

ATAXIA
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
[AD-A069375] p0314 N79-33819

ATHEROSCLEROSIS
U ARTERIOSCLEROSIS

ATHLETES
Thermoregulation in swimmers and runners
p0227 A79-41186
Dynamics of the catalase activity of the blood of athletes under the influence of local decompression
p0271 A79-49699

ATMOSPHERIC CHEMISTRY
Ion-molecule condensation reactions - A mechanism for organic synthesis in ionized reducing atmospheres
p0099 A79-22079

ATMOSPHERIC COMPOSITION
Abundance of organic compounds photochemically produced in the atmospheres of the Outer Planets
p0210 A79-39075
Enhancing biological production of ammonia from atmospheric nitrogen and soil nitrate
[PB-286515/2] p0083 N79-15571

ATMOSPHERIC CONDITIONS
U METEOROLOGY

ATMOSPHERIC EFFECTS
The organism and the habitation atmosphere
[NASA-TM-75536] p0049 N79-12685

ATMOSPHERIC IMPURITIES
U AIR POLLUTION

ATMOSPHERIC MODELS
NT DYNAMIC MODELS
Habitable zones about main sequence stars
p0136 A79-27930

ATMOSPHERIC NOISE
U ATMOSPHERICS

ATMOSPHERIC PRESSURE
Effect of decompression per se on nitrogen elimination
p0067 A79-18964

ATMOSPHERIC RADIATION
NT STRATOSPHERE RADIATION
Atmospheric neutrons
[NASA-CR-3126] p0211 N79-24631

ATMOSPHERIC TEMPERATURE
Meteorological limits on the growth and development of screwworm populations
[NASA-CR-151873] p0107 N79-16512

ATMOSPHERICS
Biological effects of electromagnetic fields
p0184 A79-33712

ATOMIC ENERGY
U NUCLEAR ENERGY

ATROPHY
Recovery of skeletal muscle after 3 mo of hindlimb immobilization in rats
p0268 A79-47856
The influence of exercise on bone atrophy
[NASA-CR-160196] p0216 N79-25714

ATTACK AIRCRAFT
NT A-7 AIRCRAFT
NT F-4 AIRCRAFT
NT F-15 AIRCRAFT
NT F-16 AIRCRAFT
NT F-18 AIRCRAFT
NT F-104 AIRCRAFT
NT F-111 AIRCRAFT
NT FIGHTER AIRCRAFT
NT JAGUAR AIRCRAFT
Ground attack
p0114 N79-16567

ATTACKING (ASSAULTING)
The design of air combat aircraft
p0114 N79-16566
Ground attack
p0114 N79-16567

ATTENTION
Auditory and visual sustained attention during ozone exposure
p0273 A79-49988
Time-sharing is not a unitary ability
[AD-A056632] p0019 N79-10739
Linear modelling of attentional resource allocation
p0091 N79-15626
A model for dynamic allocation of human attention among multiple tasks
p0092 N79-15627
Selective attention: The influences of subject sex and degree of prior habituation on performance of an attention task with distraction
p0260 N79-28876

ATTITUDE (INCLINATION)
NT PITCH (INCLINATION)
NT ROLL
NT YAW
The tilt illusion - Length and luminance changes of induction line and third /disinhibiting/ line
p0228 A79-41422
Man and automation --- for human-automatic pilot interfaces
p0275 A79-50372
The effects of closed loop tracking on a subjective tilt threshold in the roll axis
p0090 N79-15620
Use of the tilt cue in a simulated heading tracking task
p0091 N79-15621
Roll tracking effects of G-vector tilt and various types of motion washout
p0091 N79-15622

ATTITUDE CONTROL
NT LATERAL CONTROL
A model for the pilot's use of roll-axis motion cues in steady-state tracking tasks
[AD-A059504] p0079 N79-14772

AUDIO EQUIPMENT
NT EARPHONES
Magnitude estimation as a hearing aid selection procedure
p0246 N79-27838

AUDIO FREQUENCIES
A continuous wave, frequency modulated, ultrasonic device with auditory output for observing the heart
p0045 A79-14602
Effects of noise frequency on performance and annoyance
[NASA-TM-80107] p0241 N79-26781

AUDIO VISUAL EQUIPMENT
U TRAINING DEVICES

AUDIOMETRY
Automatic audiometry in the practice of flight-personnel examination
p0295 A79-51084

AUDITORY DEFECTS
Aeromedical aspects of otolaryngology
p0136 A79-27562
Two approaches to category representation in aural classification
[AD-A066705] N79-25754

AUDITORY PERCEPTION
The relationship between classical centers of the auditory tract and certain 'nonspecific' brain structures in the organization of the auditory function in animals
p0043 A79-14370
Role of the frontal associative region of the cortex in the activity of the auditory and visual sensory systems
p0043 A79-14371
Significance of motor activity for spatial hearing
p0043 A79-14372

Elements of the theory of biological analysers --- Russian book p0132 A79-26450

Auditory analysis of complex sound: Electrophysiological investigations --- Russian book p0167 A79-31899

Effect of paradoxical sleep deprivation on the acquisition of sound discrimination p0167 A79-31988

Automatic recognition of spoken words using a functional model of the auditory system p0235 A79-43464

Studies on the microwave-induced auditory effect [PB-290598/2] p0213 N79-24648

Overall loudness of steady sounds according to theory and experiment [NASA-RP-1001] N79-25753

Two approaches to category representation in aural classification [AD-A066705] N79-25754

Predicting individual listener confusions in the classification of complex, steady-state sounds [AD-A066704] p0222 N79-25755

Classification of amplitude-modulated noise patterns with extended practice [AD-A066703] p0222 N79-25756

The loudness of tinnitus p0246 N79-27837

Effects of acute noise traumata on whole-nerve and single-unit activity [IZF-1978-23] p0308 N79-32829

AUDITORY SIGNALS

The relationship between classical centers of the auditory tract and certain 'nonspecific' brain structures in the organization of the auditory function in animals p0043 A79-14370

A continuous wave, frequency modulated, ultrasonic device with auditory output for observing the heart p0045 A79-14602

Auditory analysis of complex sound: Electrophysiological investigations --- Russian book p0167 A79-31899

Manual control of yaw motion with combined visual and vestibular cues p0119 N79-17513

AUDITORY STIMULI

Bilateral and interhemispheric asymmetry of acoustic evoked potentials during monoaural acoustic stimulation p0159 A79-28735

A further investigation of visual dominance p0186 A79-33949

Auditory evoked potentials during short-term auditory stimulation p0277 A79-50659

Effects of filtering electroencephalic signals on auditory evoked brain stem responses p0176 N79-21758

Overall loudness of steady sounds according to theory and experiment [NASA-RP-1001] N79-25753

AUDITORY TASKS

Carbon monoxide and human time discrimination - Failure to replicate Beard-Wertheim experiments p0102 A79-23472

Comparative evaluation of the effectiveness of visual and aural tracking of a sinusoidal signal p0159 A79-28736

Auditory and visual sustained attention during ozone exposure p0273 A79-49988

Auditory evoked potentials during short-term auditory stimulation p0277 A79-50659

AUGMENTATION

NT STABILITY AUGMENTATION

Augmentation algorithm - A reply to Holmquist --- for nucleotide substitutions p0253 A79-45644

Molecular phylogenetic trees - On the validity of the Goodman-Moore augmentation algorithm p0253 A79-45645

Pilot-optimal augmentation synthesis p0088 N79-15603

AUTOCATALYSIS

The crisis in the problem of the origin of life p0207 A79-37982

Evolution in open systems - Acquisition and conservation of information in bioids p0207 A79-37987

AUTOCLAVES

A system for sterilizing objects --- such as water systems on the space shuttle using ethylene oxide [NASA-CASE-KSC-11085-1] p0318 N79-33848

AUTOMATA THEORY

Control systems for robots and manipulators --- Russian book p0134 A79-27303

Some properties of conservative systems --- walking robot model p0221 A79-35942

Goal-directed mechanics of controlled manipulators --- Russian book p0275 A79-50447

AUTOMATIC CONTROL

NT ADAPTIVE CONTROL
NT AUTOMATIC FLIGHT CONTROL
NT AUTOMATIC GAIN CONTROL
NT DYNAMIC CONTROL
NT FEEDBACK CONTROL
NT LEARNING MACHINES
NT NUMERICAL CONTROL
NT OPTIMAL CONTROL

Automatic control of physiological functions of the human organism in pathology --- Russian book p0132 A79-26350

Control systems for robots and manipulators --- Russian book p0134 A79-27303

Visually estimating workpiece pose in a robot hand using the feature points method p0269 A79-48018

An analysis of helicopter pilot control behaviour and workload during instrument flying tasks [NLR-MP-78003-U] p0124 N79-17553

Microbial load monitor [NASA-CR-160274] p0243 N79-27815

The systemic principles of building a man-machine control staff --- functional analysis p0249 N79-27861

AUTOMATIC DATA PROCESSING

U DATA PROCESSING

AUTOMATIC FLIGHT CONTROL

The man-computer division of tasks in the case of the control of complex technical systems --- applied to aircraft p0061 A79-17683

AUTOMATIC GAIN CONTROL

Contrast enhancement using local area brightness and gain control --- of airborne CRT display p0037 A79-13199

AUTOMATIC PATTERN RECOGNITION

U PATTERN RECOGNITION

AUTOMATIC PILOTS

Communications management by the remote system - An adaptive approach --- modeling of RPV autopilot/operator systems p0041 A79-13226

Man and automation --- for human-automatic pilot interfaces p0275 A79-50372

AUTOMATIC ROCKET IMPACT PREDICTORS

U COMPUTERIZED SIMULATION

AUTOMATIC TEST EQUIPMENT

Development of automated performance measures for introductory air combat maneuvers p0040 A79-13223

Automatic audiometry in the practice of flight-personnel examination p0295 A79-51084

Automated clinical system for chromosome analysis [NASA-CASE-NPO-13913-1] p0050 N79-12694

AUTOMATION

New principles of automation of biomedical research p0078 N79-14763

Proceedings of the 1977 Computerized Adaptive Testing Conference [AD-A060049] p0079 N79-14771

AUTOMOBILE ACCIDENTS

Whole body response research program [PB-286151/6] p0093 N79-15640

Whole body response research program. Appendix A: Methodology

[PB-286152/4] p0094 N79-15641
Whole body response research program. Appendix B: Raw data
[PB-286153/2] p0094 N79-15642
Whole body response research program. Appendix C: Processed data
[PB-286154/0] p0094 N79-15643
Calibration of three year old child dummies
[PB-288961/6] p0157 N79-19692

AUTOMOBILES
Evaluation of occupant protection devices and restraint systems
[PB-284299/5] p0053 N79-12713
Development of recommendations to improve controls operability
[PB-284433/0] p0053 N79-12714
Vehicle Steering control: A model of learning
p0089 N79-15606
The influence of vehicle aerodynamic and control response characteristics on driver-vehicle performance
p0089 N79-15608
The effects of alcohol on driver performance in a decision making situation
p0092 N79-15629
A decision model applied to alcohol effects on driver signal light behavior
p0092 N79-15630
The application of integral performance criteria to the analysis of discrete maneuvers in a driving simulator
[NS-GMR-2394] p0115 N79-17484
A control theoretic model of driver steering behavior
p0116 N79-17491
Driver steering dynamics measured in car simulator under a range of visibility and roadmaking conditions
p0117 N79-17493
Steering behaviour and manual control actions. Part 1: An evaluation of the literature and a research plan
[IZF-1978-3] p0146 N79-18594
Test and evaluation of head restraints, seat backs, and anchorages in vehicles subjected to rear impact collision
[PB-289779/1] p0178 N79-21773
Evaluation of research on surrogates for humans in motor vehicle crashes
[PB-291012/3] p0178 N79-21774
Development of a solid propellant inflation technique for the subcompact car passenger restraint system, phase 1
[PB-290328/4] p0178 N79-21775
Car driving as a cybernetic task
[IZF-1979-6] p0309 N79-32838

AUTONOMIC NERVOUS SYSTEM
NT SYMPATHETIC NERVOUS SYSTEM

AUTOPILOTS
U AUTOMATIC PILOTS

AUTOPSIES
Assessment of burns in accident fatalities
p0272 A79-49729
Whole body response research program. Appendix B: Raw data
[PB-286153/2] p0094 N79-15642

AUTORADIOGRAPHY
Autoradiographic enhancement of mammograms
p0227 A79-40773

AUTOROTATION
Oculomotor performance of aviators during an autorotation maneuver in a helicopter simulator
p0151 N79-19638

AVIATION
U AERONAUTICS

AVIATORS
U AIRCRAFT PILOTS

AVIONICS
Refinement of a computer simulation model for evaluating DAIS display concepts --- Digital Avionics Information System
p0038 A79-13209
Light weight solid state helmet symbol display and position system
p0046 A79-15177
Helicopter night operations - Feasibility and impact on the overall system --- helmet mounted FLIR detectors and image intensifier goggles
p0048 A79-16235
Life cycle costing of simulated vs actual equipment for intermediate maintenance training --- for F-16 avionics
p0064 A79-18217
Manual landings in Category 3 conditions
p0297 A79-52055
Optimisation of pilot capability and avionic system design
[AGARD-AR-118] p0113 N79-16560
Optimisation of pilot capability and avionic system design, introduction
p0113 N79-16561
Pilot workload qualification for avionics design
p0114 N79-16564
Human factors evaluations of today's helicopters as an aid to future systems design
p0150 N79-19627

AVOIDANCE
NT COLLISION AVOIDANCE

AXES (COORDINATES)
U COORDINATES

AXIAL COMPRESSION LOADS
Analytical modelling of load-deflection behavior of intervertebral discs subjected to axial compression
[AD-A071019] p0316 N79-33830

AXIAL LOADS
NT AXIAL COMPRESSION LOADS

AXIAL STRESS
Modeling the effect of axial bronchial tension on expiratory flow
p0067 A79-18957

AXIOMS
Axiomatic summary and deductions from Hering's principles of visual direction
p0228 A79-41421

AXONS
A study of axonal degeneration in the optic nerves of aging mice
p0005 A79-12123
Stereological ultrastructural analysis of the axonal endings in the neuromuscular junction of rats after a flight on biosputnik 782
p0101 A79-23468

AZINES
Clozapine metabolism in humans
[BLL-RTS-10902] p0142 N79-18567

AZOLES
NT INDOLES
NT TRYPTOPHAN

B

BACK INJURIES
Incidence of spinal disability amongst IAF pilots - Follow up of 38 cases
p0201 A79-37133
Vertebral fractures in Gnat ejections
p0201 A79-37134
Functional anatomy of vertebral column with reference to load bearing areas
p0272 A79-49732
Radiological diagnosis of spinal injuries and deformities
p0272 A79-49735
Assessment of spinal disabilities in relation to flying
p0272 A79-49736
Spinal injuries in the F/FB-111 crew escape system
p0274 A79-49996
Dynamic response of vertebral elements related to USAF injury
[AD-A059489] p0071 N79-14713
Radiological examination of the Rachis and fitness for employment as a helicopter pilot
p0151 N79-19634

BACKGROUND NOISE
Nonparametric model for the detection of signals observed by a human operator on a CRT screen on a noise background --- cathode-ray tube
p0159 A79-28565
Information-handling capacity of a human operator in detection of signals against a noisy background
p0081 N79-14989
Predicting individual listener confusions in the classification of complex, steady-state sounds
[AD-A066704] p0222 N79-25755

BACKSCATTERING
X-ray backscatter imaging

p0176 N79-21754
BACTERIA
NT CLOSTRIDIUM BOTULINUM
NT ESCHERICHIA
NT NITROBACTER
NT SALMONELLA
Characterization of a novel extremely alkalophilic bacterium p0004 A79-11950
Effects of magnesium, calcium, and serum on reversion of stable L-forms --- of soil bacterium p0131 A79-26140
Effects of low temperature on in vivo and in vitro protein synthesis in Escherichia coli and Pseudomonas fluorescens p0131 A79-26141
Thermal resistance of naturally occurring airborne bacterial spores --- Viking spacecraft dry heat decontamination simulation p0131 A79-26147
Nitrate fermentation in Clostridium perfringens and significance in metabolic evolution p0205 A79-37968
Evolution of early life inferred from protein and ribonucleic acid sequences p0206 A79-37980
Relationship between proton motive force and potassium ion transport in Halobacterium halobium envelope vesicles p0227 A79-40775
Squalenes, phytanes and other isoprenoids as major neutral lipids of methanogenic and thermoacidophilic 'archaebacteria' p0232 A79-42274
Accuracy of RGD approximation for computing light scattering properties of diffusing and motile bacteria --- Rayleigh-Gans-Debye p0233 A79-42448
Increased survival in experimental dog heatstroke after reduction of gut flora p0266 A79-47335
Gating effects in Halobacterium halobium membrane transport p0268 A79-47849
Light-driven solute transport in Halobacterium halobium p0270 A79-49194
Minute tubular forms in soil p0297 A79-51698
Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates p0297 A79-51701
Characteristics of bacterial aerosol in airtight rooms occupied by humans p0016 N79-10715
Mechanisms of recombination and function of DNA in bacteria [ORO-3941-33] p0072 N79-14715
Determination of antimicrobial susceptibilities on infected urines without isolation [NASA-CASE-GSC-12046-1] p0076 N79-14750
Mechanism of plant virus inactivation in soil injected with municipal wastewater and treatment plant sludges [PB-287012/9] p0107 N79-16513
The utilisation of organic compounds by purple bacteria in the presence of light [BLL-RTS-11213] p0141 N79-18556
A biochemical basis of obligate anaerobiosis p0142 N79-18561
Effects of lead on subcellular components in bacteria p0142 N79-18565
Bacteria in a North Carolina salt marsh. Standing crop and importance in the decomposition of Spartina alterniflora [PB-288816/2] p0153 N79-19668
Effects of different values of urine pH during long-term storage on microflora composition p0194 N79-23643
Microbial transformation of nucleosides [NASA-CR-158696] p0197 N79-25704
BACTERIOLOGY
In vitro duplication of the primary light-induced charge separation in purple photosynthetic bacteria p0131 A79-26100
Use of platinum electrodes for the electrochemical detection of bacteria p0131 A79-26146
Evolutionary relationship based on a biochemical study of energy-acquiring system between Nitrosomonas europaea and Thiobacillus novellus p0205 A79-37966
Sulfate-reducing bacteria and biochemical evolution p0205 A79-37967
Control by episome on salt-resistance in bacteria p0205 A79-37969
An ultraviolet light induced bacteriophage in Beneckea gazogenes --- organism growth on precambrian earth p0254 A79-46463
Energy transduction in Halobacterium halobium p0300 A79-53000
The utilisation of organic compounds by purple bacteria in the presence of light [BLL-RTS-11213] p0141 N79-18556
BACTERIOPHAGES
Possible contribution of transferable exogenous DNA in prokaryotic evolution p0205 A79-37971
Subcellular organisms and evolution of cell structure p0206 A79-37978
Genetic effects of cosmic radiation on bacteriophage T4Br/+/ /On materials of biological experiment Soyuz-Apollo/ p0229 A79-41708
An ultraviolet light induced bacteriophage in Beneckea gazogenes --- organism growth on precambrian earth p0254 A79-46463
BAGS
NT AIR BAG RESTRAINT DEVICES
NT GAS BAGS
Gas diffusion liquid storage bag and method of use for storing blood [NASA-CASE-NPO-13930-1] p0076 N79-14749
BALANCE
Balance training of the equilibrium organ and its effect on flight strategy p0242 N79-27074
BALLOON FLIGHT
Genetic effects of balloon flight in Drosophila melanogaster p0006 A79-12520
BANDWIDTH
NT BROADBAND
The human as a detector of changes in variance and bandwidth p0117 N79-17496
BANKING FLIGHT
U TURNING FLIGHT
BARDEEN APPROXIMATION
U ELECTRICAL PROPERTIES
BARITE
Microanalytical identification of barium sulphate crystals in statoliths of Chara Rhizoids [NASA-TM-75611] p0175 N79-21744
BAROMETRIC PRESSURE
U ATMOSPHERIC PRESSURE
BAROTRAUMA
Aeromedical aspects of otolaryngology p0136 A79-27562
Cases of probable Aero Otitis interna p0183 A79-33194
Doppler detection of thresholds for decompression-induced venous gas emboli in the awake rat p0202 A79-37707
BAYES THEOREM
Some Bayesian inference procedures for use in developing an impact acceleration injury prediction model [AD-A067228] p0220 N79-25741
BAYESIAN STATISTICS
U BAYES THEOREM
BAYS (TOPOGRAPHIC FEATURES)
NT CHESAPEAKE BAY (US)
BEAMS (RADIATION)
NT LIGHT BEAMS
NT PROTON BEAMS
BEARING (DIRECTION)
Investigations into the importance of the direction of centrifugal forces acting on the human body [RAE-LIB-TRANS-1945] p0077 N79-14758

BED REST
Physiological responses of women to simulated weightlessness: A review of the first female bed-rest study
[NASA-SP-430] p0054 N79-13686
Effects of physical conditioning and electric stimulation on metabolic processes in the soleus muscle and structure thereof in hypokinetic man
p0192 N79-23634
Development of an hypothesis for simulating anti-orthostatic bed rest
[NASA-CR-160200] p0217 N79-25717
Study report on modification of the long term circulatory model for the simulation of bed rest
[NASA-CR-160186] p0218 N79-25727
Improvements and validation of the erythropoiesis control model for bed rest simulation
[NASA-CR-160187] p0218 N79-25728
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
p0311 N79-33797

BEHAVIOR
NT DECONDITIONING
NT HUMAN BEHAVIOR
Study of specific effects of hyperfrequencies on the central nervous system. II - Exploratory research on rat /Wistar/ behaviour
p0047 A79-15493
Low tryptophan diet decreases brain serotonin and alters response to apomorphine
p0226 A79-40672
Quantitative analysis of mating behavior in aging male Drosophila Melanogaster
p0252 A79-44799
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 50
[JPRS-72462] p0170 N79-20720

BELGIUM
Analysis of the intervention of the human factor as a principal cause or influence in accidents of Mirage aircraft in the Belgian Air Force
p0290 N79-31945

BELL AIRCRAFT
NT UH-1 HELICOPTER

BENCHES
U SEATS

BENDS (PHYSIOLOGY)
U DECOMPRESSION SICKNESS

BENZENE POISONING
Assessment of human exposures to atmospheric benzene
[PB-284203/7] p0051 N79-12701

BETA PARTICLES
Beta-adrenoceptor antagonists: Central effects
p0027 N79-11702

BIBLIOGRAPHIES
Pathophysiology of overloads: Bibliography of Soviet publications --- Russian book
p0200 A79-36385
Eutrophication. Volume 2: A bibliography with abstracts
[NTIS/PS-78/0771/2] p0013 N79-10695
Eutrophication. Volume 3: A bibliography with abstracts
[NTIS/PS-78/0772/0] p0013 N79-10696
Biocompatible materials, volume 2. A bibliography with abstracts
[NTIS/PS-78/0675/5] p0019 N79-10736
A critally annotated bibliography of the literature on human factors in computer systems
[AD-A058081] p0052 N79-12707
Ecosystem models, volume 3. A bibliography with abstracts
[NTIS/PS-78/1146/6] p0054 N79-13678
Ecosystem models, volume 2. A bibliography with abstracts
[NTIS/PS-78/1145/8] p0054 N79-13679
The toxicology of ozone. A bibliography with abstracts
[NTIS/PS-78/1120/1] p0057 N79-13705
Information processing in humans, volume 2. A bibliography with abstracts
[NTIS/PS-78/1153/2] p0058 N79-13709
Information processing in humans, volume 3. A bibliography with abstracts
[NTIS/PS-78/1154/0] p0058 N79-13710
Anthropometric source book. Volume 3: Annotated bibliography of anthropometry
[NASA-RP-1024-VOL-3] p0058 N79-13712
Human work measurement. A bibliography with abstracts
[NTIS/PS-78/1197/9] p0081 N79-14781
Stress factors on pilot performance. A bibliography with abstracts
[NTIS/PS-78/1289/4] p0145 N79-18589
Biological effects of laser radiation, volume 1. A bibliography with abstracts
[NTIS/PS-79/0019/4] p0176 N79-21760
Biological effects of laser radiation, volume 2. A Bibliography with abstracts
[NTIS/PS-79/0020/2] p0176 N79-21761
Effects of fatigue on human behavior and performance. A bibliography with abstracts
[NTIS/PS-79/0071/5] p0177 N79-21762
Aircraft sonic boom: Biological effects. A bibliography with abstracts
[NTIS/PS-79/0190/3] p0214 N79-24650
Flight simulator training, volume 2. A bibliography with abstracts
[NTIS/PS-79/0277/8] p0222 N79-25758
Index to FAA Office of Aviation Medicine reports: 1961 through 1978
[AD-A067983] p0240 N79-26773
Cardiovascular diseases, volume 3. A bibliography with abstracts
[NTIS/PS-79/0063/2] p0260 N79-28874
Stress factors on pilot performance. Citations from the International Aerospace Abstracts data base
[NTIS/PS-79/0506/0] p0260 N79-28878
Altitude hypoxia, volume 1. A bibliography with abstracts
[NTIS/PS-79/0427/9] p0280 N79-30927
Altitude hypoxia, volume 2. A bibliography with abstracts
[NTIS/PS-79/0428/7] p0280 N79-30928
Biological effects of microwaves, volume 1. A bibliography with abstracts
[NTIS/PS-79/0432/9] p0280 N79-30929
Biological effects of microwaves, volume 2. A bibliography with abstracts
[NTIS/PS-79/0433/7] p0280 N79-30930
Hypothermia. A bibliography with abstracts
[NTIS/PS-79/0533/4] p0308 N79-32830
Hyperbaric oxygenation. A bibliography with abstracts
[NTIS/PS-79/0744/7] p0317 N79-33837
Human memory. A bibliography with abstracts
[NTIS/PS-79/0640/7] p0318 N79-33847
Publications of the planetary biology program for 1978: A special bibliography
[NASA-TM-80745] p0319 N79-33854

BINARY DATA
Application of pseudo random binary sequence input to identification of respiratory control dynamics
p0268 A79-48011

BINARY SYSTEMS (DIGITAL)
U DIGITAL SYSTEMS

BINOCULAR VISION
The importance of providing stereoscopic vision in training for nap-of-the-earth /NOE/ flight
p0062 A79-18206
The perceived direction of the binocular image
p0104 A79-24069
Correlation of binocular vision test results with synaptophore evaluation
p0201 A79-37136
The relationship between the apparent vertical and the vertical horopter --- visual perception of luminous line
p0225 A79-40186
The influence of rapid prism adaptation upon fixation disparity
p0231 A79-42230
Visual angle constancy for the subjective checkerboard pattern, as an indication of cortical origination of size constancy
p0231 A79-42232
Spatial frequency masking in human vision - Binocular interactions
p0232 A79-42284
Eye torsion and visual tilt are mediated by different binocular processes
p0256 A79-46651
Stereopsis in monkeys using random dot stereograms - The effect of viewing duration
p0271 A79-49481

Dynamic measurement of human cyclofusional eye movements p0142 N79-18575

BIOACOUSTICS

A continuous wave, frequency modulated, ultrasonic device with auditory output for observing the heart p0045 A79-14602

Elicited acoustic responses to meaningful and meaningless verbal stimuli p0276 A79-50654

The effective acoustic environment of helicopter crewmen p0152 N79-19645

BIOASSAY

Studies on the bioassayable growth hormone-like activity of plasma p0267 A79-47848

Clinical usefulness of radiopaque markers in left ventricular function p0293 A79-51029

A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles p0294 A79-51038

Bioassay of thermal protection afforded by candidate flight suit fabrics p0298 A79-52280

Automated clinical system for chromosome analysis [NASA-CASE-NPO-13913-1] p0050 N79-12694

Biomedical data validation through an on-line computer system [PB-285249/9] p0057 N79-13700

Determination of a generalized output index of a biological experiment after multiple tests p0076 N79-14744

Determination of antimicrobial susceptibilities on infected urines without isolation [NASA-CASE-GSC-12046-1] p0076 N79-14750

A porcine bioassay study of the physiological effects of fiber and dye degradation products (FDP) on burn wound healing [AD-A066990] N79-25748

Evaluation of four thermally protective fabrics using the USAARL bioassay method [AD-A067351] p0223 N79-25762

Mutagenic components of alternate energy sources [CONF-780636-8] p0280 N79-30923

Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids) p0311 N79-33798

BIOASTRONAUTICS

Experiment Chlorella 1 on board of Salyut 6 [IAF PAPER 78-53] p0003 A79-11223

Biological specimen holding facilities for Spacelab experiments [IAF PAPER 78-56] p0003 A79-11224

Medical control in prolonged space flights [IAF PAPER 78-63] p0003 A79-11226

Space medicine - A prognosis for future research [IAF PAPER 78-ST-17] p0003 A79-11364

Life sciences and space research XVI; Proceedings of the Open Meetings of the Working Group on Space Biology, Tel Aviv, Israel, June 7-18, 1977 p0005 A79-12508

Mechanism of the formation of phosphenes by X-rays p0006 A79-12516

An apparatus for studying electroretinographic responses under conditions of space flight p0006 A79-12517

ECLSS definition for a low cost space construction base --- Environmental Control Life Support Systems [ASME PAPER 78-ENAS-15] p0007 A79-12564

Vestibular Function Research aboard Spacelab [ASME PAPER 78-ENAS-25] p0007 A79-12574

Life sciences in the Shuttle era [ASME PAPER 78-ENAS-34] p0008 A79-12582

Support system considerations for STS biological investigations [ASME PAPER 78-ENAS-37] p0008 A79-12584

Spacelab and beyond - Bioscience problems in the use of space [DGLR PAPER 78-129] p0041 A79-14081

Medical characteristics of the Spacelab life support system [DGLR PAPER 78-130] p0041 A79-14082

Development of space biology experiments for the Space Shuttle - A student's perspective [AAS PAPER 78-134] p0099 A79-21252

The European life sciences experiments onboard the first Spacelab mission p0100 A79-22254

Light flashes in space --- cosmic ray interaction with astronaut visual system p0100 A79-22261

Space biology and medicine p0132 A79-26344

Space osteoporosis - An electromagnetic hypothesis p0165 A79-30666

The biomedical implications of engineering in space p0166 A79-31122

Medicobiological research within the framework of the scientific program 'Intercosmos' p0181 A79-32658

Spaceflight and bone turnover - Correlation with a new rat model of weightlessness p0182 A79-33049

Space biology and aerospace medicine p0226 A79-40734

The Biostack experiment in the U.S. long exposure duration test program p0227 A79-41230

Closed ecology in space from a bioengineering perspective p0228 A79-41703

Erythropoietic effects of space flight p0231 A79-42193

The application of vectorcardiography to aerospace medicine p0256 A79-46602

Ultrastructural development of the vestibular system under conditions of simulated weightlessness p0298 A79-52284

Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life [IAF PAPER 79-76] p0301 A79-53285

Early cardiovascular adaptation to zero gravity simulated by head-down tilt [IAF PAPER 79-77] p0301 A79-53286

Ultrastructural development of the vestibular system of frog larvae in 0g simulation [IAF PAPER 79-78] p0301 A79-53287

Equipment for surgical interventions and childbirth in weightlessness [IAF PAPER 79-97] p0302 A79-53296

US experiments flown on the Soviet Satellite COSMOS 782 [NASA-TM-78525] p0020 N79-11651

US experiments flown on COSMOS 782 p0020 N79-11652

Technology advancement of an oxygen generation subsystem [NASA-CR-152257] p0261 N79-28883

BIOCHEMISTRY

NT BACTERIOLOGY

NT BIOGEOCHEMISTRY

NT ENZYMOLOGY

NT PHYSIOCHEMISTRY

Current conceptions of the mechanism of the effect of chemical stimulus on taste receptors p0043 A79-14375

Identification of a tripeptidyl aminopeptidase in the anterior pituitary gland - Effect on the chemical and biological properties of rat and bovine growth hormones p0069 A79-19449

The growth of single crystals from proteins in gravity-free space [AIAA PAPER 79-0311] p0069 A79-19665

Metal porphyrins in pre-Cambrian deposits as a probable evidence for early photosynthesis p0165 A79-30695

The problem of optimally fast response as solved by the nerve cell p0166 A79-31179

Incorporation of sulphur in chemical evolution p0203 A79-37938

Takeover mechanisms and early biochemical evolution p0205 A79-37965

Evolutionary relationship based on a biochemical study of energy-acquiring system between Nitrosomonas europaea and Thiobacillus novellus p0205 A79-37966

Sulfate-reducing bacteria and biochemical evolution
p0205 A79-37967
Possible contribution of transferable exogenous DNA in prokaryotic evolution
p0205 A79-37971
Evolution in open systems - Acquisition and conservation of information in bioids
p0207 A79-37987
Squalenes, phytanes and other isoprenoids as major neutral lipids of methanogenic and thermoacidophilic 'archaebacteria'
p0232 A79-42274
Mirror symmetry breaking in biochemical evolution
p0254 A79-46462
Solar-driven chemical energy source for a Martian biota
p0254 A79-46464
Morphological and biochemical effects of oxygen toxicity
[AD-A056778] p0018 N79-10734
Dynamics of Cosmonauts' blood biochemistry during space missions
p0072 N79-14717
Translations on USSR science and technology: Biomedical and behavioral sciences, No. 53. Effects of nonionizing electromagnetic radiation
[JPRS-72606] p0074 N79-14736
Orthomolecular enhancement of human development
p0095 N79-15895
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 57
[JPRS-72808] p0121 N79-17526
A biochemical basis of obligate anaerobiosis
p0142 N79-18561
Clozapine metabolism in humans
[BLL-RTS-10902] p0142 N79-18567
Biochemical study of proteins of gastric and intestinal mucosa of rats flown aboard the Kosmos-605 biosatellite --- effects of space flight stress
p0192 N79-23631
Binding of biologically active agents to plasma proteins
[CL-1977-22] p0261 N79-29787
Mutagenic components of alternate energy sources
[CONF-780636-8] p0280 N79-30923
Energy transfer mechanisms in photobiological reactions
[COO-875-180] p0283 N79-31898
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] p0307 N79-32823

BIOCONTROL SYSTEMS
Lateral orientation and cerebral activation - Considerations for information display
p0037 A79-13194
Simulation and control of a human temperature regulation system
p0041 A79-13613
Effects of information processing requirements on reaction time of the eye
p0064 A79-18219
Biped stability considerations with vestibular models
p0066 A79-18287
Automatic control of physiological functions of the human organism in pathology --- Russian book
p0132 A79-26350
Cyclic nucleotides and adaptation of the organism --- Russian Book
p0133 A79-26500
Process of search control of coordinated movement in man
p0166 A79-30701
Effect of the blockade of hypothalamic adrenergic structures on thermoregulatory reactions
p0167 A79-31950
Control theory and biosystems: Analysis of homeostatic properties --- Russian book
p0186 A79-34506
Self-regulation of cerebral circulation under orthostatic influences
p0221 A79-36098
Neural regulation of coronary circulation
p0208 A79-38148
Central and reflex mechanisms of controlling movements --- Russian book
p0251 A79-43950
Application of pseudo random binary sequence input to identification of respiratory control dynamics
p0268 A79-48011
Characteristics of somatic and autonomic regulation during work of small muscle groups as a function of loading regime
p0276 A79-50653
Calcium regulation in smooth muscle: Isolation and characterization of the myosin light chain kinase
p0024 N79-11680
User's instructions for the 41-node thermoregulatory model (steady state version)
[NASA-CR-160220] p0212 N79-24638
Acid-base homeostasis in the human system
[NASA-CR-160222] p0212 N79-24640
User's instructions for the erythropoiesis regulatory model
[NASA-CR-160193] p0216 N79-25711
Use of a computer model in the understanding of erythropoietic control mechanisms
[NASA-CR-160201] p0217 N79-25718
Dynamic regulation of erythropoiesis: A computer model of general applicability
[NASA-CR-160203] p0217 N79-25720
Fluid and electrolyte control systems in the human body: A study report
[NASA-CR-160210] p0217 N79-25723
On a basic model of circulatory, fluid, and electrolyte regulation in the human system based upon the model of Guyton
[NASA-CR-160212] p0218 N79-25725
Improvements and validation of the erythropoiesis control model for bed rest simulation
[NASA-CR-160187] p0218 N79-25728
User's instructions for the Guyton circulatory dynamics model using the Univac 1110 batch and demand processing (with graphic capabilities)
[NASA-CR-160215] p0218 N79-25731
Study report on guidelines and test procedures for investigating stability of nonlinear cardiovascular control system models
[NASA-CR-160229] p0219 N79-25734
The application of systems analysis and mathematical models to the study of erythropoiesis during space flight
[NASA-CR-160218] p0219 N79-25739

BIODEGRADATION
Waste treatment options for use in closed systems --- in space colonies
[AIAA PAPER 79-1409] p0187 A79-34843

BIODYNAMICS
Various modeling approaches in biomechanics --- analog simulation of impact events
p0005 A79-12407
Anatomical frames of reference and biomechanics
p0065 A79-18230
Anatomical coordinate systems for human body segments
p0065 A79-18231
Can man be calculated - Biological models in aeronautical medicine and engineering
p0161 A79-29589
Biodynamic effects of canopy loss in the TF-15 aircraft
p0163 A79-30651
Process of search control of coordinated movement in man
p0166 A79-30701
Improved measurements of shear modulus and pleural membrane tension of the lung
p0236 A79-43702
Central and reflex mechanisms of controlling movements --- Russian book
p0251 A79-43950
Biodynamics of aviation stresses on the vertebral column
p0272 A79-49733
Problem of modeling the mechanism of heart contraction
p0275 A79-50287
Mechanism for the regulation of human posture during movements of the foot
p0276 A79-50651
Biomechanical properties of muscles and the efficiency of movement
p0276 A79-50652
Possibility of quantitative evaluation of the heart's mechanical activity from seismocardiosignals
p0276 A79-50658

Lung inflation and longitudinal distribution of
pulmonary vascular resistance during hypoxia
p0277 A79-50905
Effect of hypoxia on mechanical properties of
hyperthyroid cat papillary muscle
p0296 A79-51111
Passive resistive torques about long bone axes of
major human joints
p0298 A79-52283
A spherical representation of a human body for
visualizing movement
p0301 A79-53096
Theoretical foundations of cardiovascular processes
--- Book
p0304 A79-53531
Basic biomechanics equations for cardiovascular flow
p0304 A79-53534
Equations on biotransport mechanisms
p0304 A79-53535
Isokinetic exercise: A review of the literature
[NASA-CR-151841] p0051 N79-12695
Analysis and validation of human biodynamic models
[AD-A059013] p0058 N79-13714
A study of the effect of forcing function
characteristics on human operator dynamics in
manual control
p0086 N79-15590
Photometric methods for the analysis of human
kinematic responses to impact environments
[AD-A062006] p0157 N79-19690
Prosthesis coupling
[NASA-CASE-KSC-11069-1] p0240 N79-26772
Effects of vibration on the human organism
p0249 N79-27862
Operator performance and localized muscle fatigue
in a simulated space vehicle control task
[NASA-TM-58220] p0259 N79-28867
Models and Analogues for the Evaluation of Human
Biodynamic Response, Performance and Protection
--- conferences, human tolerance of
acceleration, vibration, and shock
[AGARD-CP-253] p0284 N79-31901
Prediction of whole-body response to impact forces
in flight environments
p0284 N79-31902
Procedures used to generate input data sets for
the articulated total body model from
anthropometric data
p0284 N79-31903
A three dimensional discrete element dynamic model
of the spine, head and torso
p0285 N79-31910
Application of biodynamic models to the analysis
of F-16 canopy birdstrike
p0285 N79-31911
A failure criterion for human, vertebral,
cancellous bone
p0285 N79-31912
The use of spinal analogue to compare human
tolerance of repeated shocks with tolerance of
vibration, part 1
p0288 N79-31926
The biodynamic response of the human body and its
application to standards
p0288 N79-31929
Refinement and validation of a three-dimensional
head-spin model
[AD-A062502] p0307 N79-32826

BIOELECTRIC POTENTIAL
The event related cortical potential as an index
of task workload
p0038 A79-13208
Evoked potential correlates of display image quality
p0068 A79-18998
ST isopotential precordial surface maps in
patients with acute myocardial infarction
p0098 A79-21245
Electromagnetic fields and power deposition in
body-of-revolution models of man
p0130 A79-26007
Bilateral and interhemispheric asymmetry of
acoustic evoked potentials during monoaural
acoustic stimulation
p0159 A79-28735
Elicited acoustic responses to meaningful and
meaningless verbal stimuli
p0276 A79-50654
Nonshivering thermogenesis in normal and
dystrophic muscle
p0054 N79-13680
Bioelectrical activity of the brain during 49-day
antiorthostatic hypokinesia in individuals with
early signs of vegetovascular dysfunction
p0108 N79-16521
Synchronous brain evoked potential correlates of
directed attention in humans
p0110 N79-16537

BIOELECTRICITY
Conduction difficulties of vagal origin in flight
personnel - Significance of intrathoracic data
on the bundle of His --- neural activity effects
on heart block
p0103 A79-23955
Effects of vestibular stimuli on the electrical
activity of muscles
p0187 A79-35121
Changes in the bioelectrical activity of some
cerebral structures in rabbits exposed to
microwaves
p0188 A79-35917
A hypothesis of plasmonic absorption of RF energy
by biological objects
p0233 A79-42506
An empirical formula for broad-band SAR
calculations of prolate spheroidal models of
humans and animals --- Specific Absorption Rate
p0278 A79-51015
The effect of impact acceleration on the
electrical activity of the brain
p0287 N79-31921
Distinctions of influence of the reticular
formation of the midbrain on the heart and
respiration with exposure to centripetal
accelerations
p0312 N79-33800
Methods for localization of electrical sources in
the human brain and applications to the visual
system
p0314 N79-33815
Development of electrophysiological indices of
neurological toxicity for organophosphate
pesticides and depressant drugs
[AD-A070299] p0314 N79-33821
Experimental and theoretical investigations
concerning a frequency filter behavior of the
human retina regarding electric pulse currents
[NASA-TM-75372] p0314 N79-33822

BIOENGINEERING
NT ANTHROPOMETRY
NT BIOINSTRUMENTATION
NT BIOMETRICS
NT BIOTELEMETRY
NT BODY MEASUREMENT (BIOLOGY)
NT CARDIOGRAPHY
NT ECHOCARDIOGRAPHY
NT ELECTROCARDIOGRAPHY
NT ELECTROENCEPHALOGRAPHY
NT ELECTROMYOGRAPHY
NT ELECTROPLETHYSMOGRAPHY
NT ELECTRORETINOGRAPHY
NT MAGNETOCARDIOGRAPHY
NT PHONOCARDIOGRAPHY
NT PLETHYSMOGRAPHY
NT SEISMOCARDIOGRAPHY
NT VECTORCARDIOGRAPHY
Medical technology transfer
p0048 A79-16138
A bioengineering simulator of the human visual
apparatus
p0166 A79-31180
The eccentric spheres model as the basis for a
study of the role of geometry and
inhomogeneities in electrocardiography
p0226 A79-40649
Closed ecology in space from a bioengineering
perspective
p0228 A79-41703
Serendipitous solution to the problem of culturing
Arabidopsis plants in sealed containers for
spaceflights of long duration
p0229 A79-41704
Prosthetic urinary sphincter
[NASA-CASE-MFS-23717-1] p0077 N79-14756
Improved subcutaneous electrode structure
[NASA-CASE-ARC-11117-1] p0084 N79-15576
A compact low-volume, self-regenerating artificial
kidney
[PB-287808/0] p0123 N79-17585

Biomedical constraints on thermal protective
flight clothing design: A bioengineering analysis
p0153 N79-19662
Prosthesis coupling
[NASA-CASE-KSC-11069-1] p0240 N79-26772
Application of biodynamic models to the analysis
of F-16 canopy birdstrike
p0285 N79-31911
The validation of biodynamic models
p0286 N79-31914
Frequency response of cardiovascular regulation in
canines to sinusoidal acceleration at
frequencies below 1 Hz (basis for biodynamic
modeling)
p0286 N79-31915
Refinement and validation of a three-dimensional
head-spin model
[AD-A062502] p0307 N79-32826

BIOGENESIS
U BIOLOGICAL EVOLUTION

BIOGEOCHEMISTRY
Organic geochemical studies on kerogen precursors
in recently deposited algal mats and oozes
p0001 A79-10419
A biogeochemical study of the Abu Dhabi algal mats
- A simplified ecosystem
p0132 A79-26373
Chemical fingerprints of life in terrestrial soils
and their possible use for the detection of life
on Mars and other planets
p0136 A79-27929
Amino acids in southern Kamchatka hot springs
p0182 A79-33122
Publications of the planetary biology program for
1978: A special bibliography
[NASA-TM-80745] p0319 N79-33854

BIOGRAPHY
Paul Bert
[NASA-TM-75599] p0055 N79-13687

BIOINSTRUMENTATION
NT BIOTELEMETRY
NT IMPLANTED ELECTRODES (BIOLOGY)
Radio tracking of a fin whale /Balaenoptera
physalus/
p0061 A79-18008
Interdisciplinary and international contributions
to research on biological effects of
electromagnetic waves - Past performances and
future challenges
p0129 A79-24878
A binocular stereoscopic display system for
echocardiography
p0130 A79-26072
The effects of filtering the His-Purkinje system
electrocardiogram
p0130 A79-26073
Use of platinum electrodes for the electrochemical
detection of bacteria
p0131 A79-26146
Devices for synchronizing a digital measuring
apparatus with biological signals
p0160 A79-29271
A tethering system for direct measurement of
cardiovascular function in the caged baboon
p0200 A79-36576
Disorder in pulsatile flow - Biomedical
measurements with hot film, laser and ultrasound
anemometers
p0210 A79-39509
Computer design synthesis of a below knee-Syme
prosthesis
p0251 A79-44300
Skin-resistance measuring device with higher
resolution
p0252 A79-45476
Portable device for detection of petit mal epilepsy
p0254 A79-46226
Tremometry as a method of evaluating the
functional state of the nervous system of a pilot
p0300 A79-53065
Continuous long-duration recording of the heart
rate by means of a noncontact technique
p0300 A79-53068
Bioinstrumentation for evaluation of workload in
payload specialists - Results of ASSESS II
[IAF PAPER 79-88] p0302 A79-53291
Subcutaneous channeling probe
[NASA-CASE-ARC-11091-1] p0025 N79-11684
The Physical Basis of Electromagnetic Interactions
with Biological Systems
[HEW-PUB-FDA-78-8055] p0081 N79-15551
A wide aperture focussed ultrasound system for
detection of breast carcinoma by ultrasonic
attenuation
p0142 N79-18577
Miniature implantable ultrasonic echosonometer
[NASA-CASE-ARC-11035-1] p0144 N79-18580
Magnitude estimation as a hearing aid selection
procedure
p0246 N79-27838
Development and application of resistive pulse
spectroscopy: Studies on the size, form and
deformability of red blood cells
[LBL-8640] p0280 N79-30924
Publications of the planetary biology program for
1978: A special bibliography
[NASA-TM-80745] p0319 N79-33854

BIOLOGICAL ACTIVITY
U ACTIVITY (BIOLOGY)

BIOLOGICAL ANALYSIS
U BIOASSAY

BIOLOGICAL CELLS
U CELLS (BIOLOGY)

BIOLOGICAL CLOCKS
U RHYTHM (BIOLOGY)

BIOLOGICAL EFFECTS
The effect of plasmoidal slime on the metabolism
of haploid cells of Physarum flavicomum and the
respiration of isolated mitochondria
p0105 A79-24513
Interdisciplinary and international contributions
to research on biological effects of
electromagnetic waves - Past performances and
future challenges
p0129 A79-24878
Effects of magnesium, calcium, and serum on
reversion of stable L-forms --- of soil bacterium
p0131 A79-26140
Effect of ultrasonic irradiation on mammalian
cells and chromosomes in vitro
p0134 A79-27239
Biological effects of electromagnetic fields
p0184 A79-33711
Biological effects of electromagnetic fields
p0184 A79-33712
Effect of electromagnetic fields in long-,
medium-, and short-wave ranges on biological
objects
p0185 A79-33713
Cell mechanisms for the biological effects of
electromagnetic fields
p0188 A79-35569
The Biostack experiment in the U.S. long exposure
duration test program
p0227 A79-41230
Closed ecology in space from a bioengineering
perspective
p0228 A79-41703
Genetic effects of cosmic radiation on
bacteriophage T4Br/+/ /On materials of
biological experiment Soyuz-Apollo/
p0229 A79-41708
A mechanism for high-frequency electromagnetical
field-induced biological damage
p0231 A79-41847
Protection standards for microwave and
radiofrequency radiations
p0300 A79-52878
Killifish development in zero-G on COSMOS 782:
Fundulus experiment K-104
p0021 N79-11659
Absence of gastric ulceration in rats after flight
on the COSMOS 782
p0021 N79-11660
Effects of weightlessness on the genetics and
aging process of drosophila melanogaster
p0023 N79-11673
Effect of weightlessness and centrifugation (LXG)
on erythrocyte survival in rats subjected to
prolonged space flight
p0023 N79-11674
COSMOS 936, experiment K-208: Spaceflight effects
on muscle fibers
p0024 N79-11679
Quantitative review of human susceptibility to
magnetic fields
[UCID-17773] p0026 N79-11691

The effects of strong shock waves on mortality
rates and percentages of pulmonary lesions in
rats as a function of the number of exposures
[NASA-TM-75598] p0053 N79-13676
Materials of the final reports on the joint
Soviet-American experiment on the Kosmos-936
biosatellite
[NASA-TM-75582] p0071 N79-14711
Translations on USSR science and technology:
Biomedical and behavioral sciences, No. 53.
Effects of nonionizing electromagnetic radiation
[JPRS-72606] p0074 N79-14736
Effects of microwaves on catecholamine metabolism
in the brain
p0075 N79-14739
Effects of electromagnetic field induction on
development of the green algae, scenedesmus
quadricauda (Turbpin) Breb. and composition of
free amino acids in its biomass and medium
p0075 N79-14740
Dependence of the functional activity of liver
mitochondria on microwave radiation ---
oxidative phosphorylation
p0075 N79-14741
The Physical Basis of Electromagnetic Interactions
with Biological Systems
[HEW-PUB-FDA-78-8055] p0081 N79-15551
Survey of microwave and radiofrequency biological
effects and mechanisms
p0082 N79-15552
Molecular absorption of non-ionizing radiation in
biological systems
p0082 N79-15553
Millimeter wave and far infrared absorption in
biological systems
p0082 N79-15554
Possible mechanisms of weak electromagnetic field
coupling in brain tissue
p0082 N79-15555
Classical theory of microwave interactions with
biological systems
p0082 N79-15556
The effects of alcohol on driver performance in a
decision making situation
p0092 N79-15629
A decision model applied to alcohol effects on
driver signal light behavior
p0092 N79-15630
Meteorological limits on the growth and
development of screwworm populations
[NASA-CR-151873] p0107 N79-16512
Early diagnosis for decompression sickness.
Changes in the blood found shortly after
decompression. Part 2: Experiments on rats
[NBL-1978-7] p0120 N79-17524
Chemical protection against ionizing radiation: A
survey of possible mechanisms
[NBL-1977-8] p0122 N79-17540
The effects of H2SO4 on men and H2SO4 and O3 on
laboratory animals
p0141 N79-18354
Effects of lead on subcellular components in
bacteria
p0142 N79-18565
Risks from various products used in paint spraying
[BLL-RTS-11499] p0142 N79-18569
Health effects associated with diesel exhaust
emissions, literature review and evaluation
[PB-289817/9] p0171 N79-20727
A technical review of the biological effects of
non-ionizing radiation
[PB-290166/8] p0171 N79-20728
Translations on USSR science and technology:
Biomedical and behavioral sciences, no. 59.
Effects of nonionizing electromagnetic radiation
[JPRS-72956] p0171 N79-20732
Biological effects of a magnetic field
p0172 N79-20734
Effect of radio waves of a millimeter frequency
range on the body of man and animals
p0172 N79-20735
Magnetic field effect on radial processes in
biological membranes
p0172 N79-20737
Effect of infra-low-frequency magnetic fields on
cell division
p0173 N79-20739
The influence of SHF electromagnetic fields on the
secretory function of the stomach
p0173 N79-20740
Biological effects of laser radiation, volume 2.
A Bibliography with abstracts
[NTIS/PS-79/0020/2] p0176 N79-21761
Biochemical study of proteins of gastric and
intestinal mucosa of rats flown aboard the
Kosmos-605 biosatellite --- effects of space
flight stress
p0192 N79-23631
The adrenosympathetic system in the presence of
traumatic shock during simulation of effects of
weightlessness on the human body
p0192 N79-23633
User's instructions for the whole-body algorithms
[NASA-CR-160233] p0219 N79-25735
Space biology and aerospace medicine, v. 13, no.
3, 1979
[JPRS-73784] p0243 N79-27817
Helium-oxygen mixture and the organism hyperbaric
aspect
p0243 N79-27818
The combined effect of space flight factors and
radiation on rat skeletal muscles
p0244 N79-27821
Immunological reactivity of rats flown aboard
Cosmos-605 and Cosmos-690 biosatellites
p0244 N79-27824
Biological effects of laser irradiation on nerve
cells
p0247 N79-27840
Translations on USSR science and technology:
Biomedical and behavioral sciences, no. 81
[JPRS-73729] p0249 N79-27860
Results of benthic studies at Calvert Cliffs
[PB-294261/3] p0261 N79-29788
Uncommon hypersensitivity to contacting cold water
and cold air with propagated reflex-like
erythema development
[BLL-RTS-11644] p0279 N79-30917
Mutagenic components of alternate energy sources
[CONF-780636-8] p0280 N79-30923
Obtaining growth hormone from calf blood
[NASA-TM-75326] p0283 N79-31895
Methods for studying and criteria for evaluating
the biological effects of electric fields of
industrial frequency
[CONF-780541-1] p0307 N79-32827
Immunobiological reactivity of the body under
hyperbaric and hypobaric conditions
p0310 N79-33790
Biological effects of nonionizing electromagnetic
radiation, volume 3, number 4
[AD-A070242] p0315 N79-33826
Metabolic and physical scaling in
microwave/radiofrequency bioeffects studies
[UR-3490-1561] p0316 N79-33831
Feasibility of an epidemiological study of workers
occupationally exposed to high voltage electric
fields in the electric power industry
[EPRI-EA-1020] p0316 N79-33832
Effects on populations of exposure to low levels
of ionizing radiation: Implications for nuclear
energy and medical radiation
[LBL-9084] p0316 N79-33833

BIOLOGICAL EVOLUTION
NT ABIOGENESIS
On the reality of extraterrestrial biogenesis
[IAF PAPER 78-A-51] p0003 A79-11344
The augmentation algorithm and molecular
phylogenetic trees
p0070 A79-20267
The evolution of the environment and its influence
on the evolution of life
p0099 A79-22076
Speculations of the evolution of the genetic code.
II
p0099 A79-22080
Evolution of a genetic code simulated with the
computer
p0100 A79-22081
The physical appearance of intelligent aliens
p0105 A79-24519
The origin of life on earth - Recent studies
p0134 A79-27335
Metal porphyrins in pre-Cambrian deposits as a
probable evidence for early photosynthesis
p0165 A79-30695
Chirality of compounds essential for the existence
of life, and the possibility of its evolution in

the universe
p0186 A79-34464

A review of recent concepts of the problem of the origin of life
p0221 A79-36041

Experimental approach to the chemical evolution in the primeval sea. II - Formation of protocell-like structures 'marigranules' in a modified sea medium
p0204 A79-37964

Nitrate fermentation in Clostridium perfringens and significance in metabolic evolution
p0205 A79-37968

Evolution of enzyme function - The coupled oscillator theory
p0205 A79-37970

Possible contribution of transferable exogenous DNA in prokaryotic evolution
p0205 A79-37971

The point mutation process in proteins
p0205 A79-37972

Nucleotide-binding site data and the origin of the genetic code
p0206 A79-37974

Structure-stability relationship of thermophile tRNA - A model for biological adaptation and limit of life at high temperature
p0206 A79-37976

Membranous evolution in the primitive cell
p0206 A79-37977

Subcellular organisms and evolution of cell structure
p0206 A79-37978

Evolution of early life inferred from protein and ribonucleic acid sequences
p0206 A79-37980

The study of the origin of life - Results and prospects
p0206 A79-37981

The crisis in the problem of the origin of life
p0207 A79-37982

The importance of the physical laws on the origin and evolution of life
p0207 A79-37983

The origin of the protein synthesis mechanism
p0207 A79-37986

Evolution in open systems - Acquisition and conservation of information in bioids
p0207 A79-37987

Are evolutionary rates really variable --- in vertebrate protein chemistry
p0232 A79-42273

Squalenes, phytanes and other isoprenoids as major neutral lipids of methanogenic and thermoacidophilic 'archaebacteria'
p0232 A79-42274

Carbon suboxide and the genetic code --- in biochemical evolution
p0252 A79-44865

Goodman et al.'s method for augmenting the number of nucleotide substitutions
p0253 A79-45639

On investigating the statistical properties of the populous path algorithm by computer simulation - Counterconclusions to those of Tateno and Nei --- for mutational change in protein evolution
p0253 A79-45640

A proposal concerning the origin of life on the planet earth
p0253 A79-45641

Inadequacy of prebiotic synthesis as origin of proteinous amino acids
p0253 A79-45643

Augmentation algorithm - A reply to Holmquist --- for nucleotide substitutions
p0253 A79-45644

Molecular phylogenetic trees - On the validity of the Goodman-Moore augmentation algorithm
p0253 A79-45645

Mirror symmetry breaking in biochemical evolution
p0254 A79-46462

Evolution of the biosphere /2nd enlarged edition/ --- Russian book
p0270 A79-48310

The organism and the habitation atmosphere
[NASA-TM-75536] p0049 N79-12685

Exobiology and the origin of life --- organic compounds in planetary atmospheres and interstellar matter
[NASA-CR-157988] p0081 N79-14782

Prebiotic coordination chemistry: The potential role of transition-metal complexes in the chemical evolution
[NASA-TM-75381] p0169 N79-20715

Publications of the planetary biology program for 1978: A special bibliography
[NASA-TM-80745] p0319 N79-33854

BIOLOGICAL MODELS
U BIONICS

BIOLOGICAL RHYTHM
U RHYTHM (BIOLOGY)

BIOLOGY

Control theory and biosystems: Analysis of homeostatic properties --- Russian book
p0186 A79-34506

Biological effects of nonionizing electromagnetic radiation. Volume 2, number 4: A digest of current literature
[AD-A055569] p0055 N79-13689

Some of the problems involved in planning biological experiments
p0312 N79-33805

BIOMAGNETISM

Biomagnetism and artificial magnetic stimulation of living structures
[IAF PAPER 78-52] p0002 A79-11222

Biomagnetic instrumentation and measurement
p0295 A79-51043

Clinical magnetocardiography
p0295 A79-51044

BIOMASS

Effects of electromagnetic field induction on development of the green algae, scenedesmus quadricauda (Turbpin) Breb. and composition of free amino acids in its biomass and medium
p0075 N79-14740

Aphotometer for determining the biomass of microorgan from the ATP content
[BLL-RTS-11456] p0141 N79-18555

Effect of phosphorus supply on algal biomass in a turbid Missouri Reservoir
[PB-293183/0] p0243 N79-27816

Automated biowaste sampling system feces monitoring system
[NASA-CR-160301] p0281 N79-30937

BIOMASS ENERGY PRODUCTION

Impact of large scale aquatic biomass systems
[PB-282617/0] p0013 N79-10697

Determination of the secondary production and population dynamics of the zooplankton of the Lake Champlain ecosystem
[PB-286094/8] p0084 N79-15572

BIOMECHANICS
U BIODYNAMICS

BIOMEDICAL DATA

Medical control in prolonged space flights
[IAF PAPER 78-63] p0003 A79-11226

The European life sciences experiments onboard the first Spacelab mission
[ASME PAPER 78-ENAS-24] p0007 A79-12573

Medicobiological research within the framework of the scientific program 'Intercosmos'
p0181 A79-32658

Space biology and aerospace medicine
p0226 A79-40734

New inventory for the assessment of symptom occurrence and severity at high altitude
p0273 A79-49991

Follow-up and transversal study of vital capacity and FEV sub values among personnel of the Belgian Army forces
p0028 N79-11706

Translations on USSR science and technology: Biomedical and behavioral sciences, no. 47
[JPRS-72134] p0071 N79-14708

Dynamics of Cosmonauts' blood biochemistry during space missions
p0072 N79-14717

Telemedicine: An expanding new science on land and sea
p0146 N79-19020

Regional program for acquisition of medical experiments
[NASA-CR-160121] p0155 N79-19677

Translations on USSR science and technology: Biomedical and behavioral sciences, no. 50
[JPRS-72462] p0170 N79-20720

Translations on USSR science and technology: Biomedical and behavioral sciences, no. 59. Effects of nonionizing electromagnetic radiation [JPRS-72956] p0171 N79-20732
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 60 [JPRS-73135] p0175 N79-21745
Systems identification and application systems development for monitoring the physiological and health status of crewmen in space [NASA-CR-160235] p0212 N79-24642
A prioritized set of physiological measurements for future spaceflight experiments [NASA-CR-160202] p0217 N79-25719
Investigations of respiratory control systems simulation [NASA-CR-160213] p0218 N79-25726
User's guide for the Skylab integrated medical data analysis system [NASA-CR-160189] p0220 N79-25740
Biomedical ultrasonoscope [NASA-CASE-ARC-10994-2] p0240 N79-26771
Index to FAA Office of Aviation Medicine reports: 1961 through 1978 [AD-A067983] p0240 N79-26773
Intraocular pressure reduction and regulation system [NASA-TM-79187] p0260 N79-28881

BIOMETRICS
NT ANTHROPOMETRY
NT BODY MEASUREMENT (BIOLOGY)
NT CARDIOGRAPHY
NT ECHOCARDIOGRAPHY
NT ELECTROCARDIOGRAPHY
NT ELECTROENCEPHALOGRAPHY
NT ELECTROMYOGRAPHY
NT ELECTROPLETHYSMOGRAPHY
NT ELECTRORETINOGRAPHY
NT MAGNETOCARDIOGRAPHY
NT PHONOCARDIOGRAPHY
NT PLETHYSMOGRAPHY
NT SEISMOCARDIOGRAPHY
NT VECTORCARDIOGRAPHY
Core temperature measurement in man p0010 A79-12862
The trajectories of saccadic eye movements p0065 A79-18250
Conduction difficulties of vagal origin in flight personnel - Significance of intrathoracic data on the bundle of His --- neural activity effects on heart block p0103 A79-23955
Caloric and exercise requirements of space flight - Biostereometric results from Skylab p0128 A79-24637
Specific problems in cardiovascular fluid dynamics measurements p0210 A79-39506
Improved measurements of shear modulus and pleural membrane tension of the lung p0236 A79-43702
Determination of muscle mass changes in legs from K-40 measurements p0274 A79-49997
Theoretical foundations of cardiovascular processes --- Book p0304 A79-53531
Lung mechanics: Dynamic response, acoustic generation, and flow limitation p0017 N79-10727
Detection and supervision of obstructed respiratory flow in fliers. Advantages of debit-volume graphs p0028 N79-11707
Anthropometric source book. Volume 2: A handbook of anthropometric data [NASA-RP-1024-VOL-2] p0058 N79-13711
Anthropometric source book. Volume 3: Annotated bibliography of anthropometry [NASA-RP-1024-VOL-3] p0058 N79-13712
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 52 --- with emphasis on research management [JPRS-72608] p0078 N79-14760
New principles of automation of biomedical research p0078 N79-14763
Use of the systems analytic approach for organization and coordination of complex biomedical research p0079 N79-14767
Miniature implantable ultrasonic echosonometer [NASA-CASE-ARC-11035-1] p0144 N79-18580
A long-range and long-life telemetry data-acquisition system for heart rate and multiple body temperatures from free-ranging animals [NASA-TM-78590] p0239 N79-26762
Biomedical ultrasonoscope [NASA-CASE-ARC-10994-2] p0240 N79-26771
Methods for localization of electrical sources in the human brain and applications to the visual system p0314 N79-33815

BIONICS
A biophysical model for evaluating auxiliary heating and cooling systems --- for protective clothing systems design [ASME PAPER 78-ENAS-33] p0008 A79-12581
Modeling heat transfer through human skin subjected to high external temperatures p0102 A79-23782
Linearization and sensitivity analysis of model for human eye movements p0102 A79-23783
Elements of the theory of biological analyzers --- Russian book p0132 A79-26450
Control systems for robots and manipulators --- Russian book p0134 A79-27303
Electromagnetic power absorption in cylindrical tissue models excited by a loop antenna p0136 A79-27959
ISAAC-1 - A color sensing robot p0138 A79-28168
Can man be calculated - Biological models in aeronautical medicine and engineering p0161 A79-29589
A bioengineering simulator of the human visual apparatus p0166 A79-31180
Selecting the program of motions for a biped walking machine p0166 A79-31490
A two-stage model of visual search p0186 A79-33948
Control theory and biosystems: Analysis of homeostatic properties --- Russian book p0186 A79-34506
Some properties of conservative systems --- walking robot model p0221 A79-35942
A revised model of gas transport in human lungs p0253 A79-45768
Problem of modeling the mechanism of heart contraction p0275 A79-50287
A spherical representation of a human body for visualizing movement p0301 A79-53096
Bio-heat transfer processes, for human thermoregulatory and circulatory characteristics measurements p0304 A79-53536
Refinement and validation of a mathematical model of the human torso p0247 N79-27841
Procedures used to generate input data sets for the articulated total body model from anthropometric data p0284 N79-31903
Refinement and validation of a three-dimensional head-spin model [AD-A062502] p0307 N79-32826

BIOPHYSICS
NT HEALTH PHYSICS
NT PUBLIC HEALTH
A biophysical model for evaluating auxiliary heating and cooling systems --- for protective clothing systems design [ASME PAPER 78-ENAS-33] p0008 A79-12581
The sensory systems --- Russian book on neurophysiology and biophysics research p0042 A79-14369
Model of human heat exchange and identification of its parameters Physiological studies and mathematical modeling p0159 A79-28739

The development of laser exposure limits p0181 A79-32320

Specific problems in cardiovascular fluid dynamics measurements p0210 A79-39506

A hypothesis of plasmonic absorption of RF energy by biological objects p0233 A79-42506

Protection against laser beams p0236 A79-43609

Investigation of blood subjected to volume tension p0275 A79-50261

The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia p0296 A79-51116

Theoretical foundations of cardiovascular processes --- Book p0304 A79-53531

The theory of the magnetocardiogram p0304 A79-53533

Microwave thermography: Physical principles and diagnostic applications p0083 N79-15567

Mechanics of mammalian lung p0247 N79-27844

Fundamental biophysical aspects of decompression sickness [AD-A069998] p0315 N79-33827

BIOREGENERATION

U REGENERATION (PHYSIOLOGY)

BIOREGENERATIVE LIFE SUPPORT SYSTEMS

U CLOSED ECOLOGICAL SYSTEMS

BIOSATELLITES

Stereological ultrastructural analysis of the axonal endings in the neuromuscular junction of rats after a flight on biosputnik 782 p0101 A79-23468

The joint US-USSR biological satellite program p0182 A79-33050

Ultrasonic investigations of the soleus muscle after space flight on the Biosputnik 936 p0274 A79-49992

US experiments flown on the Soviet satellite COSMOS 936 [NASA-TM-78526] p0023 N79-11671

The Cosmos 936 mission p0023 N79-11672

Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite p0311 N79-33795

BIOSENSORS

U BIOINSTRUMENTATION

BIOSIMULATION

U BIONICS

BIOSPHERE

Evolution of the biosphere /2nd enlarged edition/ --- Russian book p0270 A79-48310

BIOSYNTHESIS

The effects of temperature, salinity, and other factors on the growth and formation of UV-absorbing substances by the fungus Aspergillus p0005 A79-12512

Influence of high-altitude conditions on the metabolism of nucleic acids and proteins in the thymocytes of the rat p0069 A79-19425

3'5'-cyclic AMP content in rat tissues during hypoxic adaptation and gamma irradiation p0069 A79-19426

Effects of low temperature on in vivo and in vitro protein synthesis in Escherichia coli and Pseudomonas fluorescens p0131 A79-26141

The origin of the protein synthesis mechanism p0207 A79-37986

Inadequacy of prebiotic synthesis as origin of proteinous amino acids p0253 A79-45643

Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite p0311 N79-33796

BIOTECHNOLOGY

Food and waste management biotechnology for the space shuttle [IAF PAPER 79-93] p0302 A79-53294

Biocompatible materials, volume 2. A bibliography with abstracts [NTIS/PS-78/0675/5] p0019 N79-10736

Translations on USSR science and technology: Biomedical and behavioral sciences, no. 60 [JPRS-73135] p0175 N79-21745

Liquid crystal developments for medicine p0175 N79-21746

Emergence of biotechnology [TID-28983] p0211 N79-24626

Analytical methods for biotechnological design of man machine systems: Work on system ergonomy [FB-28] p0242 N79-26787

BIOTELEMETRY

In-vivo bone strain telemetry in monkeys /M. nemestrina/ p0002 A79-10608

Measurement of skin temperatures of active subjects by wireless telemetry p0011 A79-12872

Single frequency RF powered ECG telemetry system p0131 A79-26074

The use of hybrid integrated circuit techniques in biotelemetry applications p0131 A79-26145

Aerobiotelemetry from a fighter aircraft p0200 A79-37131

Telemetry of intracranial pressure p0227 A79-41400

An inductively powered telemetry system for temperature, EKG, and activity monitoring p0228 A79-41424

The electrocardiogram recorded by telemetry during a parachute jump, compared to a trace during stress tests - A preliminary study of 29 cases p0256 A79-46600

A long-range and long-life telemetry data-acquisition system for heart rate and multiple body temperatures from free-ranging animals [NASA-TM-78590] p0239 N79-26762

BIRD-AIRCRAFT COLLISIONS

Application of biodynamic models to the analysis of F-16 canopy birdstrike p0285 N79-31911

BIRDS

NT CHICKENS

BIRTH

Equipment for surgical interventions and childbirth in weightlessness [IAF PAPER 79-97] p0302 A79-53296

BLACKOUT (PHYSIOLOGY)

Incapacitation time for +Gz-induced loss of consciousness p0102 A79-23475

Paroxysmal disorders of consciousness due to flight factors p0161 A79-29300

Concurrent loss of consciousness and sino-atrial block during +Gz stress p0202 A79-37714

BLACKOUT (PROPAGATION)

NT ATMOSPHERICS

BLADDER

A microangiographic study of the effect of hyperthermia on the rabbit bladder p0018 N79-10732

Prosthetic urinary sphincter [NASA-CASE-MFS-23717-1] p0077 N79-14756

Spine immobilization method and apparatus --- rigid bladder [NASA-CASE-ARC-11167-1] p0279 N79-30921

BLEACHING

Evidence for the equivalent-background hypothesis in cones --- for dark adaptation thresholds p0232 A79-42233

BLEED-OFF

U PRESSURE REDUCTION

BLINDNESS

NT FLASH BLINDNESS

Role of the visual system in the compensation of vestibular dysfunction p0162 A79-29971

BLOOD

NT ERYTHROCYTES

NT LYMPHOCYTES

NT WHITE BLOOD CELLS

Acid-base curve nomogram for chimpanzee blood and comparison with human blood characteristics

p0133 A79-27105

Transient changes in arterial blood gases and heart rate during and after acutely induced hypoxia and hyperoxia to rabbits
p0134 A79-27120

The effect of hyperoxia on the oxygen tension of blood and cerebral tissue
p0208 A79-38146

Some forms of adaptation to extreme influences in the blood system
p0256 A79-46679

Dynamics of the catalase activity of the blood of athletes under the influence of local decompression
p0271 A79-49699

Effects of glycogen depletion and work load on postexercise O2 consumption and blood lactate
p0277 A79-50903

Changes in blood sugar content of dogs exposed to chronic gamma radiation for six years
p0014 N79-10706

Effects of laser radiation on morphology of peripheral blood and bone marrow under experimental and clinical conditions
p0071 N79-14710

Dynamics of Cosmonauts' blood biochemistry during space missions
p0072 N79-14717

Blood lipid changes in hypoxic rats
p0074 N79-14731

Gas diffusion liquid storage bag and method of use for storing blood
[NASA-CASE-NPO-13930-1] p0076 N79-14749

Assessment of factors possibly contributing to the susceptibility of sickle trait erythrocytes to mild hypoxia. Volume 1: Design considerations and research protocol
[AD-A059412] p0084 N79-15577

Effect of 49-day space flight on parameters of immunological reactivity and protein composition of blood in the crew of Salyut-5
p0107 N79-16515

Effects of methylprednisolone sodium succinate on clearance of livine E. coli from peripheral blood of dogs
[AD-A062123] p0169 N79-20717

Effects of propellant hydrazines on red blood cells: Methemoglobin and Heinz body formation
[AD-A064133] p0189 N79-22755

Preparation of some prostaglandin E sub 1 omega-homo-prostaglandin E sub 1 esters and their inhibiting properties on rat blood platelet aggregation
p0239 N79-26765

Investigation of albumin and globulin composition of blood of the crew of the Salyut-3 orbital station
p0244 N79-27820

Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
p0311 N79-33797

BLOOD CIRCULATION
NT BRAIN CIRCULATION
NT CORONARY CIRCULATION
NT INTRAVASCULAR SYSTEM
NT ISCHEMIA
NT PERIPHERAL CIRCULATION
NT PULMONARY CIRCULATION

Blood volume and cardiorespiratory responses to lower body negative pressure
p0010 A79-12864

Analysis of Pco2 differences during rebreathing due to slow pH equilibration in blood
p0067 A79-18958

Cardiac and vascular components of the systemic response of blood circulation to orthostatic influence
p0097 A79-20651

Regional blood supply under hypoxic hypoxia
p0097 A79-20652

Interaction between hypothalamic and bulbar levels of regulating blood circulation
p0098 A79-21242

Reliability of determining the cardiac output by the method of quadrupole chest impedance rheography
p0098 A79-21243

Self-regulation of cerebral circulation under orthostatic influences
p0221 A79-36098

The response of the microvascular canal to a hypoxic helium-containing medium
p0208 A79-38151

Application of an isolated heart model to investigate blood-oxygen delivery
p0296 A79-51112

The role of lesser circulation hemodynamic changes in pulmonary gas exchange
p0300 A79-53066

Bio-heat transfer processes, for human thermoregulatory and circulatory characteristics measurements
p0304 A79-53536

Noninvasive ultrasonic blood flow characterization
p0017 N79-10726

Changes in human renal function in passive head-up and head-down positions
p0072 N79-14722

The influence of mechanical vibration and noise on the peripheral blood circulation at skin level
[RAE-LIB-TRANS-1980] p0084 N79-15578

A study of cerebral blood flow in the goat. A. Correlations between the ventilatory and cerebrovascular responses to carbon monoxide inhalation. B. The dynamics of the cerebral blood flow response to hypoxia by frequency response analysis
p0107 N79-16510

Noninvasive techniques in the evaluation of the peripheral circulation
p0154 N79-19675

A long term model of circulation --- human body
[NASA-CR-147674] p0212 N79-24636

Effect of hyperbaric oxygen on peripheral blood neutrophil metabolism
p0245 N79-27830

Evaluation of circulatory reactions in the head to antiorthostatic position
p0245 N79-27832

Physiological fluid dynamics
[VKI-LECTURE-SERIES-32] p0247 N79-27843

Mechanics of arterial blood flow
p0247 N79-27846

Mechanics of the microcirculation
p0247 N79-27847

Techniques of measurement
p0247 N79-27850

BLOOD COAGULATION

Tissue gas and blood analyses of human subjects breathing 80% argon and 20% oxygen
p0164 A79-30655

State of blood clotting during prolonged hypokinesia
p0073 N79-14729

Blood clotting factors of the vascular wall and myocardium of hypokinetic rabbits
p0108 N79-16523

The effects of brain ischemia on the control of breathing in unanesthetized goats
p0190 N79-23624

Tissular blood clotting factors of vascular walls and myocardium during hypokinesia
p0194 N79-23644

Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
p0313 N79-33813

BLOOD FLOW

Aggregation of red cells and blood viscosity as models of materials experimentation in the space environment
[AIAA PAPER 79-0310] p0069 A79-19664

Hemodynamics in teenagers and asthmatic children during exercise
p0133 A79-27102

Organ blood flow, cardiac output, arterial blood pressure, and vascular resistance in rats exposed to various oxygen pressures
p0135 A79-27557

A fluid-mechanical study of the closure of heart valves
p0161 A79-29540

Control of skin blood flow during exercise - Thermal and nonthermal factors
p0185 A79-33807

Specific problems in cardiovascular fluid dynamics measurements

p0210 A79-39506

Disorder in pulsatile flow - Biomedical measurements with hot film, laser and ultrasound anemometers
p0210 A79-39509

Limb blood flow - Rest and heavy exercise in sitting and supine positions in man
p0235 A79-43208

A catheter flow probe for measurement of left ventricular source parameters
p0274 A79-50108

Clinical usefulness of radiopaque markers in left ventricular function
p0293 A79-51029

Cardiac blood flow measurement - A component of the comprehensive cardiac examination
p0295 A79-51041

Quantitative flow estimation with transcutaneous Doppler ultrasound
p0295 A79-51042

Application of an isolated heart model to investigate blood-oxygen delivery
p0296 A79-51112

Noninvasive ultrasonic blood flow characterization
p0017 N79-10726

A directional pulsed-Doppler ultrasonic blood flowmeter
p0050 N79-12693

Noninvasive assessment of pulmonary hypertension
[PB-285121/0] p0057 N79-13701

Effect of intermittent hypoxia on functional activity of peripheral blood neutrophils
p0074 N79-14732

Effect of cerebrocranial trauma on reactive distinctions of hypothalamic and hippocampal vessels in the presence of hypoxia
p0074 N79-14733

The effect of hyperoxia on cerebral blood flow in the unanesthetized pony
p0107 N79-16511

A transient analysis of the cerebrovascular response to carbon dioxide
p0111 N79-16539

Noninvasive techniques in the evaluation of the peripheral circulation
p0154 N79-19675

Mechanics of blood flow through normal and stenotic coronary arteries
p0154 N79-19676

Multiple tracer diffusion methods for the evaluation of cerebral capillary permeability and capillary blood flow rate in the rat
p0169 N79-20712

Aortic blood flow velocity during exercise in man
p0216 N79-25710

Physiological fluid dynamics
[VKI-LECTURE-SERIES-32] p0247 N79-27843

Mechanics of arterial blood flow
p0247 N79-27846

Mechanics of the microcirculation
p0247 N79-27847

Techniques of measurement
p0247 N79-27850

Ultrasonic doppler directional blood flow velocity meter
[RAE-LIB-TRANS-1918] p0279 N79-30920

Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
p0307 N79-32825

BLOOD PLASMA

Plasma volume and electrolyte shifts with heavy exercise in sitting and supine positions
p0161 A79-29336

Plasma electrolytes in relation to altitude tolerance in rats
p0163 A79-30652

Hyperthermia and exercise --- plasma fluid and electrolyte effects on human thermoregulation
p0252 A79-44775

The importance of light, postural and social cues in the regulation of the plasma cortisol rhythm in man
p0267 A79-47398

Studies on the bioassayable growth hormone-like activity of plasma
p0267 A79-47848

Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
p0297 A79-52023

Effect of oxygen poisoning on the spectrum of lactate dehydrogenase isozymes of rabbit blood plasma
p0017 N79-10721

Comparison of plasma and urinary steroids in men with type A and type B behavior patterns
p0028 N79-11704

Sterols bound with blood plasma proteins and erythrocyte membranes during hypokinesia
p0193 N79-23636

Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite
p0311 N79-33795

Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
p0311 N79-33798

BLOOD PRESSURE
NT DIASTOLIC PRESSURE
NT HYPERTENSION

Systolic time intervals during combined hand cooling and head-up tilt
p0135 A79-27554

Organ blood flow, cardiac output, arterial blood pressure, and vascular resistance in rats exposed to various oxygen pressures
p0135 A79-27557

Blood pressure variability of the individual in orthostatic testing
p0265 A79-47328

A catheter flow probe for measurement of left ventricular source parameters
p0274 A79-50108

Noninvasive cardiovascular measurements --- Book
p0293 A79-51026

A study of noninvasive blood pressure measurement techniques
p0294 A79-51036

Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements
p0294 A79-51037

A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles
p0294 A79-51038

Cardiac blood flow measurement - A component of the comprehensive cardiac examination
p0295 A79-51041

Beta-adrenoceptor antagonists: Central effects
p0027 N79-11702

Clinical comparisons of pressure pulse and indicator dilution methods of determining cardiac output
p0050 N79-12690

Noninvasive assessment of pulmonary hypertension using bubble ultrasonic ringing (BURP) method, part 2
[PB-283935/5] p0051 N79-12699

A study of some of the factors influencing the left ventricular diastolic pressure-volume relationship and myocardial metabolism
p0154 N79-19674

Regulation of the carbon dioxide tension in arterial blood during inhalation of carbon dioxide in birds and mammals
p0169 N79-20713

Unsteady-state response of the vascular system to transient and sustained aerospace acceleration profiles
p0286 N79-31917

BLOOD PUMPS

Physical testing of polymers use in circulatory assist devices
[PB-286129/2] p0084 N79-15579

Development of an electrical energy converter for driving left heart assist blood pumps
[PB-293510/4] p0241 N79-26780

BLOOD VESSELS
NT AORTA
NT ARTERIES
NT CAPILLARIES (ANATOMY)
NT VEINS

Influences of physical conditioning and deconditioning on coronary vasculature of dogs
p0067 A79-18955

The bloodflow in skeletal muscle capillaries in normoxia and arterial hypoxemia /Microcinematographic studies/
p0208 A79-38150

Iodine imaging using spectral analysis --- radiography for visualization of small blood vessels
p0294 A79-51034

Quantitative flow estimation with transcutaneous Doppler ultrasound
p0295 A79-51042

Unsteady-state response of the vascular system to transient and sustained aerospace acceleration profiles
p0286 N79-31917

BLOOD VOLUME

Blood volume and cardiorespiratory responses to lower body negative pressure
p0010 A79-12864

Pulmonary blood volume and interventricular circulation time in physically trained and untrained subjects
p0128 A79-24700

Plasma volume and electrolyte shifts with heavy exercise in sitting and supine positions
p0161 A79-29336

Effects of regional hemoconcentration during LBNP on plasma volume determinations --- Lower Body Negative Pressure
p0265 A79-47326

Investigation of blood subjected to volume tension
p0275 A79-50261

Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] p0301 A79-53286

BLUE GREEN ALGAE

Evolution of early life inferred from protein and ribonucleic acid sequences
p0206 A79-37980

Distribution of bluegreen algae in a Mississippi Gulf Coast salt marsh
[PB-288982/2] p0153 N79-19667

Citric acid enhancement of copper sulfate toxicity to blue-green algae and other nuisance organisms
[PB-289490/5] p0170 N79-20718

BMC

U BONE MINERAL CONTENT

BOATS

Human factors analysis of visual distress signaling devices --- used by boaters
[AD-A064174] p0190 N79-22765

BODIES OF REVOLUTION

Electromagnetic fields and power deposition in body-of-revolution models of man
p0130 A79-26007

BODY FLUIDS

NT BLOOD

NT CEREBROSPINAL FLUID

NT ENDOLYMPH

NT ERYTHROCYTES

NT LYMPH

NT LYMPHOCYTES

NT SWEAT

NT URINE

NT WHITE BLOOD CELLS

A review of the consequences of fluid and electrolyte shifts in weightlessness
[IAF PAPER 78-50] p0002 A79-11220

Fluid shifts during initial phase of immersion diuresis in man
p0185 A79-33804

Evidence for increased intrathoracic fluid volume in man at high altitude
p0305 A79-54266

Clinical and morphological studies of people in the course of long-term hypokinesia and subsequent readaptation
p0015 N79-10709

Correction of transcapillary exchange in man under the influence of rotation on a centrifuge while immersed in water
p0110 N79-16533

Specialized physiological studies in support of manned space flight
[NASA-CR-151876] p0111 N79-16542

Application of numerical methods to physiological flows --- Navier-stokes equation, prosthetic heart valves and vasoconstriction
p0146 N79-18945

Fluid and Electrolyte Balance model (FEB)
[NASA-CR-160206] p0211 N79-24633

Chemicals identified in human biological media, a pilot literature survey
[PB-290690/7] p0214 N79-24649

Fluid and electrolyte control systems in the human body: A study report
[NASA-CR-160210] p0217 N79-25723

On a basic model of circulatory, fluid, and electrolyte regulation in the human system based upon the model of Guyton
[NASA-CR-160212] p0218 N79-25725

Study report on modification of the long term circulatory model for the simulation of bed rest
[NASA-CR-160186] p0218 N79-25727

Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819

Physiological fluid dynamics
[VKI-LECTURE-SERIES-32] p0247 N79-27843

Techniques of measurement
p0247 N79-27850

Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] p0310 N79-33788

Fluid-electrolyte metabolism in the crew of Salyut-4
p0311 N79-33792

BODY KINEMATICS

Computation of rigid-body rotation in three-dimensional space from body-fixed linear acceleration measurements
[ASME PAPER 78-WA/BIO-5] p0069 A79-19759

Goal-directed mechanics of controlled manipulators --- Russian book
p0275 A79-50447

Whole body response research program
[PB-286151/6] p0093 N79-15640

Whole body response research program. Appendix A: Methodology
[PB-286152/4] p0094 N79-15641

Whole body response research program. Appendix B: Raw data
[PB-286153/2] p0094 N79-15642

Whole body response research program. Appendix C: Processed data
[PB-286154/0] p0094 N79-15643

Photometric methods for the analysis of human kinematic responses to impact environments
[AD-A062006] p0157 N79-19690

Procedures used to generate input data sets for the articulated total body model from anthropometric data
p0284 N79-31903

Simulation of head and neck response to -G sub x and +G sub z impacts
p0285 N79-31908

A three-dimensional mathematical analogue of the spine structure: A comprehensive approach
p0285 N79-31909

A three dimensional discrete element dynamic model of the spine, head and torso
p0285 N79-31910

A human body and crew station modelling system for motion studies
p0287 N79-31922

BODY MEASUREMENT (BIOLOGY)

NT ANTHROPOMETRY

NT ELECTROPLETHYSMOGRAPHY

Electromagnetic absorption in a multilayered model of man
p0226 A79-40650

Arm-leg reach and workspace layout
p0033 N79-11739

Anthropometric source book. Volume 2: A handbook of anthropometric data
[NASA-RP-1024-VOL-2] p0058 N79-13711

Anthropometric source book. Volume 3: Annotated bibliography of anthropometry
[NASA-RP-1024-VOL-3] p0058 N79-13712

Hybridization of biomedical circuitry
[NASA-CR-151874] p0111 N79-16543

Miniature implantable ultrasonic echosonometer
[NASA-CASE-ARC-11035-1] p0144 N79-18580

Analysis of body form using biostereometrics
[NASA-CR-160173] p0195 N79-23654
United States Army anthrometry: 1946-1977
[AD-A068095] p0289 N79-31938
Analysis of body size measurements for US Navy women's clothing and pattern design
[AD-A068600] p0290 N79-31939

BODY SIZE (BIOLOGY)
Anthropometry in sizing and design
p0033 N79-11742

BODY SWAY TEST
Hemodynamics in teenagers and asthmatic children during exercise
p0133 A79-27102

BODY TEMPERATURE
Comparison of circadian rhythms in male and female humans
p0004 A79-11947
Core temperature measurement in man
p0010 A79-12862
Heat transfer and temperature distribution in the human body
p0041 A79-13612
Thresholds for Na/+/ and Ca/++/ effects on thermoregulation
p0045 A79-14774
Regulation and efficiency of sweating in man /Mathematical modeling/
p0097 A79-20622
Temperature effect of muscular work in the white rat during hypoxia
p0097 A79-20654
The effects of different levels of heat production induced by diathermy and eccentric work on thermoregulation during exercise at a given skin temperature
p0128 A79-24698
The local and time-dependent temperature field in the body of a homeothermic organism in case of sudden changes of quantity and local distribution of internal heat production
p0128 A79-24699
Model of human heat exchange and identification of its parameters Physiological studies and mathematical modeling
p0159 A79-28739
Discrimination, temperature, and time of day --- human performance variances
p0161 A79-29718
Studies on thermoregulation in the rat
p0162 A79-30019
Physical performance and peak aerobic power at different body temperatures
p0221 A79-36046
Characteristics of EEG changes in rabbits in response to local cooling or heating of the central thermosensory area
p0221 A79-36097
Effect of induced cyclic changes of deep body temperature on task performances
p0202 A79-37708
Regional heat loss in resting man during immersion in 25.2 C water
p0202 A79-37709
An inductively powered telemetry system for temperature, EKG, and activity monitoring
p0228 A79-41424
Separation of the effects of raised skin and core temperature on performance of a pursuit rotor task
p0234 A79-43204
Prediction of body temperatures during exercise in flying clothing
p0273 A79-49989
Effect on performance of cycling deep body temperature between 37.0 and 37.6 C
p0274 A79-49993
Bio-heat transfer processes, for human thermoregulatory and circulatory characteristics measurements
p0304 A79-53536
Microwave thermography: Physical principles and diagnostic applications
p0083 N79-15567
Effect on mice of microwaves in the non-thermal intensity region. Respiration, rectal temperature and mental reaction
[FOA-C-54021-H2(H6)] p0120 N79-17523
Crawford and Lavoisier on the method of development and place of formation of body heat
[BLL-RTS-11228] p0142 N79-18560
The effects of dehydration on peripheral cooling
[AD-A065332] p0220 N79-25745
The human micro-environment
p0248 N79-27851
Hypothermia. A bibliography with abstracts
[NTIS/PS-79/0533/4] p0308 N79-32830

BODY TEMPERATURE REGULATION
U THERMOREGULATION

BODY WEIGHT
Weight control and restraint of laboratory rats
p0133 A79-26584
Obesity and flying fitness
p0182 A79-33108

BOEING AIRCRAFT
NT C-135 AIRCRAFT

BOEING MILITARY AIRCRAFT
U MILITARY AIRCRAFT

BOGS
U MARSHLANDS

BONE DEMINERALIZATION
In-vivo bone strain telemetry in monkeys /M. nemestrina/
p0002 A79-10608
Prolonged weightlessness and calcium loss in man
[IAF PAPER 78-48] p0002 A79-11219
Space osteoporosis - An electromagnetic hypothesis
p0165 A79-30666
Spaceflight and bone turnover - Correlation with a new rat model of weightlessness
p0182 A79-33049
Kinetic measurements of bone mineral metabolism: The use of Na-22 as a tracer for long-term bone mineral turnover studies
[NASA-CR-151868] p0111 N79-16544
The influence of exercise on bone atrophy
[NASA-CR-160196] p0216 N79-25714
A brief review of space flight calcium metabolism: Results and methodologies
[NASA-CR-160198] p0217 N79-25715

BONE MARROW
Effects of laser radiation on morphology of peripheral blood and bone marrow under experimental and clinical conditions
p0071 N79-14710

BONE MINERAL CONTENT
Spaceflight and bone turnover - Correlation with a new rat model of weightlessness
p0182 A79-33049
The use of Na-22 as a tracer for long-term bone mineral turnover studies.
p0265 A79-47327
Changes in properties of rat femur as a result of crural exarticulation and hypokinesia
p0108 N79-16522

BONES
NT CARTILAGE
NT CEREBRUM
NT FEMUR
NT TIBIA
NT VERTEBRAE
Passive resistive torques about long bone axes of major human joints
p0298 A79-52283
Histological studies on tibial bone of rats in the 1975 COSMOS-782 flight. Part 1: Endochondral osteogenesis; medullary bone turnover
p0022 N79-11665
Histological studies on tibial bone of rats in the 1975 COSMOS-782 flight. Part 2: Microradiographic study of cortical bone
p0022 N79-11666
Quantitative analysis of selected bone parameters
p0022 N79-11668
Quantitative analysis of selected bone parameters
p0023 N79-11676
Preliminary design specifications of a calcium model
[NASA-CR-160199] p0217 N79-25716

BOOST
U ACCELERATION (PHYSICS)

BOOTS (FOOTWEAR)
Insulated firefighters' crash-crew rescue boots and components: Field and laboratory evaluation
[AD-A068264] p0262 N79-29795

BORES
U CAVITIES

BORESCOPES
U ENDOSCOPES

BOSONS
NT LIGHT BEAMS
BOUNDARY VALUE PROBLEMS
The application of MINIQUASI to thermal program boundary and initial value problems
[NASA-CR-160227] p0222 N79-25759
BOW SHOCK WAVES
U SHOCK WAVES
BRADYCARDIA
Tolerance of domestic fowl to high sustained +Gz
p0127 A79-24630

BRAIN
NT CEREBRAL CORTEX
NT CEREBRUM
NT HIPPOCAMPUS
The relationship between classical centers of the auditory tract and certain 'nonspecific' brain structures in the organization of the auditory function in animals
p0043 A79-14370

Bilateral and interhemispheric asymmetry of acoustic evoked potentials during monoaural acoustic stimulation
p0159 A79-28735

The inhibitory trace effect as a manifestation of the integrative activity of the human brain in performing voluntary motor acts
p0159 A79-28737

Effect of electroconvulsive shock on monoaminergic receptor binding sites in rat brain
p0162 A79-29925

Synaptosomal uptake of hypothalamic monoamines and recovery of pituitary-adrenal activity following medial forebrain bundle lesions in rats
p0275 A79-50232

Elicited acoustic responses to meaningful and meaningless verbal stimuli
p0276 A79-50654

The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
p0296 A79-51113

Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
p0299 A79-52475

Effects of microwaves on catecholamine metabolism in the brain
p0075 N79-14739

Possible mechanisms of weak electromagnetic field coupling in brain tissue
p0082 N79-15555

Bioelectrical activity of the brain during 49-day antiorthostatic hypokinesia in individuals with early signs of vegetovascular dysfunction
p0108 N79-16521

Effects of filtering electroencephalic signals on auditory evoked brain stem responses
p0176 N79-21758

The effects of brain ischemia on the control of breathing in unanesthetized goats
p0190 N79-23624

Dose-effect relationships for ultrasound irradiation of brain tissue
p0242 N79-27812

The effect of impact acceleration on the electrical activity of the brain
p0287 N79-31921

Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] p0310 N79-33788
Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations
p0312 N79-33800

Methods for localization of electrical sources in the human brain and applications to the visual system
p0314 N79-33815

BRAIN CIRCULATION
Cerebral gas exchange in rats adapted to hypoxia during inspiration of oxygen-poor mixtures
p0097 A79-20623

Responses of pial arterioles after prolonged hypercapnia and hypoxia in the awake rabbit
p0101 A79-23075

Central and cerebral hemodynamics and metabolism of the healthy man during head-down tilting
p0127 A79-24634

Diagnostics of initial deficiency in cerebral circulation
p0166 A79-31164

Self-regulation of cerebral circulation under orthostatic influences
p0221 A79-36098

Cerebral hemodynamics and visual analyzer function following exposure to bright light
p0109 N79-16525

BRAIN DAMAGE
Ruptured arteriovenous anomaly in a former woman astronaut candidate
p0128 A79-24640

Changes in the bioelectrical activity of some cerebral structures in rabbits exposed to microwaves
p0188 A79-35917

Aircrew helmet protection against potential cerebral concussion in low-magnitude impacts
p0201 A79-37705

Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798

Effect of cerebrocranial trauma on reactive distinctions of hypothalamic and hippocampal vessels in the presence of hypoxia
p0074 N79-14733

The child in coma
p0094 N79-15890

Coma recovery
p0094 N79-15891

The control and prevention of seizures in children, a developmental and environmental approach
p0094 N79-15892

Vision
p0095 N79-15894

BRAZIL
The application of remote sensors to a model for fish mapping
[INPE-1379-PE/176] p0071 N79-14712
BREATHING
Distribution of pulmonary ventilation and perfusion during short periods of weightlessness
p0068 A79-18967

Tissue gas and blood analyses of human subjects breathing 80% argon and 20% oxygen
p0164 A79-30655

Contribution of rib cage and abdomen-diaphragm to tidal volume during CO2 rebreathing
p0185 A79-33805

Positive pressure breathing as a protective technique in +Gz acceleration
p0201 A79-37132

Distribution of regional volumes and ventilation in excised canine lobes
p0236 A79-43703

Influence of exercise and CO2 on breathing pattern of normal man
p0237 A79-43704

Gas exchange under environmental stress
[AD-A058242] p0056 N79-13697
BREATHING APPARATUS
NT OXYGEN MASKS
The objective evaluation of aircrew protective breathing equipment. III - Improved types of mask/goggles combinations. IV - Fullface masks and hoods suitable for flight attendant use
p0184 A79-33638

The dynamic oxygen-regulator test stand
[AD-A060978] p0125 N79-17560
BRIGHTNESS
Cerebral hemodynamics and visual analyzer function following exposure to bright light
p0109 N79-16525

BRIGHTNESS DISCRIMINATION
Perceived quantization error. Effect of quantization function, reconstruction function and number of levels
[FOA-C-56015-H9] p0124 N79-17556
BROADBAND
An empirical formula for broad-band SAR calculations of prolate spheroidal models of humans and animals --- Specific Absorption Rate
p0278 A79-51015

BRONCHI
Modeling the effect of axial bronchial tension on

expiratory flow
p0067 A79-18957
BRONCHIAL TUBE
NT TRACHEA
BUBBLES
Detection of bubbles in decompression sickness
p0041 A79-13573
Application of a bubble formation model to decompression sickness in rats and humans
p0102 A79-23473
Scanning and transmission electron microscopy of the blood-bubble interface in decompressed rats
p0266 A79-47333
Effects of endogenous factors on the process of gas bubble formation in the body related to decompression
p0015 N79-10713
Hyperbaric decompression by means of bubble detection
[AD-A062441] p0171 N79-20726
BUILDING STRUCTURES
U BUILDINGS
BUILDINGS
Establishing habitability factors for the design of office environments
[AD-A056463] p0020 N79-10744
Human responses to fire: Three designs for research
[PB-284959/4] p0058 N79-13708
Measurements of radiofrequency field intensity in buildings with close proximity to broadcast stations
[PB-290944/8] N79-25750
BURNS (INJURIES)
Thermal conduction effects in human skin
p0265 A79-47329
Assessment of burns in accident fatalities
p0272 A79-49729
Effect of fiber and dye degradation products /FDP/ on burn wound healing
p0298 A79-52277
A porcine bioassay study of the physiological effects of fiber and dye degradation products (FDP) on burn wound healing
[AD-A066990] N79-25748
Mathematical models of skin burns induced by simulated postcrash fires as aids in thermal protective clothing design and selection
[AD-A066946] p0223 N79-25766
Diagnosis of cutaneous thermal burn injuries by multispectral imaging analysis
[NASA-CR-162103] p0279 N79-30922
BY-PRODUCTS
Decreased activity of palladium catalyst during processing of excreta
p0016 N79-10716

C

C-135 AIRCRAFT
Visual system for the Boom Operator Part Task Trainer --- KC-135 aerial refueling task simulator
p0137 A79-28162
C-141 AIRCRAFT
Study of crew task loading on the C-141A aircraft
[AD-A057346] p0034 N79-11746
CABIN ATMOSPHERES
NT SPACECRAFT CABIN ATMOSPHERES
Analysis of climatic data and cockpit thermal conditions at a fighter base in North West India
p0201 A79-37135
Effect of hypokinesia on animal resistance to chemical agents
p0109 N79-16524
CADMIUM
The distribution of cadmium and other metals in human tissues
[PB-285200/2] p0057 N79-13703
CAI
U COMPUTER ASSISTED INSTRUCTION
CALCIFICATION
Coronary calcification in the diagnosis of coronary artery disease
p0226 A79-40465
CALCIUM
Thresholds for Na/+/ and Ca/++/ effects on thermoregulation
p0045 A79-14774
Effects of magnesium, calcium, and serum on reversion of stable L-forms --- of soil bacterium
p0131 A79-26140
Effect of sodium and calcium ingestion on thermoregulation during exercise in man
p0163 A79-30624
Space osteoporosis - An electromagnetic hypothesis
p0165 A79-30666
Calcium regulation in smooth muscle: Isolation and characterization of the myosin light chain kinase
p0024 N79-11680
A correlation of the effects of cationic uncouplers on intact cardiac muscle and on calcium bound to isolated cardiac muscle plasma membranes
p0111 N79-16540
Changes in calcium ion activity due to magnetization of solution as the possible mechanism of biological action of magnetic fields
p0173 N79-20741
Study report on a double isotope method of calcium absorption
[NASA-CR-160194] p0216 N79-25712
Preliminary design specifications of a calcium model
[NASA-CR-160199] p0217 N79-25716
CALCIUM METABOLISM
Prolonged weightlessness and calcium loss in man
[IAF PAPER 78-48] p0002 A79-11219
A brief review of space flight calcium metabolism: Results and methodologies
[NASA-CR-160198] p0217 N79-25715
CALIBRATING
Calibration of three year old child dummies
[PB-268961/6] p0157 N79-19692
CALIFORNIA
Biomedical application in space, pilot program in the southern California region
[NASA-CR-160171] p0195 N79-23653
Energy supply and demand in California
p0242 N79-27603
CALORIC REQUIREMENTS
Caloric and exercise requirements of space flight - Biostereometric results from Skylab
p0128 A79-24637
CALORIC STIMULI
A study of the effects of six light conditions on caloric induced nystagmus
p0195 N79-23652
Effect of restricted activity on vestibular function
p0312 N79-33802
CAMERAS
NT TELEVISION CAMERAS
CANADA
The Canadian Forces Life Quality Improvement Programme
p0026 N79-11693
CANADAIR CF-104 AIRCRAFT
U F-104 AIRCRAFT
CANCER
Hyperthermia as an Antineoplastic Treatment Modality
[NASA-CP-2051] p0017 N79-10728
Hyperthermia in the treatment of cancer: A review of the radiobiological basis
p0017 N79-10729
The combined effects of pulsed magnetic radiation (diapulse) and chemotherapy on tumor bearing mice. The measurement of rodent palatal explants as a device for measurement of the biologic effects of nonionic radiation (EMR)
p0018 N79-10733
Coupling apparatus for ultrasonic medical diagnostic system
[NASA-CASE-NPO-13935-1] p0077 N79-14751
The lymph nodes and lymph vessels of the white rat
[BLL-RTS-11309] p0141 N79-18554
Isolation of virus-augmented tumor antigens
p0142 N79-18564
The dangerous relation between sunburn and skin cancer
[BLL-RTS-11310] p0142 N79-18573
A wide aperture focussed ultrasound system for detection of breast carcinoma by ultrasonic attenuation
p0142 N79-18577
Study of pharmaceutical industrial problems
[NASA-CR-160267] p0248 N79-27852
CANOPIES
Biodynamic effects of canopy loss in the TF-15 aircraft
p0163 A79-30651

Internal cockpit reflections of external point light sources for the model YAH-64 advanced attack helicopter
[AD-A056489] p0033 N79-11744

CAPILLARIES (ANATOMY)
Capillary fragility during air exposure of man to 1-5 ATA and after decompression
p0010 A79-12863
Multiple tracer diffusion methods for the evaluation of cerebral capillary permeability and capillary blood flow rate in the rat
p0169 N79-20712

CAPILLARY CIRCULATION
U CAPILLARY FLOW

CAPILLARY FLOW
Correction of transcapillary exchange in man under the influence of rotation on a centrifuge while immersed in water
p0110 N79-16533
Mechanics of the microcirculation
p0247 N79-27847

CARBOHYDRATE METABOLISM
The effect of plasmoidal slime on the metabolism of haploid cells of Physarum flavicomum and the respiration of isolated mitochondria
p0105 A79-24513
Energetic aspects of adaptation --- Russian book on metabolic responses to stress
p0167 A79-31906
Glucose metabolism in rat lung during exposure to hyperbaric O2
p0221 A79-36047
Insulin-like effect of bovine growth hormone in vivo as demonstrated by oxidation of C/14/-U-glucose in diabetic rats
p0252 A79-44797
COSMOS 936, experiment K204: The effects of space flight on some liver enzymes concerned with carbohydrate and lipid metabolism in the rat
p0023 N79-11675
Carbohydrate metabolism of the stimulated diaphragm muscle
p0050 N79-12689
Effects of intermittent magnetic field on activity of carbohydrate metabolism enzymes and oxygen uptake in testicular tissue
p0075 N79-14738
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
p0311 N79-33797

CARBOHYDRATES
NT ADENOSINES
NT FATS
NT GLUCOSE
NT GLYCOGENS
NT HEXOSES
NT INOSITOLS
NT NUCLEOSIDES
NT POLYSACCHARIDES
Response of crown gall tissue to the space environment: Residual carbohydrates in supporting tissue --- COSMOS 782
p0020 N79-11653

CARBON
NT ACTIVATED CARBON
NT CARBON 14
Photosynthethic carbon reduction by seagrasses exposed to ultraviolet B radiation
[NASA-CR-160144] p0175 N79-21742

CARBON COMPOUNDS
NT FLUOROPOLYMERS
Prebiotic molecular evolution
p0203 A79-37928
Physical testing of polymers use in circulatory assist devices
[PB-286129/2] p0084 N79-15579

CARBON DIOXIDE
CO2 and exercise tidal volume
p0133 A79-27104
Contribution of rib cage and abdomen-diaphragm to tidal volume during CO2 rebreathing
p0185 A79-33805
Influence of exercise and CO2 on breathing pattern of normal man
p0237 A79-43704
Gas exchange under environmental stress
[AD-A058242] p0056 N79-13697
A transient analysis of the cerebrovascular response to carbon dioxide
p0111 N79-16539
Regulation of the carbon dioxide tension in arterial blood during inhalation of carbon dioxide in birds and mammals
p0169 N79-20713
The growth kinetics of freshwater algae
p0174 N79-21740
Computer program for calculation of oxygen uptake
[NASA-TM-78585] p0174 N79-21741
Metabolic rate meter and method
[NASA-CASE-MSC-12239-1] p0175 N79-21750
Investigations about the quantitative changes of carbon dioxide production in humans. Report 2: Carbon dioxide production during fever and its relationship with heat production
[NASA-TM-75452] p0211 N79-24632
Flight prototype CO2 and humidity control system
[NASA-CR-160224] p0222 N79-25760

CARBON DIOXIDE CONCENTRATION
Responses of conscious rabbits to CO2 at ambient temperatures of 5, 20, and 35 C
p0277 A79-50904

CARBON DIOXIDE REMOVAL
The dependence of the CO2 removal efficiency of LiOH on humidity and mesh size --- in spacecraft life support systems
[ASME PAPER 78-ENAS-5] p0006 A79-12554
Electrochemically regenerable carbon dioxide absorber
[NASA-CR-152099] p0262 N79-29794

CARBON DIOXIDE TENSION
NT HYPERCAPNIA
NT HYPOCAPNIA
Analysis of Pco2 differences during rebreathing due to slow pH equilibration in blood
p0067 A79-18958
Mechanics of the regulation of the respiratory system in man
p0160 A79-29258

CARBON ISOTOPES
NT CARBON 14

CARBON MONOXIDE
Synthesis of organic compounds from carbon monoxide and water by UV photolysis
p0099 A79-22077
The effects of carbon monoxide on dual-task performance
p0161 A79-29716
The effects of carbon monoxide and cyanide on the brain
p0024 N79-11682
The interaction of carbon monoxide and altitude on aviator performance: Pathophysiology of exposure to carbon monoxide
[AD-A055212] p0056 N79-13694
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 51
[JPRS-72588] p0076 N79-14745
Liberation of carbon monoxide by man when working in protective gear
p0076 N79-14748
A study of cerebral blood flow in the goat. A. Correlations between the ventilatory and cerebrovascular responses to carbon monoxide inhalation. B. The dynamics of the cerebral blood flow response to hypoxia by frequency response analysis
p0107 N79-16510
Effects of oxides on nitrogen, Carbon monoxide and photochemical oxidants on the ECG during exercise and on cardiopulmonary function
[PB-291595/7] p0177 N79-21763

CARBON MONOXIDE POISONING
Developmental and hematological responses to low level exposure of carbon monoxide in mice
p0048 A79-16099
Carbon monoxide and human time discrimination - Failure to replicate Beard-Wertheim experiments
p0102 A79-23472
Characteristics of serious carbon monoxide poisoning
p0167 A79-32100
The combined effect of carbon monoxide and normobaric hyperoxia on animals
p0073 N79-14730

CARBON SUBOXIDES
Carbon suboxide and the genetic code --- in biochemical evolution

p0252 A79-44865
CARBON 14
Insulin-like effect of bovine growth hormone in vivo as demonstrated by oxidation of C/14/-U-glucose in diabetic rats
p0252 A79-44797
CARBOXYLATION
Prebiotic synthesis of amino acids by carboxylation of amines in oxidative atmosphere
p0203 A79-37937
CARBOXYLIC ACIDS
NT ACETIC ACID
NT TRYPTOPHAN
CARCINOGENS
Evaluation of toxic effects of organic contaminants in recycled water
[PB-291379/6] p0190 N79-22760
CARCINOMA
U CANCER
CARDIAC VENTRICLES
Microwave apexcardiography
p0231 A79-41848
Effects of endurance training on left ventricular dimensions in healthy men
p0237 A79-43706
A catheter flow probe for measurement of left ventricular source parameters
p0274 A79-50108
Clinical usefulness of radiopaque markers in left ventricular function
p0293 A79-51029
Temporal relation between onset of cell anoxia and ischemic contractile failure
p0300 A79-52895
Contour detector and data acquisition system for the left ventricular outline
[NASA-CASE-ARC-10985-1] p0017 N79-10724
Hybrid computation of left ventricular performance using noninvasive techniques
[AD-A063749] p0190 N79-22758
Influences of dietary fats on coronary flow rate and left ventricular work of the isolated rat heart
p0239 N79-26766
Effects of dietary fats on the coronary flow rate and the left ventricular function of the isolated rat heart
p0239 N79-26767
Characterization of cardiovascular function by automated monitoring of cardiac contractility and left ventricular wall motion activity
p0247 N79-27842
CARDIOGRAPHY
NT ECHOCARDIOGRAPHY
NT ELECTROCARDIOGRAPHY
NT MAGNETOCARDIOGRAPHY
NT PHONOCARDIOGRAPHY
NT SEISMOCARDIOGRAPHY
NT VECTORCARDIOGRAPHY
A tethering system for direct measurement of cardiovascular function in the caged baboon
p0200 A79-36576
Predictive accuracy of Q-X/Q-T ratio, Q-Tc interval, S-T depression and R wave amplitude during stress testing --- heart pathology
p0225 A79-40464
Real-time computerized fluoroscopic cardiac imaging
p0294 A79-51035
CARDIOLOGY
Cardiac response to whole-body heating
p0165 A79-30661
Some tests used in the practice of aviation medical examination for differential diagnosis of heart diseases
p0188 A79-35136
Frequency analysis of heart rate variability under flight conditions
p0202 A79-37713
Coronary calcification in the diagnosis of coronary artery disease
p0226 A79-40465
Modification of cardiac function by synchronized oscillating acceleration
p0278 A79-50908
Noninvasive cardiovascular measurements --- Book
p0293 A79-51026
Computer quantitation of angiocardiographic images
p0293 A79-51028
Computer quantitation of coronary angiograms
p0293 A79-51030
Clinical applications of new echocardiographic techniques
p0295 A79-51040
Biomagnetic instrumentation and measurement
p0295 A79-51043
Clinical magnetocardiography
p0295 A79-51044
Application of an isolated heart model to investigate blood-oxygen delivery
p0296 A79-51112
Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics
p0296 A79-51118
The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations
p0300 A79-52894
Temporal relation between onset of cell anoxia and ischemic contractile failure
p0300 A79-52895
Difficulties posed by left axis deviation in the evaluation of fliers, and their relations to the concept of left anterior hemiblock
p0029 N79-11714
Cardiological findings in 115 pilots: Diagnoses and assessment of their flying fitness
p0030 N79-11721
Normal and pathological cardiovascular findings in applicants to the Air Force service
p0031 N79-11722
Clinical comparisons of pressure pulse and indicator dilution methods of determining cardiac output
p0050 N79-12690
A correlation of the effects of cationic uncouplers on intact cardiac muscle and on calcium bound to isolated cardiac muscle plasma membranes
p0111 N79-16540
Technical evaluation report on the Aerospace Medical Panel London Specialists' Meeting, Fall 1977 --- disease prevention, flight fitness, and findings in cardiology and pulmonary function
[AGARD-AR-131] p0171 N79-20729
Specific findings in cardiology and pulmonary function with special emphasis on assessment criteria for flying
p0171 N79-20731
CARDIOVASCULAR SYSTEM
NT AORTA
NT ARTERIES
NT BLOOD VESSELS
NT CAPILLARIES (ANATOMY)
NT CARDIAC VENTRICLES
NT ERYTHROCYTES
NT HEART
NT HEMATOPOIESIS
NT HEMATOPOIETIC SYSTEM
NT LYMPHOCYTES
NT MYOCARDIUM
NT SYSTOLE
NT VEINS
Special tests for astronaut selection - Study of cardiovascular reactions by the orthostatism test
p0047 A79-15490
Cardiac and vascular components of the systemic response of blood circulation to orthostatic influence
p0097 A79-20651
Interaction between hypothalamic and bulbar levels of regulating blood circulation
p0098 A79-21242
Cardiovascular regulatory response to lower body negative pressure following blood volume loss
p0101 A79-23470
Cardiorespiratory assessment of decongestant-antihistamine effects on altitude, +Gz, and fatigue tolerances
p0127 A79-24628
Central and cerebral hemodynamics and metabolism of the healthy man during head-down tilting
p0127 A79-24634
Time for loss of increased cardiac responsiveness to isoproterenol in cold-acclimated rats after removal from cold
p0128 A79-24636

Age trends in the cardiovascular dynamics of aircrewmen
p0136 A79-27560

Functional changes in the cardiovascular system of machine-tool operators under physical and neurologically stressful loads
p0160 A79-29270

Early cardiovascular adaptation to simulated zero gravity
p0162 A79-29727

Cardiac responses of dogs to nonsynchronous and heart synchronous whole-body vibration
p0162 A79-29728

Incidence of cardiovascular problems among flying personnel and their evaluation
p0182 A79-33186

Cardiac changes during behavioral stress in dogs
p0200 A79-36575

Specific problems in cardiovascular fluid dynamics measurements
p0210 A79-39506

Continuous metabolic and cardiovascular measurements on a monkey subject during a simulated 6-day Spacelab mission
p0229 A79-41713

Isolation of a shock-induced circulating cardiodepressant substance
p0257 A79-46967

Noninvasive cardiovascular measurements --- Book
p0293 A79-51026

Current status of cardiovascular imaging by transmission computed tomography
p0294 A79-51032

A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles
p0294 A79-51038

Clinical applications of new echocardiographic techniques
p0295 A79-51040

Cardiac blood flow measurement - A component of the comprehensive cardiac examination
p0295 A79-51041

Time course of O2-pulse during various tests of aerobic power
p0297 A79-52024

Theoretical foundations of cardiovascular processes --- Book
p0304 A79-53531

Basic biomechanics equations for cardiovascular flow
p0304 A79-53534

Clinical and morphological studies of people in the course of long-term hypokinesia and subsequent readaptation
p0015 N79-10709

Cardiovascular, metabolic, and respiratory responses of sedentary females to equal metabolic workloads on the bicycle ergometer and treadmill
p0024 N79-11681

Experience with periodic aviation medical examinations
p0026 N79-11696

Beta-adrenoceptor antagonists: Central effects
p0027 N79-11702

Specific Findings in Cardiology and Pulmonary Function with Special Emphasis on Assessment criteria for Flying
[AGARD-CP-232] p0028 N79-11705

Reproducibility of human cardiovascular responses to orthostatic stress
p0030 N79-11720

Evaluation of cardiac risk and subject response to ameliorative efforts
p0031 N79-11723

Cardiovascular diseases as a cause of unfitness for flying service in aircrews of Italian Air Force: Etiopathogenesis, influence of performance in flight, and prevention
p0031 N79-11725

Cardiovascular fitness of pilots of transport aircraft
p0031 N79-11726

Cardiovascular studies of reducing and oxidizing agents
p0049 N79-12682

Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-284686/3] p0052 N79-12703

Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-286696/0] p0085 N79-15581

Aircraft flight simulation of spacelab experiment using an implanted telemetry system to obtain cardiovascular data from the monkey
p0147 N79-19022

Noninvasive techniques in the evaluation of the peripheral circulation
p0154 N79-19675

Cardiac adaptation to endurance training: Determined by echocardiography and electrocardiography
p0194 N79-23648

The effects of active and passive heat acclimatization procedures on the cardiovascular, thermoregulatory, and sweat rate responses to work in the heat in male humans
p0195 N79-23651

Physiological system integrations with emphasis on the respiratory-cardiovascular system
[NASA-CR-160230] p0213 N79-24643

User's instructions for the cardiovascular Walters model
[NASA-CR-160204] p0217 N79-25721

User's instructions for the high speed version of the cardiovascular exercise model
[NASA-CR-160211] p0218 N79-25724

User's instructions for the GE cardiovascular model to simulate LBNP and tilt experiments, with graphic capabilities
[NASA-CR-160216] p0219 N79-25732

Study report on guidelines and test procedures for investigating stability of nonlinear cardiovascular control system models
[NASA-CR-160229] p0219 N79-25734

Effect of brief head-down hypokinesia on pressure in various parts of the healthy man's cardiovascular system
p0245 N79-27831

Characterization of cardiovascular function by automated monitoring of cardiac contractility and left ventricular wall motion activity
p0247 N79-27842

Cardiovascular diseases, volume 3. A bibliography with abstracts
[NTIS/PS-79/0063/2] p0260 N79-28874

Possibility of improving assessment of cardio-pulmonary function by submaximal exercise on a bicycle ergometer
[BLL-RTS-11657] p0279 N79-30918

Frequency response of cardiovascular regulation in canines to sinusoidal acceleration at frequencies below 1 Hz (basis for biodynamic modeling)
p0286 N79-31915

The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress
[AD-A069952] p0318 N79-33845

CARGO AIRCRAFT
NT C-135 AIRCRAFT
NT C-141 AIRCRAFT

CAROTID SINUS REFLEX
Frequency response of cardiovascular regulation in canines to sinusoidal acceleration at frequencies below 1 Hz (basis for biodynamic modeling)
p0286 N79-31915

CARTILAGE
The relationship between adult articular cartilage thickness and dynamic loads of a uniaxial joint
p0154 N79-19671

CARTRIDGE ACTUATED DEVICES
U EXPLOSIVE DEVICES

CASCADES (FLUID DYNAMICS)
U FLUID DYNAMICS

CASE HISTORIES
Case report - Intracardial gas bubbles in relation to altitude decompression chokes
p0011 A79-12871

CATABOLISM
Hemoglobinemia in rats exposed to high altitude is not due to an overload of catabolic mechanisms
p0101 A79-23467

CATALASE
  Dynamics of the catalase activity of the blood of athletes under the influence of local decompression
  p0271 A79-49699
CATALYSIS
 NT AUTOCATALYSIS
  Four-man rated dual catalyst system for the recovery of water from urine
  [NASA-CR-152227] p0112 N79-16550
CATALYTIC ACTIVITY
  A simple analogical model for the selection of optical activity and of the most efficient catalysts in the course of molecular evolution
  p0204 A79-37957
  Decreased activity of palladium catalyst during processing of excreta
  p0016 N79-10716
CATECHOLAMINE
  Sustained operations and sleep deprivation - Effects on indices of stress
  p0009 A79-12859
  Effects of microwaves on catecholamine metabolism in the brain
  p0075 N79-14739
  Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite
  p0244 N79-27822
CATHODE RAY TUBES
  Visual acuity with regard to simultaneous colored contrast on a television screen - Results
  p0103 A79-23952
  Providing an eye separator on a color cathode tube --- enhancing visual acuity
  p0152 N79-19639
CATIONS
 NT METAL IONS
  A correlation of the effects of cationic uncouplers on intact cardiac muscle and on calcium bound to isolated cardiac muscle plasma membranes
  p0111 N79-16540
CAVITATION
 U CAVITATION FLOW
CAVITATION FLOW
  Application of a bubble formation model to decompression sickness in rats and humans
  p0102 A79-23473
CAVITIES
  The design and construction of a miniature dosimeter for the study of the effects of air cavities in radiation therapy
  p0176 N79-21757
CELESTIAL BODIES
 NT EARTH (PLANET)
 NT MAIN SEQUENCE STARS
 NT MARS (PLANET)
CELL DIVISION
  Effect of infra-low-frequency magnetic fields on cell division
  p0173 N79-20739
CELLS (BIOLOGY)
 NT AXONS
 NT CHROMOSOMES
 NT COLLAGENS
 NT ERYTHROCYTES
 NT HEMATOPOIESIS
 NT HEMOGLOBIN
 NT LYMPHOCYTES
 NT MACROPHAGES
 NT MITOCHONDRIA
 NT NEURONS
 NT OXYHEMOGLOBIN
  Biomagnetism and artificial magnetic stimulation of living structures
  [IAF PAPER 78-52] p0002 A79-11222
  Convective control of long-range coherence in plant growth regulation
  p0006 A79-12515
  Senescent changes in the ribosomes of animal cells in vivo and in vitro
  p0134 A79-27226
  Effect of ultrasonic irradiation on mammalian cells and chromosomes in vitro
  p0134 A79-27239
  Paradoxical reaction of some intracellular antioxidative defense mechanisms during adaptation of the organism to hypoxia
  p0165 A79-30696
  Photochemical transformations of the visual pigment rhodopsin
  p0181 A79-32319
  Biological effects of electromagnetic fields
  p0184 A79-33711
  Cell mechanisms for the biological effects of electromagnetic fields
  p0188 A79-35569
  Coacervate drops as a model for precellular structures
  p0204 A79-37960
  Coacervate drops - Primitive forms of precells
  p0204 A79-37962
  Possible contribution of transferable exogenous DNA in prokaryotic evolution
  p0205 A79-37971
  Membranous evolution in the primitive cell
  p0206 A79-37977
  Subcellular organisms and evolution of cell structure
  p0206 A79-37978
  Norepinephrine action on smooth muscle cells of coronary arteries
  p0208 A79-38149
  Preliminary results of Cytos experiment flows in Salyut VI - Investigations of Paramechium aurelia
  p0229 A79-41709
  Enchancement of luminance flicker by color-opponent mechanisms
  p0252 A79-44582
  Gating effects in Halobacterium halobium membrane transport
  p0268 A79-47849
  Design of polymeric immunomicrospheres for cell labelling and cell separation
  p0275 A79-50234
  Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates
  p0297 A79-51701
  Energy transduction in Halobacterium halobium
  p0300 A79-53000
  System for and method of freezing biological tissue
  [NASA-CASE-GSC-12173-1] p0013 N79-10694
  Effect of oxygen poisoning on the spectrum of lactate dehydrogenase isozymes of rabbit blood plasma
  p0017 N79-10721
  The effect of hyperthermia on the radiation response of crypt cells in mouse jejunum
  p0018 N79-10731
  The morphogenetic responses of cultured totipotent cells of carrot (Daucus carota L.) at zero gravity --- cosmos 782
  p0021 N79-11657
  Effect of space flight on cell-mediated immunity --- COSMOS 782 satellite
  p0021 N79-11661
  Purification and cultivation of human pituitary growth hormone secreting cells
  [NASA-CR-151853] p0051 N79-12697
  Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
  [NASA-TM-75582] p0071 N79-14711
  Possible mechanisms of weak electromagnetic field coupling in brain tissue
  p0082 N79-15555
  Interfacial and intracellular water: Expected anomalies in dielectric properties
  p0082 N79-15558
  Wavelength dependence of ultraviolet-enhanced reactivation and induction of mammalian viruses
  [HEW-PUB-FDA-78-8059] p0084 N79-15575
  The effect of infection with herpes simplex viruses types 1 and 2 on cell DNA synthesis and thymidine kinase activities in cultured human cells
  p0141 N79-18558
  Raman spectroscopy of biological membranes and other biological systems
  p0141 N79-18559
  Cell response to chronic irradiation-modeling and simulation studies
  p0142 N79-18562
  A theoretical study of membrane diffusion and lymphocyte patching
  p0142 N79-18563

Study of model membrane fusion using photon correlation spectroscopy --- lipid bilayer phase transition in cell membranes p0147 N79-19591

Effect of infra-low-frequency magnetic fields on cell division p0173 N79-20739

A method for separating biological cells [NASA-CASE-MFS-23883-1] p0175 N79-21743

Effects of propellant hydrazines on red blood cells: Methemoglobin and Heinz body formation [AD-A064133] p0189 N79-22755

Electrophysiological determination of retinal sensitivity to color after intense monochromatic light adaptation [AD-A063852] p0189 N79-22756

Purification and cultivation of human pituitary growth hormone secreting cells [NASA-CR-160242] p0219 N79-25736

Preparation of guinea pig macrophage for electrophoretic experiments in space [NASA-CR-158777] p0243 N79-27814

Biological effects of laser irradiation on nerve cells p0247 N79-27840

Study of pharmaceutical industrial problems [NASA-CR-160267] p0248 N79-27852

Cell biology basis for the life of an organism in the radiation field [ANL-TRANS-1152] p0261 N79-29786

Studying the state of cellular metal ions by the extended X-ray absorption fine structure [AD-A069799] p0279 N79-30914

Direct exposure of monolayers of mammalian cells to airborne pollutants in a unique culture system [AD-A069822] p0283 N79-31897

CENTRAL NERVOUS SYSTEM

NT BRAIN
NT CEREBRAL CORTEX
NT CEREBRUM
NT HIPPOCAMPUS
NT SPINAL CORD
NT SPINE

How does the saccadic eye movement controller adapt for pathological states p0046 A79-14961

Study of specific effects of hyperfrequencies on the central nervous system. II - Exploratory research on rat /Wistar/ behaviour p0047 A79-15493

A model for vestibular function in altered gravitational states p0229 A79-41710

Rat behavior in maze after flight aboard Kosmos-690 biosatellite p0014 N79-10705

The effects of carbon monoxide and cyanide on the brain p0024 N79-11682

Potential relationship between human central nervous system injury and impact forces based on primate studies p0286 N79-31919

CENTRIFUGAL FORCE

Effect of weightlessness and centrifugation (LXG) on erythrocyte survival in rats subjected to prolonged space flight p0023 N79-11674

Quantitative analysis of selected bone parameters p0023 N79-11676

Investigations into the importance of the direction of centrifugal forces acting on the human body [RAE-LIB-TRANS-1945] p0077 N79-14758

CENTRIFUGES

NT HUMAN CENTRIFUGES

CENTRIFUGING

Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations p0312 N79-33800

CENTRIFUGING STRESS

Geotropism of hornet comb construction under persistent acceleration p0006 A79-12514

Studies on the erythron and the ferrokinetic responses in beagles adapted to hypergravity p0010 A79-12869

Special test for astronaut selection - Tests of tolerance in the centrifuge and in flight p0047 A79-15491

Relaxed +Gz tolerance in healthy men - Effect of age p0067 A79-18956

Incapacitation time for +Gz-induced loss of consciousness p0102 A79-23475

RBC-/Cr-51/ half-life and albumin turnover in growing Beagle dogs during chronic radial acceleration p0135 A79-27553

Physiological effect of high, sustained +Gz forces on man p0229 A79-41711

Influence of the ambient acceleration field upon acute acceleration tolerance in chickens p0230 A79-41715

Effect of microwave radiation on the resistance of rats to transverse acceleration loading p0275 A79-50496

CENTRIPETAL FORCE

Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations p0312 N79-33800

CEPSTRAL ANALYSIS

Homomorphic analysis and modeling of ECG signals p0210 A79-39973

CERAMAL PROTECTIVE COATINGS

U PROTECTIVE COATINGS

CEREBRAL CORTEX

Lateral orientation and cerebral activation - Considerations for information display p0037 A79-13194

The event related cortical potential as an index of task workload p0038 A79-13208

Role of the frontal associative region of the cortex in the activity of the auditory and visual sensory systems p0043 A79-14371

Piecewise Fourier analysis of images and the role of occipital, temporal and parietal cortex in visual perception p0160 A79-29248

Self-regulation of cerebral circulation under orthostatic influences p0221 A79-36098

The effect of hyperoxia on the oxygen tension of blood and cerebral tissue p0208 A79-38146

Responses of retinal and visual pathway potentials of the guinea pig to nitrogen and helium at high pressure p0266 A79-47331

The visual cortex of normal and deprived monkeys p0296 A79-5117

Tissular respiration of the brain after exposure of rats to hypertoxic helium and oxygen mixtures at atmospheric and elevated pressure p0015 N79-10712

The effect of hyperoxia on cerebral blood flow in the unanesthetized pony p0107 N79-16511

A transient analysis of the cerebrovascular response to carbon dioxide p0111 N79-16539

Multiple tracer diffusion methods for the evaluation of cerebral capillary permeability and capillary blood flow rate in the rat p0169 N79-20712

CEREBRAL VASCULAR ACCIDENTS

Cerebral accident subsequent to G-force loading - A case report p0165 A79-30664

CEREBROSPINAL FLUID

Responses of pial arterioles after prolonged hypercapnia and hypoxia in the awake rabbit p0101 A79-23075

Composition of cerebral fluids in goats adapted to high altitude p0277 A79-50902

CEREBRUM

Determination of cerebral and neck subcutaneous tissue PO2 with 3 and 4 +Gz in M. mulatta p0234 A79-43205

Composition of cerebral fluids in goats adapted to high altitude p0277 A79-50902
A study of cerebral blood flow in the goat. A. Correlations between the ventilatory and cerebrovascular responses to carbon monoxide inhalation. B. The dynamics of the cerebral blood flow response to hypoxia by frequency response analysis p0107 N79-16510

CERTIFICATION
Ergometric tests in expert medical certification of flight personnel p0109 N79-16527
Characteristics of medically disqualified airman applicants in calendar years 1975 and 1976 [FAA-AM-78-25] p0144 N79-18582

CESSNA MILITARY AIRCRAFT
U MILITARY AIRCRAFT

CF-104 AIRCRAFT
U F-104 AIRCRAFT

CHAIRS
U SEATS

CHALCOGENIDES
NT CARBON DIOXIDE
NT CARBON MONOXIDE
NT CARBON SUBOXIDES
NT HYDROGEN SULFIDE
NT NITROGEN DIOXIDE
NT NITROGEN OXIDES
NT NITROGEN TETROXIDE
NT SULFUR DIOXIDES
NT SULFUR OXIDES

CHANCE-VOUGHT MILITARY AIRCRAFT
U MILITARY AIRCRAFT

CHANNEL CAPACITY
Test of the 10 bits/sec channel-capacity hypothesis for human tracking p0253 A79-45771

CHAPMAN-JOUGET FLAME
U CHEMICAL EQUILIBRIUM

CHARCOAL
NT ACTIVATED CARBON

CHARGE SEPARATION
U POLARIZATION (CHARGE SEPARATION)

CHARGED PARTICLES
NT BETA PARTICLES
NT CATIONS
NT ELECTRONS
NT METAL IONS
NT POSITIVE IONS

CHECKOUT EQUIPMENT
U TEST EQUIPMENT

CHEMICAL ANALYSIS
NT GAS ANALYSIS
NT POTENTIOMETRIC ANALYSIS
NT QUANTITATIVE ANALYSIS
NT SPECTROSCOPIC ANALYSIS
NT URINALYSIS
Microanalytical identification of barium sulphate crystals in statoliths of Chara Rhizoids [NASA-TM-75611] p0175 N79-21744
Effects of propellant hydrazines on red blood cells: Methemoglobin and Heinz body formation [AD-A064133] p0189 N79-22755

CHEMICAL BONDS
A molecular description of oxygen binding to hemoglobin p0194 N79-23646
Binding of biologically active agents to plasma proteins [CL-1977-22] p0261 N79-29787

CHEMICAL COMPOSITION
NT CARBON DIOXIDE CONCENTRATION
Effects of dietary composition on nutritional state in rats during exposure to high altitude p0134 A79-27118
Preliminary design specifications of a calcium model [NASA-CR-160199] p0217 N79-25716

CHEMICAL COMPOUNDS
Chemicals identified in human biological media, a pilot literature survey [PB-290690/7] p0214 N79-24649
Acute toxicity of a number of chemicals of interest to the Air Force [AD-A067313] p0220 N79-25742

CHEMICAL EFFECTS
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite p0299 A79-52475
Chemicals in environment affect man's physiology p0077 N79-14754

CHEMICAL ELEMENTS
NT ALUMINUM
NT AMERICIUM 241
NT ARGON
NT CADMIUM
NT CALCIUM
NT CARBON
NT CARBON 14
NT CHROMIUM ISOTOPES
NT COPPER
NT COPPER ISOTOPES
NT HELIUM
NT HYDROGEN IONS
NT IODINE
NT IRON
NT LEAD (METAL)
NT MAGNESIUM
NT MERCURY (METAL)
NT NEON ISOTOPES
NT NITROGEN
NT OXYGEN
NT PALLADIUM
NT PHOSPHORUS
NT PLATINUM
NT POTASSIUM
NT POTASSIUM 40
NT RARE GASES
NT SELENIUM
NT SODIUM
NT SODIUM ISOTOPES
NT SODIUM 22
NT STRONTIUM
NT TRITIUM
NT VANADIUM
NT ZINC
NT ZIRCONIUM
Acute toxicity of a number of chemicals of interest to the Air Force [AD-A067313] p0220 N79-25742

CHEMICAL ENERGY
Solar-driven chemical energy source for a Martian biota p0254 A79-46464

CHEMICAL EQUILIBRIUM
NT ACID BASE EQUILIBRIUM
A simple model of fluid flow and electrolyte balance in the body [NASA-CR-160205] p0217 N79-25722

CHEMICAL EVOLUTION
On the reality of extraterrestrial biogenesis [IAF PAPER 78-A-51] p0003 A79-11344
Lifecloud: The origin of life in the universe --- Book p0061 A79-17123
Synthesis of organic compounds from carbon monoxide and water by UV photolysis p0099 A79-22077
Porphyrin-like compounds genesis under simulated abiotic conditions p0099 A79-22078
Ion-molecule condensation reactions - A mechanism for organic synthesis in ionized reducing atmospheres p0099 A79-22079
Speculations of the evolution of the genetic code. II p0099 A79-22080
Evolution of a genetic code simulated with the computer p0100 A79-22081
Photochemical synthesis of amino acids from aqueous solutions of ethyl alcohol, ammonia/nitrogen under varied conditions p0105 A79-24520
HCN did not condense to give heteropolypeptides on the primitive earth p0133 A79-26542
Prebiotic nucleotide oligomerization in a fluctuating environment - Effects of kaolinite and cyanamide p0162 A79-29938
A review of recent concepts of the problem of the origin of life p0221 A79-36041
Prebiotic molecular evolution p0203 A79-37928

Experimental approach to the chemical evolution in the primeval sea. I - Formation of amino acids and amino acid polymers in modified sea mediums
p0203 A79-37935
Prebiotic synthesis of amino acids by carboxylation of amines in oxidative atmosphere
p0203 A79-37937
Incorporation of sulphur in chemical evolution
p0203 A79-37938
A simple analogical model for the selection of optical activity and of the most efficient catalysts in the course of molecular evolution
p0204 A79-37957
Quantitative aspects of the effect of weak interaction during chemical evolution
p0204 A79-37959
Experimental approach to the chemical evolution in the primeval sea. II - Formation of protocell-like structures 'marigranules' in a modified sea medium
p0204 A79-37964
Takeover mechanisms and early biochemical evolution
p0205 A79-37965
Sulfate-reducing bacteria and biochemical evolution
p0205 A79-37967
Some characteristic features of the origin and evolution of the amino acid composition of proteins - A theoretical consideration
p0206 A79-37973
Evolution of transfer RNA
p0206 A79-37975
Epimerization of L-isoleucine on Na-montmorillonite and its implication to Precambrian chemical fossils
p0206 A79-37979
The study of the origin of life - Results and prospects
p0206 A79-37981
The crisis in the problem of the origin of life
p0207 A79-37982
A critical assessment of the origin of life
p0207 A79-37985
Squalenes, phytanes and other isoprenoids as major neutral lipids of methanogenic and thermoacidophilic 'archaebacteria'
p0232 A79-42274
Carbon suboxide and the genetic code --- in biochemical evolution
p0252 A79-44865
Goodman et al.'s method for augmenting the number of nucleotide substitutions
p0253 A79-45639
On investigating the statistical properties of the populous path algorithm by computer simulation - Counterconclusions to those of Tateno and Nei --- for mutational change in protein evolution
p0253 A79-45640
A proposal concerning the origin of life on the planet earth
p0253 A79-45641
Polymers produced by heating an amino acid mixture in sea water enriched with transition elements
p0254 A79-46461
Mirror symmetry breaking in biochemical evolution
p0254 A79-46462
Prebiotic coordination chemistry: The potential role of transition-metal complexes in the chemical evolution
[NASA-TM-75381] p0169 N79-20715
Publications of the planetary biology program for 1977: A special bibliography
[NASA-TM-80338] p0179 N79-21777
Publications of the planetary biology program for 1978: A special bibliography
[NASA-TM-80745] p0319 N79-33854

CHEMICAL FUELS
NT DIESEL FUELS
NT JET ENGINE FUELS
NT SYNTHETIC FUELS
CHEMICAL KINETICS
U REACTION KINETICS
CHEMICAL PROPERTIES
NT SALINITY
A literature review-problem definition studies on selected toxic chemicals. Volume 2: Occupational health and safety aspects of phosphorus smoke compounds
[AD-A056019] p0025 N79-11685

CHEMICAL REACTIONS
NT CARBOXYLATION
NT DECARBOXYLATION
NT FERMENTATION
NT OXIDATION
NT OXIDATION-REDUCTION REACTIONS
NT OXYGENATION
NT PHOSPHORYLATION
NT PHOTOCHEMICAL REACTIONS
NT PHOTOLYSIS
NT PHOTOOXIDATION
NT PHOTOSYNTHESIS
NT PYROLYSIS
NT REDUCTION (CHEMISTRY)
CHEMICAL SHIFT
U CHEMICAL EQUILIBRIUM
CHEMICAL TESTS
NT CHEMICAL ANALYSIS
NT GAS ANALYSIS
NT POTENTIOMETRIC ANALYSIS
NT QUANTITATIVE ANALYSIS
NT SPECTROSCOPIC ANALYSIS
NT URINALYSIS
CHEMILUMINESCENCE
Effect of different doses of centimeter-band electromagnetic oscillations of biochemiluminescence of central nervous system and liver tissues
p0172 N79-20738

CHEMISORPTION
Study report on a double isotope method of calcium absorption
[NASA-CR-160194] p0216 N79-25712
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs
p0312 N79-33803

CHEMISTRY
NT INTERSTELLAR CHEMISTRY
CHEMORECEPTORS
Current conceptions of the mechanism of the effect of chemical stimulus on taste receptors
p0043 A79-14375

CHEMOTHERAPY
The combined effects of pulsed magnetic radiation (diapulse) and chemotherapy on tumor bearing mice. The measurement of rodent palatal explants as a device for measurement of the biologic effects of nonionic radiation (NIR)
p0018 N79-10733
The control and prevention of seizures in children, a developmental and environmental approach
p0094 N79-15892
Isolation of virus-augmented tumor antigens
p0142 N79-18564

CHESAPEAKE BAY (US)
Results of benthic studies at Calvert Cliffs
[PB-294261/3] p0261 N79-29788
CHEST
Contribution of rib cage and abdomen-diaphragm to tidal volume during CO2 rebreathing
p0185 A79-33805
New developments in ultrasonic imaging of the chest and other body organs
[UCRL-80340-REV-1] p0018 N79-10735
CHICKENS
Influence of the ambient acceleration field upon acute acceleration tolerance in chickens
p0230 A79-41715
Prospects of using Japanese quail in biological life support systems
p0109 N79-16531

CHILDREN
The child in coma
p0094 N79-15890
The control and prevention of seizures in children, a developmental and environmental approach
p0094 N79-15892
Orthomolecular enhancement of human development
p0095 N79-15895
Intelligence
p0095 N79-15896
Calibration of three year old child dummies
[PB-288961/6] p0157 N79-19692
CHILLING
U COOLING

CHIMES
U AUDITORY SIGNALS
CHIMPANZEES
Acid-base curve nomogram for chimpanzee blood and comparison with human blood characteristics p0133 A79-27105
CHLORELLA
Experiment Chlorella 1 on board of Salyut 6 [IAF PAPER 78-53] p0003 A79-11223
CHLORIDES
NT SODIUM CHLORIDES
NT ZINC CHLORIDES
CHLORINE COMPOUNDS
NT SODIUM CHLORIDES
NT ZINC CHLORIDES
CHLOROPHYLLS
In vitro duplication of the primary light-induced charge separation in purple photosynthetic bacteria p0131 A79-26100
Applications of chlorophyll fluorescence transient measurements to the functional analysis of photosynthetic processes p0243 N79-27813
CHLOROPLASTS
Evolution of early life inferred from protein and ribonucleic acid sequences p0206 A79-37980
CHOICE
U SELECTION
CHOKES
Case report - Intracardial gas bubbles in relation to altitude decompression chokes p0011 A79-12871
CHOLESTEROL
The prediction of the existence or nonexistence of coronary artery disease using routine clinical laboratory measurement p0028 N79-11703
Sterols bound with blood plasma proteins and erythrocyte membranes during hypokinesia p0193 N79-23636
CHOLINESTERASE
Reactions of methamidophos with mammalian cholinesterases [AD-A058683/4] p0051 N79-12698
Comparative study of acetylcholinesterase inactivation in warm-blooded animals and insects with substituted vinyl phosphates p0121 N79-17527
CHROMATOGRAPHY
NT GAS CHROMATOGRAPHY
CHROMIUM
NT CHROMIUM ISOTOPES
CHROMIUM ISOTOPES
RBC-/Cr-51/ half-life and albumin turnover in growing Beagle dogs during chronic radial acceleration p0135 A79-27553
CHROMOSOMES
Effect of ultrasonic irradiation on mammalian cells and chromosomes in vitro p0134 A79-27239
Effect of accelerations combined with radiation on occurrence of gene mutations in the drosophila p0016 N79-10720
Automated clinical system for chromosome analysis [NASA-CASE-NPO-13913-1] p0050 N79-12694
CHRONOLOGY
NT GEOCHRONOLOGY
CHRONOTRONS
U TIME LAG
CINEFLUOROGRAPHY
U RADIOGRAPHY
CINEMATOGRAPHY
A cinematographic technique for investigating some aspects of visual recognition p0300 A79-53067
CINERADIOGRAPHY
U RADIOGRAPHY
CIRCADIAN RHYTHMS
Comparison of circadian rhythms in male and female humans p0004 A79-11947
Comparison of hormone and electrolyte circadian rhythms in male and female humans p0004 A79-11948
Changes in the circadian rhythm of performance and mood in healthy young men exposed to prolonged, heavy physical work, sleep deprivation, and caloric deficit p0234 A79-43202
Circadian rhythm of electrolyte uresis in healthy persons p0257 A79-46681
The importance of light, postural and social cues in the regulation of the plasma cortisol rhythm in man p0267 A79-47398
Stability of circadian system of the body p0073 N79-14723
Task complexity and 24-hr performance patterns in morning and evening active subjects [FOA-C-52001-H6] p0122 N79-17537
Human circadian physiology: Internal organization of temperature, sleep-wake and neuroendocrine rhythms monitored in an environment free of time cues p0154 N79-19670
CIRCUIT DIAGRAMS
The development of a whole-body algorithm [NASA-CR-160214] p0218 N79-25730
CIRCUITS
NT HYBRID CIRCUITS
NT INTEGRATED CIRCUITS
NT SWITCHING CIRCUITS
NT TRANSMISSION CIRCUITS
CIRCULATION
NT BLOOD CIRCULATION
NT BRAIN CIRCULATION
NT CORONARY CIRCULATION
NT INTRAVASCULAR SYSTEM
NT ISCHEMIA
NT PERIPHERAL CIRCULATION
NT PULMONARY CIRCULATION
CIRCULATORY SYSTEM
NT AORTA
NT ARTERIES
NT BLOOD VESSELS
NT CAPILLARIES (ANATOMY)
NT VASCULAR SYSTEM
NT VEINS
Mathematical simulation of the human circulatory system p0110 N79-16535
Evaluation of exercise-respiratory system modifications and preliminary respiratory-circulatory system integration scheme [NASA-CR-160221] p0212 N79-24639
On a basic model of circulatory, fluid, and electrolyte regulation in the human system based upon the model of Guyton [NASA-CR-160212] p0218 N79-25725
Study report on modification of the long term circulatory model for the simulation of bed rest [NASA-CR-160186] p0218 N79-25727
User's instructions for the Guyton circulatory dynamics model using the Univac 1110 batch and demand processing (with graphic capabilities) [NASA-CR-160215] p0218 N79-25731
Evaluation of exercise-respiratory system modifications and integration schemes for physiological systems [NASA-CR-160223] p0219 N79-25733
CITIES
Measurements of radiofrequency field intensity in buildings with close proximity to broadcast stations [PB-290944/8] N79-25750
Radiofrequency radiation levels and population exposure in urban areas of the eastern United States [PB-292855/4] p0241 N79-26779
CIVIL AVIATION
Current role of alcohol as a factor in civil aircraft accidents p0136 A79-27561
Disability pattern amongst civil aircrew p0182 A79-33192
Soviet civil aviation training programs p0270 A79-49221
Judgement evaluation and instruction in civil pilot training [AD-A057440] p0019 N79-10737
CLASSIFICATIONS
NT HIERARCHIES
The systems analytic approach to the problem of classification of scientific medical research

p0078 N79-14766
CLAYS
NT KAOLINITE
NT MONTMORILLONITE
CLEAN ROOMS
Planetary protection guidelines for Outer Planet missions
p0005 A79-12511
CLEANERS
Spacecraft utensil/hand cleansing fixture
[NASA-CR-151845] p0032 N79-11731
Spacecraft utensil/hand cleansing fixture, addendum
[NASA-CR-151846] p0032 N79-11732
CLIMATOLOGY
NT MICROCLIMATOLOGY
CLINICAL MEDICINE
Clinical importance of directional statistics for electrocardiographic differentiation of smoking habits
p0098 A79-21246
Pneumothorax and flight personnel --- incidence, etiology and treatment
p0103 A79-23956
The value of measuring ocular tonus as a test for detecting glaucoma in flight personnel
p0104 A79-23959
Characteristics of serious carbon monoxide poisoning
p0167 A79-32100
Myocardial infarction in young men
p0188 A79-35137
+Gz tolerance correlation with clinical parameters
p0235 A79-43213
Noninvasive cardiovascular measurements --- Book
p0293 A79-51026
Computer quantitation of coronary angiograms
p0293 A79-51030
Clinical applications of new echocardiographic techniques
p0295 A79-51040
Cardiac blood flow measurement - A component of the comprehensive cardiac examination
p0295 A79-51041
Biomagnetic instrumentation and measurement
p0295 A79-51043
Clinical magnetocardiography
p0295 A79-51044
Detection and supervision of obstructed respiratory flow in fliers. Advantages of debit-volume graphs
p0028 N79-11707
Difficulties posed by left axis deviation in the evaluation of fliers, and their relations to the concept of left anterior hemiblock
p0029 N79-11714
Cardiac conduction and aptitude problem of fliers. The benefits of endocavital recording of the His bundles
p0030 N79-11716
The advantages of ultrasonic echocardiography in the cardiological evaluation of fliers
p0030 N79-11718
Clinical comparisons of pressure pulse and indicator dilution methods of determining cardiac output
p0050 N79-12690
Automated clinical system for chromosome analysis
[NASA-CASE-NPO-13913-1] p0050 N79-12694
Noninvasive estimation of bilirubin and hemoglobin oxygen saturation in the skin by reflection spectrophotometry
p0054 N79-13684
Early detection of disease: The correlation of the volatile organic profiles from patients with upper respiratory infections with subjects of normal profiles
[NASA-CR-160100] p0121 N79-17532
Evaluation of clinical biofeedback
[PB-287776/9] p0123 N79-17544
The role of computer technology mathematical models in treatment of patients following heart surgery
p0170 N79-20721
Liquid crystal developments for medicine
p0175 N79-21746
Study report on combining diagnostic and therapeutic considerations with subsystem and whole-body simulation
[NASA-CR-160231] p0213 N79-24644
Possibility of improving assessment of cardio-pulmonary function by submaximal exercise on a bicycle ergometer
[BLL-RTS-11657] p0279 N79-30918
CLOSED ECOLOGICAL SYSTEMS
Developing closed life support systems for large space habitats
[AAS PAPER 78-145] p0099 A79-21260
Space biology and medicine
p0132 A79-26344
Systems integration in the development of controlled ecological life support systems
[AIAA PAPER 79-1406] p0187 A79-34842
Waste treatment options for use in closed systems --- in space colonies
[AIAA PAPER 79-1409] p0187 A79-34843
Closed regenerative life support systems for space travel - Their development poses fundamental questions for ecological science
p0228 A79-41702
Closed ecology in space from a bioengineering perspective
p0228 A79-41703
Microflora of water reclaimed in sealed compartments
p0193 N79-23638
Evaluation of oxidizability of air in closed areas
p0313 N79-33808
CLOSED LOOP SYSTEMS
U FEEDBACK CONTROL
CLOSTRIDIUM BOTULINUM
The effect of ultrasound on botulin toxin
[AD-A059544] p0142 N79-18566
CLOSURES
A fluid-mechanical study of the closure of heart valves
p0161 A79-29540
CLOTH
U FABRICS
CLOTHING
NT BOOTS (FOOTWEAR)
NT COVERALLS
NT FLIGHT CLOTHING
NT GLOVES
NT GOGGLES
NT HELMETS
NT PRESSURE SUITS
NT PROTECTIVE CLOTHING
NT SPACE SUITS
NT SUITS
CLOTTING
Tissular blood clotting factors of vascular walls and myocardium during hypokinesia
p0194 N79-23644
Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
p0313 N79-33813
COAGULATION
NT BLOOD COAGULATION
Scanning and transmission electron microscopy of the blood-bubble interface in decompressed rats
p0266 A79-47333
COASTAL ECOLOGY
A biogeochemical study of the Abu Dhabi algal mats - A simplified ecosystem
p0132 A79-26373
COASTAL MARSHLANDS
U MARSHLANDS
COASTAL WATER
The application of remote sensors to a model for fish mapping
[INPE-1379-PE/176] p0071 N79-14712
COATINGS
NT PAINTS
NT PROTECTIVE COATINGS
COCHLEA
Effects of acute noise traumata on whole-nerve and single-unit activity
[IZF-1978-23] p0308 N79-32829
COCKPIT SIMULATORS
Tracking-task performance during heat stress simulating cockpit conditions in high-performance aircraft
p0236 A79-43675
COCKPITS
Physiological requirements for design of environmental control systems - Control of heat stress in high-performance aircraft
[ASME PAPER 78-ENAS-22] p0007 A79-12571

Investigation of arrangement of multipurpose displays and use of tailored control logic in a fighter aircraft cockpit
p0038 A79-13205
Multifunction keyboard configurations for single-seat, air-to-ground fighter cockpits
p0039 A79-13213
Factors that affect display size criteria in a cockpit display system
p0063 A79-18212
Better definition of eye to aortic valve distance in high acceleration cockpit /HAC/ seating geometries
p0183 A79-33632
Effect of cockpit temperature gradients on the validity of single-point measurements
p0234 A79-43203
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
p0266 A79-47334
Internal cockpit reflections of external point light sources for the model YAH-64 advanced attack helicopter
[AD-A056489] p0033 N79-11744
In-flight toxicology of fixed and rotary wing aircraft crew stations
p0149 N79-19619
The use of biostereometry in helicopter cockpit design --- using a simulator and analytic geometry
p0150 N79-19629
The effective acoustic environment of helicopter crewmen
p0152 N79-19645
A human body and crew station modelling system for motion studies
p0287 N79-31922

COENZYMES
NT CYTOCHROMES
Effects of aeration on formation and localization of the acetyl coenzyme A synthetases of Saccharomyces cerevisiae
p0162 A79-30125

COGNITION
Shalit Perceptual Organization and Reduction Questionnaire (SPORQ). Report 2: Characteristics and reliability
[FOA-C-55031-H6] p0309 N79-32836

COGNITIVE PSYCHOLOGY
Rhythms in human performance - 1-1/2-hour oscillations in cognitive style
p0210 A79-39601
The role of cognitive switching in head-up displays --- to determine pilot ability to accurately extract information from either of two sources
[NASA-CR-3137] p0318 N79-33851

COHERENT ANTI-STOKES RAMAN SPECTROSCOPY
U RAMAN SPECTROSCOPY

COLD ACCLIMATIZATION
Human psychophysiology in extremal conditions --- Russian book on polar region adaptation
p0048 A79-15977
Time for loss of increased cardiac responsiveness to isoproterenol in cold-acclimated rats after removal from cold
p0128 A79-24636
Thermoregulation in swimmers and runners
p0227 A79-41186
Cross-adaptive effects of cold, hypoxia, or physical training on decompression sickness in mice
p0268 A79-47855

COLD TOLERANCE
Time for loss of increased cardiac responsiveness to isoproterenol in cold-acclimated rats after removal from cold
p0128 A79-24636
Responses of high altitude natives to a standard cold test at sea level
p0164 A79-30658
Thermoregulation in unrestrained rats during and after exposure to 1.5-4 G
p0227 A79-41185
Bimodal relationship of human tremor and shivering on introduction to cold exposure
p0298 A79-52278
Uncommon hypersensitivity to contacting cold water and cold air with propagated reflex-like erythema development
[BLL-RTS-11644] p0279 N79-30917

COLD WATER
Cold water survival suits for aircrew
p0298 A79-52282
Survival and protection of aircrew in the event of accidental immersion in cold water
[AGARD-AG-211(ENG)] p0196 N79-23661

COLD WEATHER TESTS
Responses of high altitude natives to a standard cold test at sea level
p0164 A79-30658
Evaluation of British and Canadian conductive rubber heating elements for handwear: Preliminary report
[AD-A052826] p0093 N79-15637
Man and materiel in the cold regions, part 1
[AD-A063752] p0178 N79-21771

COLLAGENS
Raman and infrared investigations of the nature of intracellular water
[AD-A061254] p0120 N79-17522

COLLECTION
Urine collection apparatus
[NASA-CASE-MSC-18381-1] p0195 N79-23657

COLLISION AVOIDANCE
Human factors considerations in establishing aircraft collision avoidance system alert thresholds
p0045 A79-14438
Collision avoidance response stereotypes in pilots and nonpilots
p0068 A79-18995

COLLISION WARNING DEVICES
U COLLISION AVOIDANCE
U WARNING SYSTEMS

COLLISIONS
NT BIRD-AIRCRAFT COLLISIONS
NT MIDAIR COLLISIONS
Test and evaluation of head restraints, seat backs, and anchorages in vehicles subjected to rear impact collision
[PB-289779/1] p0178 N79-21773

COLLOIDS
NT AEROSOLS
NT FOG
Coacervate drops as a model for precellular structures
p0204 A79-37960
Coacervate drops - Primitive forms of precells
p0204 A79-37962

COLOR
Regression models of search time for color-coded information displays
p0209 A79-38359
Light and color on a manned spacecraft
p0059 N79-13996
Electrophysiological determination of retinal sensitivity to color after intense monochromatic light adaptation
[AD-A063852] p0189 N79-22756

COLOR PERCEPTION
U COLOR VISION

COLOR TELEVISION
Digital color image compression in a perceptual space
p0136 A79-28013
A 25-inch precision color display for simulator visual systems
p0137 A79-28164
Contrast sensitivity of the human eye to various display phosphor types
[AD-A058383] p0056 N79-13695

COLOR VISION
Apparent saturation of blue-sensitive cones occurs at a color-opponent stage
p0002 A79-10474
Four years of color research for visual displays --- human performance consideration for use in aircraft
p0039 A79-13210
A controller's eye view of color
p0102 A79-23596
Visual acuity with regard to simultaneous colored contrast on a television screen - Results
p0103 A79-23952
Aeromedical implications of the X-Chrom lens for improving color vision deficiencies
p0135 A79-27556
Recognition by the human eye of colored symbols on different backgrounds

p0136 A79-27673
ISAAC-1 - A color sensing robot
p0138 A79-28168
Chromatic border distinctness - Not an index of hue or saturation differences
p0139 A79-28332
Deductive derivation of a mathematical model for spectral sensitivity of the human organ of sight. I, II
p0166 A79-31178
Visual contrast sensitivity functions obtained with colored and achromatic gratings
p0181 A79-32628
Detection of coloured stimuli by independent linear systems
p0231 A79-42229
Enhancement of luminance flicker by color-opponent mechanisms
p0252 A79-44582
Using color substitution pupil response to expose chromatic mechanisms
p0265 A79-47116
Contrast sensitivity of the human eye to various display phosphor types
[AD-A058383] p0056 N79-13695
Providing an eye separator on a color cathode tube --- enhancing visual acuity
p0152 N79-19639
Effects of vestibular factors on color-discriminating function of the human eyes following color preadaptation
p0192 N79-23632
Restoration of color perception after deadapting flashes
p0193 N79-23640
Contribution to the theory of photopic vision: Retinal phenomena
[NASA-TM-75507] p0315 N79-33823
COLORATION
U COLOR
COMA
The child in coma
p0094 N79-15890
Coma recovery
p0094 N79-15891
COMBAT
An Air Combat Effectiveness Study /ACES/ program
p0040 A79-13222
Development of automated performance measures for introductory air combat maneuvers
p0040 A79-13223
Air Combat Maneuvering Range /ACMR/ - Has operational performance measurement entered a Golden Age
p0064 A79-18221
Methodology to assess psychological stress and its impact in the air combat environment
[AD-A053874] p0057 N79-13707
Air-to-air combat skills: Contribution of platform motion to inertial training
[AD-A062738] p0173 N79-20743
COMBINED STRESS
Physiologic and performance measurements in simulated airborne combined stress environments
p0202 A79-37710
COMBUSTION PRODUCTS
Renal damage in mice following exposure to the pyrolysis products of polytetrafluoroethylene
p0066 A79-18306
COMFORT
A study of the available evidence on duration effects on comfort and task proficiency under vibration
p0258 A79-46399
COMMAND AND CONTROL
The man-computer division of tasks in the case of the control of complex technical systems --- applied to aircraft
p0061 A79-17683
Man/terminal interaction evaluation of computer operating system command and control service concepts --- in Spacelab
p0064 A79-18224
Combined monitoring, decision and control model for the human operator in a command and control desk
p0092 N79-15631
Combined discrete network: Continuous control modeling of man-machine systems
[AD-A071574] p0310 N79-32842
COMMAND-CONTROL
U COMMAND AND CONTROL
COMMERCIAL AIRCRAFT
Coordinated crew performance in commercial aircraft operations
p0040 A79-13219
COMMERCIAL AVIATION
U CIVIL AVIATION
U COMMERCIAL AIRCRAFT
COMMUNICATING
NT AIRCRAFT COMMUNICATION
NT INFORMATION DISSEMINATION
NT VERBAL COMMUNICATION
COMMUNICATION
NT INFORMATION DISSEMINATION
NT VERBAL COMMUNICATION
Development of techniques to enhance man/machine communication
[NASA-CR-157886] p0032 N79-11730
COMMUNICATION EQUIPMENT
NT STEREOTELEVISION
COMMUNICATION SYSTEMS
U TELECOMMUNICATION
COMMUNICATION THEORY
NT WORDS (LANGUAGE)
COMMUNITIES
NT MOUNTAIN INHABITANTS
COMPARTMENTS
NT AIRCRAFT COMPARTMENTS
NT HYPERBARIC CHAMBERS
NT PRESSURE CHAMBERS
NT TEST CHAMBERS
COMPATIBILITY
NT ELECTROMAGNETIC COMPATIBILITY
NT SYSTEMS COMPATIBILITY
Investigation of psychological compatibility of crew members of multiseat aircraft
p0166 A79-31165
COMPENSATORY TRACKING
Vigilance and electroencephalogram --- human performance in compensatory target tracking
p0100 A79-22975
Visual cues in manual tracking of simulated targets
p0103 A79-23792
The effects of carbon monoxide on dual-task performance
p0161 A79-29716
A structural model of the adaptive human pilot
[AIAA 79-1784] p0252 A79-45411
Modeling human tracking performance in a high G-stress environment
p0269 A79-48012
Human operators in adversary tracking encounters
p0269 A79-48015
Effects of information processing requirements on reaction time of the eye
[AD-A060099] p0080 N79-14778
COMPLEX SYSTEMS
Task functional demands as factors in dual-task performance
p0039 A79-13214
The man-computer division of tasks in the case of the control of complex technical systems --- applied to aircraft
p0061 A79-17683
Evaluation of models describing human operator control of slowly responding complex systems --- Thesis
p0167 A79-31494
Application of computer animation for dynamic display in complex energy systems --- for human operator performance improvement
p0186 A79-34172
COMPLEXITY
NT TASK COMPLEXITY
COMPLIANCE (ELASTICITY)
U MODULUS OF ELASTICITY
COMPOSITION (PROPERTY)
NT ATMOSPHERIC COMPOSITION
NT CARBON DIOXIDE CONCENTRATION
NT CHEMICAL COMPOSITION
NT CONCENTRATION (COMPOSITION)
NT MOISTURE CONTENT
COMPRESSED GAS
NT HIGH PRESSURE OXYGEN
COMPRESSION LOADS
NT AXIAL COMPRESSION LOADS

COMPUTER ASSISTED INSTRUCTION
  A computer-based simulator simulator --- computer-assisted pilot training p0039 A79-13215
  Transfer of a computer-assisted instrument procedures trainer to flight p0039 A79-13216
  The evaluation of a complex computer-based flight procedures trainer p0161 A79-29717
  ARPA authoring system [AD-A064723] p0190 N79-22762
COMPUTER GRAPHICS
  Digital enhancement of computerized axial tomograms p0004 A79-11544
  Computer-graphic design for human performance [AD-A055132] p0046 A79-15399
  Perception of graphic displays of space p0062 A79-18205
  Visual cues in manual tracking of simulated targets p0103 A79-23792
  Recent developments and plans for pilot training devices [SAE PAPER 781007] p0130 A79-25889
  Object, illusion and frame of reference as design criteria for computer-generated displays p0137 A79-28157
  Digital image anomalies - Static and dynamic --- rastering and aliasing effects and elimination p0137 A79-28158
  Windshield quality and pilot performance measurement utilizing computer-generated imagery p0137 A79-28165
  Transfer of landing skill after training with supplementary visual cues p0138 A79-28167
  A fast-reacting and versatile optokinetic stimulus pattern by computer graphics with application examples p0160 A79-28993
  Application of computer animation for dynamic display in complex energy systems --- for human operator performance improvement p0186 A79-34172
  The development of integrated multidimensional displays p0187 A79-34990
  Real-time computerized fluoroscopic cardiac imaging p0294 A79-51035
  Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators p0297 A79-52276
  A spherical representation of a human body for visualizing movement p0301 A79-53096
  Analysis and validation of human biodynamic models [AD-A059013] p0058 N79-13714
  Graphic display of human motion [AD-A064344] p0190 N79-22763
  Transient thermoregulatory model with graphics output [NASA-CR-160217] p0212 N79-24637
COMPUTER METHODS
 U COMPUTER PROGRAMS
COMPUTER PROGRAMMING
 NT ON-LINE PROGRAMMING
  Prospects of a mathematical theory of human behavior in complex man-machine systems tasks --- time sharing computer analogy of automobile driving p0088 N79-15599
  Modifications to the steady-state 41-node thermoregulatory model including validation of the respiratory and diffusional water loss equations [NASA-CR-160219] p0219 N79-25738
COMPUTER PROGRAMS
 NT INPUT/OUTPUT ROUTINES
 NT SUBROUTINES
  A theoretical model to estimate some ergonomic parameters from age, height and weight p0132 A79-26150
  Computer quantitation of angiocardiographic images p0293 A79-51028
  Generalized environmental control and life support system computer program (G1894), phase 3 [NASA-CR-151836] p0019 N79-10741
  A survey of existing computer programs for aircrew workload assessment [AD-A058518] p0059 N79-13718
  Editing procedure for anthropometric survey data [AD-A060393] p0093 N79-15639
  Human operator identification model and related computer programs [NASA-CR-152237] p0112 N79-16551
  Speech as a pilot input medium p0119 N79-17519
  Computer program for calculation of oxygen uptake [NASA-TM-78585] p0178 N79-21741
  A discrete parameter model of the head and neck with neuromuscular feedback p0211 N79-24627
  Fluid and Electrolyte Balance model (FEB) [NASA-CR-160206] p0211 N79-24633
  Design specification for the whole-body algorithm [NASA-CR-160226] p0212 N79-24641
  User's instructions for the cardiovascular Walters model [NASA-CR-160204] p0217 N79-25721
  On a basic model of circulatory, fluid, and electrolyte regulation in the human system based upon the model of Guyton [NASA-CR-160212] p0218 N79-25725
  User's instructions for the Guyton circulatory dynamics model using the Univac 1110 batch and demand processing (with graphic capabilities) [NASA-CR-160215] p0218 N79-25731
  User's instructions for the GE cardiovascular model to simulate LBNP and tilt experiments, with graphic capabilities [NASA-CR-160216] p0219 N79-25732
  Evaluation of exercise-respiratory system modifications and integration schemes for physiological systems [NASA-CR-160223] p0219 N79-25733
  User's guide for the Skylab integrated medical data analysis system [NASA-CR-160189] p0220 N79-25740
  The application of MINIQUASI to thermal program boundary and initial value problems [NASA-CR-160227] p0222 N79-25759
  Review of unfolding methods used in the US and their standardization for dosimetry [BNWL-SA-6503] p0307 N79-32828
COMPUTER SIMULATION
 U COMPUTERIZED SIMULATION
COMPUTER STORAGE DEVICES
 NT RANDOM ACCESS MEMORY
COMPUTER SYSTEMS DESIGN
  Pilot preflight briefing utilizing an interactive computer generated Voice Response System p0167 A79-31887
COMPUTER SYSTEMS PROGRAMS
 NT INPUT/OUTPUT ROUTINES
COMPUTER TECHNIQUES
  High-speed computerized tomography p0004 A79-12030
  Models for automated motor skills training --- computer controlled adaptive instruction p0035 A79-13182
  The application of computer aided evaluative techniques to system test and evaluation --- of fighter aircraft pilot performance p0036 A79-13190
  Response surface methodology as a manipulator of complex task difficulty --- for computer generated aircraft area navigation control-display systems evaluation p0039 A79-13211
  Computerized clinical electroencephalography in perspective p0226 A79-40648
  Automatic recognition of spoken words using a functional model of the auditory system p0235 A79-43464
  Visually estimating workpiece pose in a robot hand using the feature points method p0269 A79-48018
  Computer augmented manual control of remote manipulators p0269 A79-48019
  An operator-aiding manipulator control system p0269 A79-48020
  Computer quantitation of coronary angiograms p0293 A79-51030

Visual motion perception by intelligent systems
p0300 A79-52691
New developments in ultrasonic imaging of the chest and other body organs
[UCRL-80340-REV-1] p0018 N79-10735
New principles of automation of biomedical research
p0078 N79-14763
TADRAP: A computer-aided technique for reducing aircrew task analysis data --- helicopter design considering human factors
p0150 N79-19628
A systematic approach to computer analysis of pulmonary vascular patterns
p0176 N79-21756
A computer system for statistical analysis of EEG transients
p0216 N79-25707

COMPUTERIZED CONTROL
U NUMERICAL CONTROL

COMPUTERIZED DESIGN
Computer-graphic design for human performance
[AD-A055132] p0046 A79-15399
Computer design synthesis of a below knee-Syme prosthesis
p0251 A79-44300

COMPUTERIZED SIMULATION
NT ANALOG SIMULATION
NT DIGITAL SIMULATION
Modeling and analysis using SAINT - A combined discrete/continuous network simulation language --- Systems Analysis of Integrated Network of Tasks for RPV
p0004 A79-11480
Various modeling approaches in biomechanics --- analog simulation of impact events
p0005 A79-12407
Human factors design criteria for transilluminated displays
p0036 A79-13187
Computer simulation of thermoregulatory responses to heat stress - A future work design and training tool
p0037 A79-13196
Refinement of a computer simulation model for evaluating DAIS display concepts --- Digital Avionics Information System
p0038 A79-13209
Evolution of a genetic code simulated with the computer
p0100 A79-22081
Linearization and sensitivity analysis of model for human eye movements
p0102 A79-23783
The evaluation of a complex computer-based flight procedures trainer
p0161 A79-29717
Thermal bounds to the time of stay of human beings in enclosures
p0231 A79-41770
Adjustment of an electronic model for electrocardiogram simulation
p0232 A79-42240
On investigating the statistical properties of the populous path algorithm by computer simulation - Counterconclusions to those of Tateno and Nei --- for mutational change in protein evolution
p0253 A79-45640
Test of the 10 bits/sec channel-capacity hypothesis for human tracking
p0253 A79-45771
A spherical representation of a human body for visualizing movement
p0301 A79-53096
Applied analysis of computer simulated decompression profiles
p0017 N79-10722
Simple models for the shuttle remote manipulator system
[NASA-CR-151881] p0113 N79-16554
Physiological system integrations with emphasis on the respiratory-cardiovascular system
[NASA-CR-160230] p0213 N79-24643
The application of sensitivity analysis to models of large scale physiological systems
[NASA-CR-160228] p0213 N79-24645
User's instructions for the erythropoiesis regulatory model
[NASA-CR-160193] p0216 N79-25711
Use of a computer model in the understanding of erythropoietic control mechanisms
[NASA-CR-160201] p0217 N79-25718
Dynamic regulation of erythropoiesis: A computer model of general applicability
[NASA-CR-160203] p0217 N79-25720
User's instructions for the cardiovascular Walters model
[NASA-CR-160204] p0217 N79-25721
Study report on modification of the long term circulatory model for the simulation of bed rest
[NASA-CR-160186] p0218 N79-25727
Improvements and validation of the erythropoiesis control model for bed rest simulation
[NASA-CR-160187] p0218 N79-25728
User's instructions for the GE cardiovascular model to simulate LBNP and tilt experiments, with graphic capabilities
[NASA-CR-160216] p0219 N79-25732
Sensory mechanism modeling
[AD-A069439] p0262 N79-29796
Prediction of whole-body response to impact forces in flight environments
p0284 N79-31902
Procedures used to generate input data sets for the articulated total body model from anthropometric data
p0284 N79-31903
The validation of biodynamic models
p0286 N79-31914
A human body and crew station modelling system for motion studies
p0287 N79-31922
Models of human operators in vision dependent tasks
[NASA-CP-2103] p0317 N79-33838
A survey of Applied Psychological Services' models of the human operator
p0317 N79-33839
SAINT: A combined simulation language for modeling man-machine systems
p0317 N79-33842

COMPUTERS
NT AIRBORNE/SPACEBORNE COMPUTERS
NT HYBRID COMPUTERS
The role of computer technology mathematical models in treatment of patients following heart surgery
p0170 N79-20721

CONCENTRATION (COMPOSITION)
NT CARBON DIOXIDE CONCENTRATION
NT MOISTURE CONTENT
Aphotometer for determining the biomass of microorgan from the ATP content
[BLL-RTS-11456] p0141 N79-18555
Effects of different values of urine pH during long-term storage on microflora composition
p0194 N79-23643
Investigation of albumin and globulin composition of blood of the crew of the Salyut-3 orbital station
p0244 N79-27820
Mathematical modeling of arterial oxygen saturation and eye-level blood pressure during +G sub Z stress
p0286 N79-31916

CONCENTRATORS
Health and safety hazards associated with solar concentration systems
p0200 A79-36628

CONDENSATION
Prebiotic condensation reactions using cyanamide
p0203 A79-37932
Prebiotic condensation of oligonucleotide
p0204 A79-37945

CONDITIONED REFLEXES
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] p0301 A79-53286
Ultrastructural development of the vestibular system of frog larvae in 0g simulation
[IAF PAPER 79-78] p0301 A79-53287
Neurophysiological bases of vestibular conditioning
p0013 N79-10699

CONDITIONED RESPONSES
U CONDITIONING (LEARNING)

CONDITIONING
Effect of physical conditioning on cardiac mitochondrial function
p0068 A79-18966

Sweating responses during heat acclimation and moderate conditioning p0185 A79-33803
CONDITIONING (LEARNING)
Role of autogenic training in psychophysiological conditioning of aviation school students p0098 A79-21244
Rat behavior in maze after flight aboard Kosmos-690 biosatellite p0014 N79-10705
CONDITIONS
NT FLIGHT CONDITIONS
CONDUCTIVE HEAT TRANSFER
Modeling heat transfer through human skin subjected to high external temperatures p0102 A79-23782
Application of similarity transformation to unsteady state heat migration problems in human skin and subcutaneous tissues p0233 A79-42932
CONDUCTORS
NT ELECTROLYTES
CONES
Evidence for the equivalent-background hypothesis in cones --- for dark adaptation thresholds p0232 A79-42233
CONFERENCES
Life sciences and space research XVI; Proceedings of the Open Meetings of the Working Group on Space Biology, Tel Aviv, Israel, June 7-18, 1977 p0005 A79-12508
Human Factors Society, Annual Meeting, 21st, San Francisco, Calif., October 17-20, 1977, Proceedings p0035 A79-13181
Human Factors Society, Annual Meeting, 22nd, Detroit, Mich., October 16-19, 1978, Proceedings p0062 A79-18201
Visual simulation and image realism; Proceedings of the Seminar, San Diego, Calif., August 30, 31, 1978 p0137 A79-28156
Origin of life; Proceedings of the Second ISSOL Meeting and Fifth ICOL Meeting, Kyoto, Japan, April 5-10, 1977 p0203 A79-37919
Life sciences and space research XVII; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 10, 1978, and Symposium on Gravitational Physiology, Innsbruck, Austria, June 2, 3, 1978 p0228 A79-41701
Aero Medical Society of India, Annual Meeting, 21st, Bangalore, India, December 15, 16, 1978, Proceedings p0271 A79-49726
Hyperthermia as an Antineoplastic Treatment Modality [NASA-CP-2051] p0017 N79-10728
Proceedings of the 1977 Computerized Adaptive Testing Conference [AD-A060049] p0079 N79-14771
The Physical Basis of Electromagnetic Interactions with Biological Systems [HEW-PUB-FDA-78-8055] p0081 N79-15551
The 14th Annual Conference on Manual Control --- digital simulation of human operator dynamics [NASA-CP-2060] p0086 N79-15588
Proceedings of the first and second USA-USSR Symposia on the Effects of Pollutants upon aquatic ecosystems. Volume 1: USA Symposium. Volume 2: USSR Symposium [PB-287219/0] p0112 N79-16546
Proceedings, 13th Annual Conference on Manual Control [NASA-CR-158107] p0114 N79-17475
Operational Helicopter Aviation Medicine [AGARD-CP-255] p0148 N79-19605
Orenburg symposium on mycotoxins p0175 N79-21749
Report of the Workshop on Biological Screening Tests [PB-294303/3] p0279 N79-30916
Models and Analogues for the Evaluation of Human Biodynamic Response, Performance and Protection --- conferences, human tolerance of acceleration, vibration, and shock [AGARD-CP-253] p0284 N79-31901
Third Symposium on Motion Sickness p0313 N79-33814
Ultrasonic tissue characterization II [PB-296356/9] p0316 N79-33836
CONFINEMENT
The influence of hyperbaric environment in combination with workload and confinement on human information processing [DLR-FB-78-12] p0280 N79-30926
CONFIRMATION
U PROVING
CONFLUENCE
U CONVERGENCE
CONGENITAL ANOMALIES
Assessment of factors possibly contributing to the susceptibility of sickle trait erythrocytes to mild hypoxia. Volume 1: Design considerations and research protocol [AD-A059412] p0084 N79-15577
CONGENITAL CONDITIONS
U CONGENITAL ANOMALIES
CONGRESSIONAL REPORTS
Extraterrestrial intelligence research [GPO-35-355] p0094 N79-15645
Radiation protection [GPO-35-583] p0263 N79-31899
CONICAL FLARE
U CONES
CONNECTIVE TISSUE
NT CARTILAGE
NT COLLAGENS
Subcutaneous channeling probe [NASA-CASE-ARC-11091-1] p0025 N79-11684
CONNECTORS
NT ELECTRIC CONNECTORS
CONNECTORS (ELECTRIC)
U ELECTRIC CONNECTORS
CONSCIOUSNESS
Consciousness alteration in space [AIAA PAPER 79-1430] p0187 A79-34853
CONSECUTIVE EVENTS
Petri nets as a modeling tool for discrete concurrent tasks of the human operator --- describing sequential and parallel demands on human operators p0088 N79-15600
CONSOLES
Seating, console and workplace design - Seated operator reach profiles p0036 A79-13188
Seating, console, and workplace design - Integration of literature and accommodation model p0036 A79-13189
Human factors evaluation of the AN/UYQ-21 display console [AD-A056383] p0020 N79-10743
CONSTRAINTS
NT METEOROLOGICAL PARAMETERS
Test and evaluation of head restraints, seat backs, and anchorages in vehicles subjected to rear impact collision [PB-289779/1] p0178 N79-21773
CONSTRUCTION
The design and construction of a miniature dosimeter for the study of the effects of air cavities in radiation therapy p0176 N79-21757
CONSUMABLES (SPACECRAFT)
NT CONSUMABLES (SPACECREW SUPPLIES)
NT SPACE RATIONS
CONSUMABLES (SPACECREW SUPPLIES)
NT DEHYDRATED FOOD
NT POTABLE WATER
NT SPACE RATIONS
Food packages for Space Shuttle [ASME PAPER 78-ENAS-13] p0007 A79-12562
Maximizing storage stability of foods to be used for resupply in a controlled ecological life supply system: Evaluation of research [NASA-CR-158846] p0260 N79-28880
CONSUMPTION
NT OXYGEN CONSUMPTION
NT WATER CONSUMPTION
CONTACT DERMATITIS
Allergy to lanolin [BLL-RTS-11185] p0142 N79-18570
Uncommon hypersensitivity to contacting cold water and cold air with propagated reflex-like erythema development [BLL-RTS-11684] p0279 N79-30917

CONTACT LENSES
Aeromedical implications of the X-Chrom lens for improving color vision deficiencies p0135 A79-27556

CONTAMINANTS
NT TRACE CONTAMINANTS
Investigation of composition of trace contaminants in the air environment of the Soyuz-22 spacecraft p0072 N79-14720
Effect of hypokinesia on animal resistance to chemical agents p0109 N79-16524
Evaluation of toxic effects of organic contaminants in recycled water [PB-291379/6] p0190 N79-22760
Chemicals identified in human biological media, a pilot literature survey [PB-290690/7] p0214 N79-24649
Direct exposure of monolayers of mammalian cells to airborne pollutants in a unique culture system [AD-A069822] p0283 N79-31897

CONTAMINATION
NT SPACECRAFT CONTAMINATION

CONTENT
NT BONE MINERAL CONTENT

CONTINUITY
Perception of continuity in stroboscopic motion - A temporal frequency analysis p0186 A79-34375

CONTOURS
Texture contours can facilitate stereopsis by initiating vergence eye movements p0270 A79-48816
Contour detector and data acquisition system for the left ventricular outline [NASA-CASE-ARC-10985-1] p0017 N79-10724

CONTRACTION
Cardio-pulmonary response to shock [AD-A065672] p0196 N79-23659
Recruitment and discharge properties of motor units in human brachial biceps and adductor pollicis during isometric contractions p0216 N79-25708

CONTRAST
NT IMAGE CONTRAST

CONTROL
The development and evaluation of objective frequency domain based pilot performance measures in ASUPT [AD-A059477] p0080 N79-14776
Flight prototype CO2 and humidity control system [NASA-CR-160224] p0222 N79-25760

CONTROL CONFIGURED VEHICLES
A theoretical investigation of power and control configurations for a high g-onset centrifuge drive system [AD-A070912] p0309 N79-32841

CONTROL DEVICES
U CONTROL EQUIPMENT

CONTROL EQUIPMENT
NT CONTROL STICKS
NT TELEOPERATORS
Instrumentation for controlling and monitoring environmental control and life support systems [ASME PAPER 78-ENAS-40] p0009 A79-12587
Anthropology in Spacelab - Control and display system in Spacelab [DGLR PAPER 78-151] p0042 A79-14096
Increasing pilot's performance capacity during flight through use of a control element serving as information carrier [DGLR PAPER 78-152] p0042 A79-14097
Object-handling system for manual industry p0101 A79-23464
Control systems for robots and manipulators --- Russian book p0134 A79-27303
Flight experience with manually controlled unconventional aircraft motions p0088 N79-15602
The determination of the operating range of a twin-grip control yoke through biomechanical means p0089 N79-15609
Human/computer control of undersea teleoperators p0089 N79-15612
Earth orbital teleoperator systems evaluation [NASA-CR-150912] p0112 N79-16552
Advanced industrial robot control systems [PB-287273/7] p0113 N79-16558
Microprocessor: Based prosthetic control [PB-286652/3] p0113 N79-16559
Flight prototype CO2 and humidity control system [NASA-CR-160224] p0222 N79-25760
A theoretical investigation of power and control configurations for a high g-onset centrifuge drive system [AD-A070912] p0309 N79-32841

CONTROL SIMULATION
Simulation study on time series of heart responses p0037 A79-13197
A computer-based simulator simulator --- computer-assisted pilot training p0039 A79-13215
The multiloop concept of the pilot work load as a basis of future experiments and studies [ONERA, TP NO. 1978-10] p0045 A79-14795
Effects of target motion and image on AAA tracking --- Anti-Aircraft Artillery p0046 A79-14969
The human operator in the control system: Linear models --- German book p0132 A79-26356
Modeling human tracking performance in a high G-stress environment p0269 A79-48012
Pilot workload during final approach in congested airspace p0269 A79-48014
Driver steering dynamics measured in car simulator under a range of visibility and roadmaking conditions p0117 N79-17493
The driving simulator developed by the Institute for Perception TNO. A validation study in straight road driving [IZF-1978-16-PR-1] p0145 N79-18588
Helmet weight simulator [NASA-CASE-LAR-12320-1] p0223 N79-25761
Ergonomic research into human tolerances for roll and pitch as well as their influence on individual perception and reactions to control parameters [BMVG-FBWT-78-18] p0282 N79-30944

CONTROL STICKS
Influences of joystick spring resistance on the execution of simple and complex positioning movements p0119 N79-17517

CONTROL SYSTEMS
U CONTROL

CONTROL THEORY
A model for sensorimotor control and learning p0005 A79-12122
Application of control theory to the investigation of roll motion effects on pilot control behavior [AD-A054921] p0046 A79-14972
Control of robot manipulators from the modeling of their dynamics --- French thesis p0101 A79-23427
Control theory and biosystems: Analysis of homeostatic properties --- Russian book p0186 A79-34506
Stabilization of a biped walking machine with incomplete information on its phase coordinates p0273 A79-49879
Proceedings, 13th Annual Conference on Manual Control [NASA-CR-158107] p0114 N79-17475
The effects of deviate internal representations in the optimal model of the human operator p0114 N79-17477
A quasi-linear control theory analysis of timesharing skills p0115 N79-17479
A dual-loop model of the human controller p0115 N79-17480
Parameter estimation in a human operator describing function model for a two-dimensional tracking task p0115 N79-17481
An approach to the multi-axis problem in manual control --- optimal pilot model p0115 N79-17482
Error rate information in attention allocation pilot models p0115 N79-17483
The effects of participatory mode and task workload on the detection of dynamic system

failures
p0116 N79-17487
A control theoretic model of driver steering behavior
p0116 N79-17491
Modelling the human operator of slowly responding systems using linear models
p0117 N79-17492
A model of the human supervisor
p0117 N79-17495
Prediction of pilot-aircraft stability boundaries and performance contours
p0118 N79-17507
Use of the optimal control model in the design of motion cue experiments
p0118 N79-17510
The systemic principles of building a man-machine control staff --- functional analysis
p0249 N79-27861
The application of control theory to the investigation of roll motion effects on human operator performance
p0288 N79-31931

CONTROL VALVES
Microbial Check Valve for Shuttle
[ASME PAPER 78-ENAS-27] p0008 A79-12576

CONTROLLABILITY
Quantifying operator preference during human factors test and evaluation --- in helicopter design
p0062 A79-18202

CONTROLLED ATMOSPHERES
NT ARGON-OXYGEN ATMOSPHERES
NT CABIN ATMOSPHERES
NT HELIUM-OXYGEN ATMOSPHERES
NT SPACECRAFT CABIN ATMOSPHERES
Voice communication in artificial atmospheres --- Russian book
p0048 A79-16500
The combined effect of carbon monoxide and normobaric hyperoxia on animals
p0073 N79-14730

CONTROLLED STABILITY
U CONTROL

CONTROLLERS
NT SERVOMECHANISMS
Evaluation of models describing human operator control of slowly responding complex systems --- Thesis
p0167 A79-31494

CONVAIR MILITARY AIRCRAFT
U MILITARY AIRCRAFT

CONVECTION
Mathematical studies of oxygen transport to tissue
p0170 N79-20723

CONVECTIVE FLOW
Convective control of long-range coherence in plant growth regulation
p0006 A79-12515

CONVERGENCE
Region extraction using convergent evidence
[AD-A061591] p0124 N79-17552

CONVULSIONS
Effect of electroconvulsive shock on monoaminergic receptor binding sites in rat brain
p0162 A79-29925
The control and prevention of seizures in children, a developmental and environmental approach
p0094 N79-15892

COOLING
NT LIQUID COOLING
NT SURFACE COOLING
Epiphysis of rats under the combined action of hypoxia, hypercapnia and cooling
p0256 A79-46680

COORDINATE SYSTEMS
U COORDINATES

COORDINATES
Anatomical coordinate systems for human body segments
p0065 A79-18231

COORDINATION
Process of searca control of coordinated movement in man
p0166 A79-30701

COPILOTS
U AIRCRAFT PILOTS

COPPER
NT COPPER ISOTOPES
Cu-content of the liver of young mice in relation to a defect in the Cu-metabolism
[IRI-133-77-02] p0239 N79-26764

COPPER COMPOUNDS
Citric acid enhancement of copper sulfate toxicity to blue-green algae and other nuisance organisms
[PB-289490/5] p0170 N79-20718
Citric acid enhancement of copper sulfate toxicity to the blue-green algae ""aphanizomenon flos-aquae'' and ""microcystis aeruginosa''
[PB-291637/7] p0189 N79-22751

COPPER ISOTOPES
Results of a 64Cu-loading test applied to patients with an inherited defect in their Cu-metabolism (Menkes' disease)
[IRI-133-77-04] p0240 N79-26774
The oral 64Cu-loading test: Applications and problems
[IRI-133-78-02] p0240 N79-26775

CORIOLIS EFFECT
Voluntary movement control and adaptation to cross-coupled stimulation --- motion sickness avoidance
p0009 A79-12860

CORNEA
Experimental determination of maximum permissible exposure to laser radiation of 1.54-micron wavelength --- corneal damage
p0002 A79-10648

CORONARY ARTERY DISEASE
Predicting coronary artery disease with treadmill stress testing Changes in R-wave amplitude compared with ST segment depression
p0186 A79-34284
Coronary calcification in the diagnosis of coronary artery disease
p0226 A79-40465
Computer quantitation of coronary angiograms
p0293 A79-51030
The prediction of the existence or nonexistence of coronary artery disease using routine clinical laboratory measurement
p0028 N79-11703
Coronary atherosclerosis and fitness for flying
p0029 N79-11711
Detection of coronary artery disease in apparently healthy, asymptomatic aircrew members using thallium-201 myocardial perfusion scintigraphy
p0029 N79-11712
Left Anterior Hemiblock (LAH): Diagnosis and aeromedical risk
p0029 N79-11715
The impact of coronary vascular risk factors on professional aircrew license loss in the United Kingdom
p0031 N79-11724
The effect of moderate hypothermia on the circulatory and myocardial consequences of acute coronary ligation in dogs
p0049 N79-12683
Development and evaluation of instrument systems for noninvasive detection, characterization and quantification of atherosclerotic lesions
[PB-286851/1] p0085 N79-15582

CORONARY CIRCULATION
Regional coronary blood flow at rest and during high sustained +Gz in a miniature swine with subclinical, ischemic, coronary heart disease due to coronary stenosis
p0010 A79-12865
Influences of physical conditioning and deconditioning on coronary vasculature of dogs
p0067 A79-18955
Effect of exercise on collateral development in dogs with normal coronary arteries
p0067 A79-18960
Pulmonary blood volume and interventricular circulation time in physically trained and untrained subjects
p0128 A79-24700
Cardiac responses of dogs to nonsynchronous and heart synchronous whole-body vibration
p0162 A79-29728
Neural regulation of coronary circulation
p0208 A79-38148
Norepinephrine action on smooth muscle cells of coronary arteries

p0208 A79-38149
A catheter flow probe for measurement of left ventricular source parameters
p0274 A79-50108
Clinical usefulness of radiopaque markers in left ventricular function
p0293 A79-51029
Mechanics of blood flow through normal and stenotic coronary arteries
p0154 N79-19676
Influences of dietary fats on coronary flow rate and left ventricular work of the isolated rat heart
p0239 N79-26766
Effects of dietary fats on the coronary flow rate and the left ventricular function of the isolated rat heart
p0239 N79-26767
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
p0307 N79-32825

CORPUSCULAR RADIATION
NT BETA PARTICLES
CORRELATION
NT DATA CORRELATION
NT SIGNAL ANALYSIS
CORSAIR AIRCRAFT
U A-7 AIRCRAFT
CORTICOSTEROIDS
NT ALDOSTERONE
Inhibition of the pituitary-adrenal response to stress during deprivation-induced feeding
p0235 A79-43605
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
p0297 A79-52023
Effects of methylprednisolone sodium succinate on clearance of living E. coli from peripheral blood of dogs
[AD-A062123] p0169 N79-20717
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
p0311 N79-33798

COSMIC RADIATION
U COSMIC RAYS
COSMIC RAYS
Radiobiological investigations in Cosmos 782 space flight /Biobloc SP1 experiment/
p0006 A79-12518
Biological study of tobacco seeds flown in the joint Apollo-Soyuz test-project
p0006 A79-12519
Genetic effects of balloon flight in Drosophila melanogaster
p0006 A79-12520
Light flashes in space --- cosmic ray interaction with astronaut visual system
p0100 A79-22261
Development capacity of artemia cysts and lettuce seeds flown in Cosmos 936 and directly exposed to cosmic rays
p0127 A79-24632
Genetic effects of cosmic radiation on bacteriophage T4Br/+/ /On materials of biological experiment Soyuz-Apollo/
p0229 A79-41708
Preliminary results of Cytos experiment flown in Salyut VI - Investigations of Paramecium aurelia
p0229 A79-41709
The dose rate of cosmic ray radiation received by a biological target in the stratosphere and at altitudes of satellite orbits
p0233 A79-42623
Cosmic ray effects on the eyes of rats flown on COSMOS 782
p0022 N79-11669
Cosmic ray effects on the eyes of stationary and centrifuged rats flown on COSMOS 936, experiment K-207
p0024 N79-11678

COSMOGONY
U COSMOLOGY
COSMOLOGY
Lifecloud: The origin of life in the universe --- book
p0061 A79-17123
A review of recent concepts of the problem of the origin of life
p0221 A79-36081

COSMONAUTS
Preliminary selection of candidates for space flights
[IAF PAPER 79-83] p0302 A79-53289
Psychological training - One of the most important factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] p0303 A79-53426
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
p0303 A79-53486
The cosmonaut in flight
[NASA-TT-F-17838] p0032 N79-11729
Salyut-6--Soyuz-29: Our commentary, the crew and the station
[NASA-TM-75393] p0174 N79-20745
Investigation of albumin and globulin composition of blood of the crew of the Salyut-3 orbital station
p0244 N79-27820

COSMOS SATELLITES
NT INTERCOSMOS SATELLITES
The joint US-USSR biological satellite program
p0182 A79-33050
US experiments flown on the Soviet satellite COSMOS 936
[NASA-TM-78526] p0023 N79-11671
The Cosmos 936 mission
p0023 N79-11672
Space radiation dosimetry onboard COSMOS 936: US portion of experiment K-206
p0023 N79-11677
Biochemical study of proteins of gastric and intestinal mucosa of rats flown aboard the Kosmos-605 biosatellite --- effects of space flight stress
p0192 N79-23631

COSMOS 782 SATELLITE
Radiobiological investigations in Cosmos 782 space flight /Biobloc SP1 experiment/
p0006 A79-12518
Stereological ultrastructural analysis of the axonal endings in the neuromuscular junction of rats after a flight on biosputnik 782
p0101 A79-23468
Studies of amino acid metabolism in the muscles of rats flown aboard the biosatellite Cosmos 782
p0230 A79-41714
US experiments flown on the Soviet Satellite COSMOS 782
[NASA-TM-78525] p0020 N79-11651
US experiments flown on COSMOS 782
p0020 N79-11652
Response of crown gall tissue to the space environment: Residual carbohydrates in supporting tissue --- COSMOS 782
p0020 N79-11653
Responses of crown gall tissue to the space environment: Tumor development and anatomy --- cosmos 782
p0020 N79-11654
Responses of crown gall tissue to the space environment: Glutamine synthetase activity --- cosmos 782
p0020 N79-11655
Responses to crown gall tissue to the space environment: Isozyme patterns --- cosmos 782
p0020 N79-11656
The morphogenetic responses of cultured totipotent cells of carrot (Daucus carota L.) at zero gravity --- cosmos 782
p0021 N79-11657
Killfish development in zero-G on COSMOS 782: Fundulus experiment K-104
p0021 N79-11659
Absence of gastric ulceration in rats after flight on the COSMOS 782
p0021 N79-11660
Effect of space flight on cell-mediated immunity --- COSMOS 782 satellite
p0021 N79-11661
Alterations in erythrocyte survival parameters in rats after 19.5 days aboard COSMOS 782
p0021 N79-11663
Histological studies on tibial bone of rats in the 1975 COSMOS-782 flight. Part 1: Endochondral osteogenesis; medullary bone turnover

p0022 N79-11665
Histological studies on tibial bone of rats in the 1975 COSMOS-782 flight. Part 2: Microradiographic study of cortical bone
p0022 N79-11666
Mineralization in teeth and jaws, as judged radiographically, in rats of the COSMOS-782 experiment
p0022 N79-11667
Quantitative analysis of selected bone parameters
p0022 N79-11668
Cosmic ray effects on the eyes of rats flown on COSMOS 782
p0022 N79-11669
Effects of weightlessness on the embryonic development and aging of Drosophila
p0022 N79-11670
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
p0311 N79-33796

COSMOS 936 SATELLITE
Development capacity of artemia cysts and lettuce seeds flown in Cosmos 936 and directly exposed to cosmic rays
p0127 A79-24632
Biological experiments carried out aboard the biological satellite Cosmos-936
p0230 A79-41717
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
p0299 A79-52475

COST ANALYSIS
USAF life support equipment costs
p0083 A79-14402
Life cycle costing of simulated vs actual equipment for intermediate maintenance training --- for F-16 avionics
p0064 A79-18217
Cost analysis of pilot training systems
[SAE PAPER 781005] p0130 A79-25487

COST EFFECTIVENESS
AWAVS, a research facility for defining flight trainer visual system requirements
p0062 A79-18207
Simulator Training Requirements and Effectiveness Study /STRES/
p0063 A79-18216

COST REDUCTION
Very-large-scale integration - What it means for technical systems and humans
p0181 A79-32640

COUNTERS
Perceived quantization error. Effect of quantization function, reconstruction function and number of levels
[FOA-C-56015-H9] p0124 N79-17556

COUPLINGS
Prosthesis coupling
[NASA-CASE-KSC-11069-1] p0240 N79-26772

COVERALLS
Development of the CWU-48/P high temperature resistant aramid knit flyer's coverall
[AD-A059128] p0059 N79-13716

CRACKING (CHEMICAL ENGINEERING)
NT PYROLYSIS

CRASH INJURIES
Various modeling approaches in biomechanics --- analog simulation of impact events
p0005 A79-12407
SPH-4 helmet damage and head injury correlation
p0127 A79-24633
Head acceleration and psychomotor performance --- related to crash accident survival rates
p0135 A79-27559
Spinal injury pattern due to ejections
p0272 A79-49734
Passive resistive torques about long bone axes of major human joints
p0298 A79-52283
Analysis of naval aviation head and neck injuries (1969-1978)
[AD-A057657] p0026 N79-11689
Whole body response research program
[PB-286151/6] p0093 N79-15640
Whole body response research program. Appendix A: Methodology
[PB-286152/4] p0094 N79-15641
Whole body response research program. Appendix B: Raw data
[PB-286153/2] p0094 N79-15642
Whole body response research program. Appendix C: Processed data
[PB-286154/0] p0094 N79-15643
Tentative estimation of the injuries likely to occur during the crash of a SA 341 Gazelle helicopter, from a study on mannequins
p0287 N79-31925

CRASH LANDING
An inflatable restraint system --- for helicopter crash protection
p0044 A79-14408

CRASHES
NT CRASH LANDING
Test and evaluation of head restraints, seat backs, and anchorages in vehicles subjected to rear impact collision
[PB-289779/1] p0178 N79-21773
Evaluation of research on surrogates for humans in motor vehicle crashes
[PB-291012/3] p0178 N79-21774
The use of mathematical modeling in crashworthy helicopter seating systems
p0287 N79-31923

CREW PROCEDURES (INFLIGHT)
Spacelab's payload specialists, their selection and duties on-board
p0226 A79-40720

CREWS
NT FLIGHT CREWS
NT SPACECREWS

CRITERIA
Criteria for maximum tolerable heat stress. A proposal
[IZF-1978-13] p0144 N79-18583

CRITICAL FLICKER FUSION
Effect of physical training at moderate altitude /1850 m/ on hypoxic tolerance
p0235 A79-43210
Enhancement of luminance flicker by color-opponent mechanisms
p0252 A79-44582
The peripheral critical flicker frequency
p0271 A79-49482

CROP GROWTH
The impact of sulfur dioxide on vegetation: A sulfur dioxide-ozone response model
[PB-283604/7] p0049 N79-12686
Selected examples of dispersal of arthropods associated with agricultural crop and animal production
p0148 N79-19595

CRYOGENIC EQUIPMENT
System for and method of freezing biological tissue
[NASA-CASE-GSC-12173-1] p0013 N79-10694

CRYSTAL GROWTH
The growth of single crystals from proteins in gravity-free space
[AIAA PAPER 79-0311] p0069 A79-19665

CRYSTALS
NT LIQUID CRYSTALS
NT SINGLE CRYSTALS
Microanalytical identification of barium sulphate crystals in statoliths of Chara Rhizoids
[NASA-TM-75611] p0175 N79-21744

CUES
Use of the optimal control model in the design of motion cue experiments
p0118 N79-17510
A model for the pilot's use of motion cues in roll-axis tracking tasks
p0118 N79-17512
Manual control of yaw motion with combined visual and vestibular cues
p0119 N79-17513
Motion cue effects on human pilot dynamics in manual control
p0119 N79-17514
Motion cue models for pilot-vehicle analysis
[AD-A061477] p0125 N79-17561
Helmet weight simulator
[NASA-CASE-LAR-12320-1] p0223 N79-25761

CULTIVATION
Serendipitous solution to the problem of culturing Arabidopsis plants in sealed containers for spaceflights of long duration
p0229 A79-41704
Purification and cultivation of human pituitary growth hormone secreting cells

[NASA-CR-151853] p0051 N79-12697
Preparation of guinea pig macrophage for electrophoretic experiments in space
[NASA-CR-158777] p0243 N79-27814

CULTURE TECHNIQUES
Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates
p0297 A79-51701
Purification and cultivation of human pituitary growth hormone secreting cells
[NASA-CR-160242] p0219 N79-25736
Study of pharmaceutical industrial problems
[NASA-CR-160267] p0248 N79-27852

CURES
Aspects of dietary prevention of arteriosclerosis
p0262 N79-29792

CURRENT CONVERTERS (AC TO DC)
Development of an electrical energy converter for circulatory device
[PB-286738/0] p0111 N79-16545

CURRENT REGULATORS
Development of an electrical energy converter for circulatory device
[PB-286738/0] p0111 N79-16545

CURRENT STABILIZERS
U CURRENT REGULATORS

CURTISS-WRIGHT MILITARY AIRCRAFT
U MILITARY AIRCRAFT

CURVE FITTING
A numerical method of film analysis with differentiation --- curve fitting with harmonic analysis
p0061 A79-17585

CURVED SURFACES
U CONTOURS

CYANAMIDES
Prebiotic nucleotide oligomerization in a fluctuating environment - Effects of kaolinite and cyanamide
p0162 A79-29938
Prebiotic condensation reactions using cyanamide
p0203 A79-37932

CYANIDES
The effects of carbon monoxide and cyanide on the brain
p0024 N79-11682
The effects of the pollutant, sodium cyanide, on the morphology and physiology of oedogonium cardiacum
p0147 N79-19028

CYANO COMPOUNDS
NT CYANAMIDES

CYANOPHYTA
U BLUE GREEN ALGAE

CYBERNETICS
Elements of the theory of biological analyzers --- Russian book
p0132 A79-26450
Car driving as a cybernetic task
[IZF-1979-6] p0309 N79-32838

CYCLES
NT WORK-REST CYCLE

CYSTS
Coupling apparatus for ultrasonic medical diagnostic system
[NASA-CASE-NPO-13935-1] p0077 N79-14751

CYTOCHROMES
Evolution of early life inferred from protein and ribonucleic acid sequences
p0206 A79-37980

CYTOGENESIS
Evolutionary relationship based on a biochemical study of energy-acquiring system between Nitrosomonas europaea and Thiobacillus novellus
p0205 A79-37966
Evolution of transfer RNA
p0206 A79-37975

CYTOLOGY
The effect of plasmoidal slime on the metabolism of haploid cells of Physarum flavicomum and the respiration of isolated mitochondria
p0105 A79-24513
Energy transduction in Halobacterium halobium
p0300 A79-53000
Development and application of resistive pulse spectroscopy: Studies on the size, form and deformability of red blood cells
[LBL-8640] p0280 N79-30924

CYTOPLASM
Senescent changes in the ribosomes of animal cells in vivo and in vitro
p0134 A79-27226

D

DAEMO (DATA ANALYSIS)
U DATA PROCESSING
U DATA REDUCTION
U DATA TRANSMISSION

DAMAGE
NT FIRE DAMAGE
NT IMPACT DAMAGE
NT LASER DAMAGE
NT RADIATION DAMAGE

DAMPING IN PITCH
U PITCH (INCLINATION)

DAMPING IN ROLL
U ROLL

DAMPING IN YAW
U YAW

DAMPNESS
U MOISTURE CONTENT

DARK ADAPTATION
Primate cone sensitivity to flicker during light and dark adaptation as indicated by the foveal local electroretinogram
p0104 A79-24065
The equivalent background and retinal eccentricity
p0104 A79-24066
Evidence for the equivalent-background hypothesis in cones --- for dark adaptation thresholds
p0232 A79-42233
Changes in critical duration during dark-adaptation
p0304 A79-54252
Influence of light adaptation on dark adaptation time for pattern recognition tasks
[FB-31] p0316 N79-33835

DATA ACQUISITION
Contour detector and data acquisition system for the left ventricular outline
[NASA-CASE-ARC-10985-1] p0017 N79-10724
Aircrew inflight physiological data acquisition system 2
[AD-A055638] p0055 N79-13690
RNAV procedural turn anticipation techniques experiment no. 2, GAT-2A. Phase 3: 2 and 4 nmi offset tracking procedures
[AD-A060501] p0085 N79-15583
Strategic and tactical use of movement information in pest management
p0148 N79-19597
Regional program for acquisition of medical experiments
[NASA-CR-160121] p0155 N79-19677
Aircrew modularized inflight data acquisition system
[AD-A064725] p0190 N79-22766
Improvements in the man-machine interface for data acquisition, display and control
p0224 N79-25983
The information in aircraft accidents investigation
p0291 N79-31947

DATA ADAPTIVE EVALUATOR/MONITOR
U DATA PROCESSING
U DATA REDUCTION
U DATA TRANSMISSION

DATA ANALYSIS
U DATA PROCESSING
U DATA REDUCTION

DATA BASES
Human factors design criteria for transilluminated displays
p0036 A79-13187

DATA COMPACTION
U DATA COMPRESSION

DATA COMPRESSION
Digital color image compression in a perceptual space
p0136 A79-28013

DATA CONVERSION ROUTINES
NT SUBROUTINES

DATA CORRELATION
NT SIGNAL ANALYSIS
The development of the ATC selection battery: A new procedure to make maximum use of available information when correcting correlations for restriction in range due to selection
[FAA-AM-78-36] N79-25752

DATA HANDLING SYSTEMS
U DATA SYSTEMS
DATA PROCESSING
NT DATA CORRELATION
NT DATA REDUCTION
NT SCENE ANALYSIS
NT SIGNAL ANALYSIS
NT SIGNAL PROCESSING
A study of noninvasive blood pressure measurement techniques p0294 A79-51036
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 51 [JPRS-72588] p0076 N79-14745
Visual information processing p0076 N79-14747
Information-handling capacity of a human operator in detection of signals against a noisy background p0081 N79-14989
Development and evaluation of instrument systems for noninvasive detection, characterization and quantification of atherosclerotic lesions [PB-286851/1] p0085 N79-15582
Bandpass channels, zero-crossings, and early visual information processing [AD-A062338] p0170 N79-20724
User's guide for the Skylab integrated medical data analysis system [NASA-CR-160189] p0220 N79-25740
Human processing of information and the computerized mode of presentation: Ergonomic parameters [FOA-C-56018-H9] p0263 N79-29797
DATA PROCESSING EQUIPMENT
NT AIRBORNE/SPACEBORNE COMPUTERS
NT COMPUTERS
NT DATA PROCESSING TERMINALS
NT HYBRID COMPUTERS
NT MICROPROCESSORS
Event-driven displays for manipulator control p0089 N79-15610
DATA PROCESSING TERMINALS
Man/terminal interaction evaluation of computer operating system command and control service concepts --- in Spacelab p0064 A79-18224
Physical and mental working environment in a terminal based computer system [BLL-RTS-11634] p0197 N79-23665
MM/1, a man - machine interface: A contribution towards a standard [NPL-CSU-2/78] p0197 N79-23669
DATA PROCESSORS
U DATA PROCESSING EQUIPMENT
DATA READOUT SYSTEMS
U DATA SYSTEMS
U DISPLAY DEVICES
DATA REDUCTION
Experimental designs for investigating complex human operator/machine systems p0040 A79-13225
TADRAP: A computer-aided technique for reducing aircrew task analysis data --- helicopter design considering human factors p0150 N79-19628
A method for semi-automatic analysis of eye movements [DLR-MITT-79-02] p0283 N79-30946
Reference parameters for shock inputs and shock tolerance limits p0284 N79-31905
DATA SYSTEMS
Ergonomic problems regarding the interactive touch input via screens in onboard and ground-based flight control p0061 A79-17695
DATA TRANSMISSION
Single frequency RF powered ECG telemetry system p0131 A79-26074
Information transmission during eye movements p0209 A79-38360
Attempt to describe a class of man-machine dialogue systems based on a natural language p0251 A79-44057
Event-driven displays for manipulator control p0089 N79-15610
DATING
U TIME MEASUREMENT
DEACTIVATION
Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components [NASA-CR-158627] p0137 N79-25705
DEAFNESS
U AUDITORY DEFECTS
DECARBOXYLATION
In vivo response of ornithine decarboxylase activity to growth hormone as demonstrated by oxidation of L-ornithine-1-/C-14/ in hypophysectomized rats p0005 A79-12400
DECAY
NT CHEMILUMINESCENCE
NT FLUORESCENCE
NT MICROWAVE EMISSION
NT RADIO EMISSION
NT WEAK ENERGY INTERACTIONS
DECISION MAKING
Communications management by the remote system - An adaptive approach --- modeling of RPV autopilot/operator systems p0041 A79-13226
Human engineering study of information processing applicable to helmet-mounted displays p0068 A79-18994
A model of human decisionmaking in fault diagnosis tasks that include feedback and redundancy p0163 A79-30222
Man and automation --- for human-automatic pilot interfaces p0275 A79-50372
Judgement evaluation and instruction in civil pilot training [AD-A057440] p0019 N79-10737
Use of reward-penalty structures in human experimentation p0089 N79-15607
The effects of alcohol on driver performance in a decision making situation p0092 N79-15629
A decision model applied to alcohol effects on driver signal light behavior p0092 N79-15630
A model of human event detection in multiple process monitoring situations p0092 N79-15632
Pilot decision making in a computer-aided flight management situation p0093 N79-15633
A decision, monitoring and control model of the human operator applied to an RPV control problem [AD-A069880] p0282 N79-30939
Adaptive estimation of information values in continuous decision making and control of advanced aircraft [AD-A069741] p0282 N79-30941
Effects of amphetamine on response selection and response execution processes in choice reaction tasks [IZF-1978-8] p0309 N79-32839
DECISION THEORY
Applications of two-parameter decision theories in psychology [AD-A059010] p0052 N79-12705
Human health damages from mobile source air pollution: Additional Delphi data analysis, volume 2 [PB-288320/5] p0145 N79-18586
DECOMPOSITION
NT PHOTOLYSIS
Observability of electrical heart activity studied with singular value decomposition [TH-78-E-81] p0144 N79-18584
DECOMPRESSION
U PRESSURE REDUCTION
DECOMPRESSION SICKNESS
Intracardial gas bubbles and decompression sickness while flying at 9,000 m within 12-24 h of diving p0010 A79-12866
Case report - Intracardial gas bubbles in relation to altitude decompression chokes p0011 A79-12871
Detection of bubbles in decompression sickness p0041 A79-13573
Effect of decompression per se on nitrogen elimination p0067 A79-18964

Application of a bubble formation model to decompression sickness in rats and humans
p0102 A79-23473

Mechanical vs. ischemic mechanisms for decompression sickness
p0164 A79-30656

Doppler detection of thresholds for decompression-induced venous gas emboli in the awake rat
p0202 A79-37707

Scanning and transmission electron microscopy of the blood-bubble interface in decompressed rats
p0266 A79-47333

Cross-adaptive effects of cold, hypoxia, or physical training on decompression sickness in mice
p0268 A79-47855

Dynamics of the catalase activity of the blood of athletes under the influence of local decompression
p0271 A79-49699

Investigation of blood subjected to volume tension
p0275 A79-50261

Effects of endogenous factors on the process of gas bubble formation in the body related to decompression
p0015 N79-10713

Applied analysis of computer simulated decompression profiles
p0017 N79-10722

Early diagnosis for decompression sickness. Changes in the blood found shortly after decompression. Part 2: Experiments on rats
[MBL-1978-7] p0120 N79-17524

Hyperbaric decompression by means of bubble detection
[AD-A062441] p0171 N79-20726

Probability of caisson disease while wearing a space suit when exiting from a spacecraft with an atmosphere close to that of earth
p0244 N79-27826

Compatibility test of oxygen exposures in the range of 2.2 to 2.8 bar absolute
[DLR-FB-78-10] p0280 N79-30925

Fundamental biophysical aspects of decompression sickness
[AD-A069998] p0315 N79-33827

DECONDITIONING

Prophylactic effects of intermittent acceleration against physiological deconditioning in simulated weightlessness
p0229 A79-41712

Deconditioning-induced exercise responses as influenced by heat acclimation
p0273 A79-49985

DECONGESTANTS

Cardiorespiratory assessment of decongestant-antihistamine effects on altitude, +Gz, and fatigue tolerances
p0127 A79-24628

Effects of altitude and two decongestant-antihistamine preparations on physiological functions and performance
p0127 A79-24635

DECONTAMINATION

NT SPACECRAFT STERILIZATION

Thermal resistance of naturally occurring airborne bacterial spores --- Viking spacecraft dry heat decontamination simulation
p0131 A79-26147

DEFECTS

NT AUDITORY DEFECTS

DEFLATING

U INFLATABLE STRUCTURES

U PRESSURE REDUCTION

DEGRADATION

NT BIODEGRADATION

NT THERMAL DEGRADATION

Mechanisms of activated carbon degradation by perspiration
[AD-A059872] p0080 N79-14777

DEGREES OF FREEDOM

The development of a six degree-of-constraint robot performance evaluation test
p0117 N79-17504

DEHYDRATED FOOD

Maximizing storage stability of foods to be used for resupply in a controlled ecological life supply system: Evaluation of research
[NASA-CR-158846] p0260 N79-28880

DEHYDRATION

Prebiotic condensation reactions using cyanamide
p0203 A79-37932

Heat and acute dehydration effects on acceleration response
p0237 A79-43705

Specialized physiological studies in support of manned space flight
[NASA-CR-151876] p0111 N79-16542

The effects of dehydration on peripheral cooling
[AD-A065332] p0220 N79-25745

DEKATRONS

U COUNTERS

DELPHI METHOD (FORECASTING)

Human health damages from mobile source air pollution: A delphi method, volume 1
[PB-288319/7] p0145 N79-18585

Human health damages from mobile source air pollution: Additional Delphi data analysis, volume 2
[PB-288320/5] p0145 N79-18586

DEMAND (ECONOMICS)

Energy supply and demand in California
p0242 N79-27603

DEMINERALIZING

NT BONE DEMINERALIZATION

DEMODULATION

The use of synchronous demodulation for the measurement of eye movements by means of an ocular magnetic search coil
p0210 A79-39974

DEMONSTRATION

U PROVING

DENSITY (MASS/VOLUME)

NT GAS DENSITY

DEOXYRIBONUCLEIC ACID

Possible contribution of transferable exogenous DNA in prokaryotic evolution
p0205 A79-37971

Subcellular organisms and evolution of cell structure
p0206 A79-37978

Radiation lesion to liver DNA of rats exposed to radiation during flight aboard the Kosmos-690 biosatellite
p0014 N79-10702

Mechanisms of recombination and function of DNA in bacteria
[ORO-3941-33] p0072 N79-14715

DNA content of animal organs during space flight on Kosmos-690 satellite
p0073 N79-14728

Microwave frequencies and the structure of the double helix
p0082 N79-15559

The effect of infection with herpes simplex viruses types 1 and 2 on cell DNA synthesis and thymidine kinase activities in cultured human cells
p0141 N79-18558

Effects of gravity on contractile proteins
[NASA-CR-160303] p0279 N79-30913

Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
p0311 N79-33796

DEPENDENCE

NT TIME DEPENDENCE

DEPRESSANTS

Isolation of a shock-induced circulating cardiodepressant substance
p0257 A79-46967

DEPRESSURIZATION

U PRESSURE REDUCTION

DEPRIVATION

NT SENSORY DEPRIVATION

NT SLEEP DEPRIVATION

DEPTH PERCEPTION

U SPACE PERCEPTION

DERMATITIS

NT CONTACT DERMATITIS

DESALINIZATION

Control by episome on salt-resistance in bacteria
p0205 A79-37969

DESCENT

NT PARACHUTE DESCENT

DESIGN ANALYSIS

Anthropometry in sizing and design
p0033 N79-11742

DESIGN OF EXPERIMENTS
U EXPERIMENTAL DESIGN
DESORPTION
Trace contaminant studies of HSC adsorbent
[NASA-CR-160148] p0177 N79-21769
DESYNCHRONIZED SLEEP
U RAPID EYE MOVEMENT STATE
DETECTION
NT AIRCRAFT DETECTION
NT RADAR DETECTION
NT SIGNAL DETECTION
NT TARGET RECOGNITION
Detection of coloured stimuli by independent linear systems
p0231 A79-42229
DETERIORATION
Mechanisms of deterioration of nutrients --- improved quality of freeze-dried foods
[NASA-CR-160128] p0156 N79-19686
DEVELOPMENT
Orthomolecular enhancement of human development
p0095 N79-15895
DEWAR SYSTEMS
U CRYOGENIC EQUIPMENT
DIABETES MELLITUS
Insulin-like effect of bovine growth hormone in vivo as demonstrated by oxidation of C/14/-U-glucose in diabetic rats
p0252 A79-44797
DIAGNOSIS
Detection of bubbles in decompression sickness
p0041 A79-13573
Diagnostics of initial deficiency in cerebral circulation
p0166 A79-31164
Some tests used in the practice of aviation medical examination for differential diagnosis of heart diseases
p0188 A79-35136
Myocardial infarction in young men
p0188 A79-35137
Motion sickness in cats - A symptom rating scale used in laboratory and flight tests
p0202 A79-37711
Coronary calcification in the diagnosis of coronary artery disease
p0226 A79-40465
Hyperventilation in aircrew - A review
p0235 A79-43212
Portable device for detection of petit mal epilepsy
p0254 A79-46226
Computerized positron emission tomography /PET/ for the assessment of myocardial integrity
p0293 A79-51031
Signal processing in ultrasound --- for diagnostic medicine
p0294 A79-51039
Clinical applications of new echocardiographic techniques
p0295 A79-51040
An illness-injury severity index
p0050 N79-12688
Noninvasive assessment of pulmonary hypertension using bubble ultrasonic ringing (BURP) method, part 2
[PB-283935/5] p0051 N79-12699
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-284686/3] p0052 N79-12703
Noninvasive assessment of pulmonary hypertension
[PB-285121/0] p0057 N79-13701
Coupling apparatus for ultrasonic medical diagnostic system
[NASA-CASE-NPO-13935-1] p0077 N79-14751
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-286696/0] p0085 N79-15581
Early detection of disease: The correlation of the volatile organic profiles from patients with upper respiratory infections with subjects of normal profiles
[NASA-CR-160100] p0121 N79-17532
Technical evaluation report on the Aerospace Medical Panel London Specialists' Meeting, Fall 1977 --- disease prevention, flight fitness, and findings in cardiology and pulmonary function
[AGARD-AR-131] p0171 N79-20729
Prospective medicine opportunities in aerospace medicine
p0171 N79-20730
A systematic approach to computer analysis of pulmonary vascular patterns
p0176 N79-21756
ESR studies on different pathological states
[ISS-L-22/9] p0248 N79-27854
Computed axial tomography (CAT)
[ISS-R-78/4] p0262 N79-29791
Diagnosis of cutaneous thermal burn injuries by multispectral imaging analysis
[NASA-CR-162103] p0279 N79-30922
DIAGRAMS
NT CIRCUIT DIAGRAMS
DIALYSIS
A compact low-volume, self-regenerating artificial kidney
[PB-287808/0] p0123 N79-17545
DIAPHRAGM (ANATOMY)
Contribution of rib cage and abdomen-diaphragm to tidal volume during CO2 rebreathing
p0195 A79-33805
Carbohydrate metabolism of the stimulated diaphragm muscle
p0050 N79-12689
DIASTOLIC PRESSURE
A study of some of the factors influencing the left ventricular diastolic pressure-volume relationship and myocardial metabolism
p0154 N79-19674
DIELECTRIC CONSTANT
U PERMITTIVITY
DIELECTRIC MATERIALS
U DIELECTRICS
DIELECTRIC PROPERTIES
NT PERMITTIVITY
Molecular absorption of non-ionizing radiation in biological systems
p0082 N79-15553
Interfacial and intracellular water: Expected anomalies in dielectric properties
p0082 N79-15558
DIELECTRICS
Electric field measurements within biological media
p0083 N79-15562
DIESEL FUELS
A literature review-problem definition studies on selected toxic chemicals. Volume 1: Occupational health and safety aspects of diesel fuel and white smoke generated from it
[AD-A056018] p0025 N79-11686
A literature review-problem definition studies on selected toxic chemicals. Volume 8: Environmental aspects of diesel fuel and fog oils SGF number 1 and SGF number 2 and smoke screens generated from them
[AD-A056021] p0025 N79-11688
Health effects associated with diesel exhaust emissions, literature review and evaluation
[PB-289817/9] p0171 N79-20727
DIETS
Effects of dietary composition on nutritional state in rats during exposure to high altitude
p0134 A79-27118
Influences of dietary fats on coronary flow rate and left ventricular work of the isolated rat heart
p0239 N79-26766
Effects of dietary fats on the coronary flow rate and the left ventricular function of the isolated rat heart
p0239 N79-26767
Effects of dietary fats on atherosclerosis and thrombosis
p0240 N79-26776
Physiological effects of a high soybean protein diet in man
p0240 N79-26777
Aspects of dietary prevention of arteriosclerosis
p0262 N79-29792
DIFFERENTIAL ALGEBRA
U MATRICES (MATHEMATICS)
DIFFRACTION
NT WAVE DIFFRACTION
DIFFRACTION GRATINGS
U GRATINGS (SPECTRA)
DIFFRACTION PATTERNS
The retinal resolving power measured by laser

interference fringes p0304 A79-54091
DIFFUSE RADIATION
Accuracy of RGD approximation for computing light scattering properties of diffusing and motile bacteria --- Rayleigh-Gans-Debye p0233 A79-42448
DIFFUSION
NT GASEOUS DIFFUSION
NT IONIC DIFFUSION
NT MOLECULAR DIFFUSION
NT PARTICLE DIFFUSION
NT TURBULENT DIFFUSION
A theoretical study of membrane diffusion and lymphocyte patching p0142 N79-18563
Multiple tracer diffusion methods for the evaluation of cerebral capillary permeability and capillary blood flow rate in the rat p0169 N79-20712
Biological effects of a magnetic field p0172 N79-20734
DIFFUSION EFFECT
U DIFFUSION
DIFLUORO COMPOUNDS
NT POLYTETRAFLUOROETHYLENE
DIGESTING
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs p0312 N79-33803
DIGESTIVE SYSTEM
NT GASTROINTESTINAL SYSTEM
NT INTESTINES
NT STOMACH
NT TEETH
Information on the comparative physiology of digestive enzymes [BLL-RTS-11203] p0142 N79-18572
DIGITAL FILTERS
The effects of filtering the His-Purkinje system electrocardiogram p0130 A79-26073
DIGITAL NAVIGATION
Refinement of a computer simulation model for evaluating DAIS display concepts --- Digital Avionics Information System p0038 A79-13209
DIGITAL RADAR SYSTEMS
Evolution of the man-machine interface in surveillance radar systems p0001 A79-10322
DIGITAL SIMULATION
Simulation and control of a human temperature regulation system p0041 A79-13613
Man-machine reliability - A practical engineering tool p0047 A79-15400
Closed loop models for analyzing the effects of simulator characteristics --- digital simulation of human operators p0087 N79-15598
Discrete-time pilot model --- human dynamics and digital simulation p0088 N79-15601
User's instructions for the high speed version of the cardiovascular exercise model [NASA-CR-160211] p0218 N79-25724
Combined discrete network: Continuous control modeling of man-machine systems [AD-A071574] p0310 N79-32842
DIGITAL SYSTEMS
NT DIGITAL NAVIGATION
NT DIGITAL RADAR SYSTEMS
Digital man-machine control systems - The effects of preview lag p0131 A79-26149
Devices for synchronizing a digital measuring apparatus with biological signals p0160 A79-29271
DIGITAL TECHNIQUES
Digital enhancement of computerized axial tomograms p0004 A79-11544
The development of a digital video subtraction system for intravenous angiography p0294 A79-51033
DIGITAL TELEVISION
Digital color image compression in a perceptual space p0136 A79-28013
DILUTION
Fluid shifts during initial phase of immersion diuresis in man p0185 A79-33804
DIMENSIONAL ANALYSIS
Visual search for complex targets p0208 A79-38357
DIMENSIONAL MEASUREMENT
Anthropometry p0032 N79-11737
DIMENSIONS
NT LENGTH
DIODES
NT LIGHT EMITTING DIODES
DIOXIDES
NT CARBON DIOXIDE
NT SULFUR DIOXIDES
DIRECT POWER GENERATORS
NT THERMOELECTRIC GENERATORS
DIRECTIONAL ANTENNAS
NT LOOP ANTENNAS
DIRECTIVITY
Axiomatic summary and deductions from Hering's principles of visual direction p0228 A79-41421
DISCRETE FUNCTIONS
Discrete time modeling of heavy transport plane pilot behavior p0118 N79-17508
DISCRIMINATION
NT BRIGHTNESS DISCRIMINATION
NT SENSORY DISCRIMINATION
NT TACTILE DISCRIMINATION
NT VISUAL DISCRIMINATION
DISEASES
NT ARTERIOSCLEROSIS
NT ATAXIA
NT BONE DEMINERALIZATION
NT CANCER
NT CARBON MONOXIDE POISONING
NT CONTACT DERMATITIS
NT CORONARY ARTERY DISEASE
NT DIABETES MELLITUS
NT EDEMA
NT EPILEPSY
NT GLAUCOMA
NT HEART DISEASES
NT INFECTIOUS DISEASES
NT MYOCARDIAL INFARCTION
NT OSTEOPOROSIS
NT PULMONARY LESIONS
NT RADIATION SICKNESS
NT RESPIRATORY DISEASES
NT THROMBOSIS
NT TUMORS
NT ULCERS
Disability pattern amongst civil aircrew p0182 A79-33192
The Canadian Forces Life Quality Improvement Programme p0026 N79-11693
The morbidity experience of air traffic control personnel, 1967-1977 [AD-A056053] p0051 N79-12696
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease [PB-284686/3] p0052 N79-12703
DISORIENTATION
The vestibule and flying --- pilot disorientation p0255 A79-46598
Disorientation in Royal Naval helicopter pilots p0152 N79-19648
Geographical disorientation and flight safety p0291 N79-31951
Human factors in production and prevention of aircraft accidents due to disorientation in flight p0291 N79-31952
DISPERSION
Dispersal of forest insects p0148 N79-19596
DISPERSIONS
NT AEROSOLS
NT COLLOIDS
NT FOG
NT SMOKE

Selected examples of dispersal of arthropods associated with agricultural crop and animal production p0148 N79-19595

Strategic and tactical use of movement information in pest management p0148 N79-19597

DISPLAY DEVICES
NT APPROACH INDICATORS
NT HEAD-UP DISPLAYS
NT HOT-FILM ANEMOMETERS

The robot's eyes - Stereo vision system for automated scene analysis p0004 A79-12006

Human factors design criteria for transilluminated displays p0036 A79-13187

Discrimination of density and clustering on four versions of a stochastic display --- human performance of pattern recognition p0036 A79-13192

Lateral orientation and cerebral activation - Considerations for information display p0037 A79-13194

Contrast enhancement using local area brightness and gain control --- of airborne CRT display p0037 A79-13199

Investigation of arrangement of multipurpose displays and use of tailored control logic in a fighter aircraft cockpit p0038 A79-13205

Refinement of a computer simulation model for evaluating DAIS display concepts --- Digital Avionics Information System p0038 A79-13209

Four years of color research for visual displays --- human performance consideration for use in aircraft p0039 A79-13210

Observer performance using a video display --- in simulated air to ground target acquisition tasks p0039 A79-13217

Anthropology in Spacelab - Control and display system in Spacelab [DGLR PAPER 78-151] p0042 A79-14096

Ergonomic problems regarding the interactive touch input via screens in onboard and ground-based flight control p0061 A79-17695

Perception of graphic displays of space p0062 A79-18205

The importance of providing stereoscopic vision in training for nap-of-the-earth /NOE/ flight p0062 A79-18206

The effects of prediction, quickening, frequency separation, and percent of pursuit in perspective displays for low-visibility landing p0063 A79-18210

An investigation of pictorial and symbolic aircraft displays for landing p0063 A79-18211

Factors that affect display size criteria in a cockpit display system p0063 A79-18212

Pilot performance during flight simulation with peripherally presented visual signals p0063 A79-18213

Human factors considerations in the design and evaluation of a helmet mounted display using a light emitting diode matrix p0063 A79-18214

Perceptual localization, feature identification and ocular motor factors in scanning a visual display p0064 A79-18218

Secondary visual workload capability with primary visual and kinesthetic-tactual displays p0064 A79-18220

Human engineering study of information processing applicable to helmet-mounted displays p0068 A79-18994

Speed and load stress as determinants of performance in a time sharing task p0068 A79-18999

A visual simulator with transformation of the perspective in the raster of television pictures --- German book on pilot training systems p0069 A79-19375

Engineering-psychological study of information imaging systems --- manual control of spaceship docking p0099 A79-21404

A controller's eye view of color p0102 A79-23596

Visual acuity with regard to simultaneous colored contrast on a television screen - Results p0103 A79-23952

Factors controlling the competing sensations produced by a bistable stroboscopic motion display p0104 A79-24067

Recent developments and plans for pilot training devices [SAE PAPER 781007] p0130 A79-25889

A binocular stereoscopic display system for echocardiography p0130 A79-26072

Hyper-resolution in human perception of movement in visual displays p0132 A79-26240

Object, illusion and frame of reference as design criteria for computer-generated displays p0137 A79-28157

Digital image anomalies - Static and dynamic --- rastering and aliasing effects and elimination p0137 A79-28158

Visual system for the Boom Operator Part Task Trainer --- KC-135 aerial refueling task simulator p0137 A79-28162

Component performance of a 360 deg non-programmed visual display --- laser image flight simulator p0137 A79-28163

A 25-inch precision color display for simulator visual systems p0137 A79-28164

Windshield quality and pilot performance measurement utilizing computer-generated imagery p0137 A79-28165

Training effectiveness versus simulation realism p0138 A79-28166

Extrapolation of pulsed light data in scanned displays --- laser radiation eye exposure limits p0138 A79-28170

The holographic Pancake Window --- magnifier for flight simulation display p0138 A79-28172

Application of Fresnel lenses to virtual image display --- for training simulators p0139 A79-28173

A fast-reacting and versatile optokinetic stimulus pattern by computer graphics with application examples p0160 A79-28993

A comparison of kinesthetic-tactual and visual displays via a critical tracking task --- for aircraft control p0162 A79-29720

Visual contrast sensitivity functions obtained with colored and achromatic gratings p0181 A79-32628

Application of computer animation for dynamic display in complex energy systems --- for human operator performance improvement p0186 A79-34172

The development of integrated multidimensional displays p0187 A79-34990

Regression models of search time for color-coded information displays p0209 A79-38359

Dynamics of the eye and head during movement between displays - A qualitative and quantitative guide for designers p0209 A79-38362

Pilot-optimal augmentation of the air-to-air tracking task [AIAA 79-1747] p0252 A79-45388

Helicopter commands at the touch of a hand [AHS 79-13] p0270 A79-49066

Real-time computerized fluoroscopic cardiac imaging p0294 A79-51035

Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators p0297 A79-52276

Target redundancy in visual search - Do repetitions of the target within the display impair processing

p0299 A79-52540
Compensation for transport delays produced by computer image generation systems
[AD-A056720] p0019 N79-10738
Human factors evaluation of the AN/UYQ-21 display console
[AD-A056383] p0020 N79-10743
The effect of active area on the legibility of dot matrix displays
[AD-A058014] p0052 N79-12708
Human factors aspects of low light level television and forward looking infrared sensor displays. 1: A feasibility study of scaled subjective complexity of still scenes applied to computer image generation
[AD-A058938] p0058 N79-13715
An extension of the quickened display for manual control
p0086 N79-15591
Analysis of a VTOL hover task with predictor displays using an optimal control model of the human operator
p0088 N79-15605
Event-driven displays for manipulator control
p0089 N79-15610
Display aids for remote control of untethered undersea vehicles
p0090 N79-15613
A safety margin and flight reference system and display for powered-lift aircraft
p0090 N79-15614
Evaluation of display and control concepts for a terminal configured vehicle in final approach in a windshear environment
p0090 N79-15616
Two dimensional eye tracking: Sampling rate of forcing function
p0090 N79-15617
The effect of a visual/motion display mismatch in a single axis compensatory tracking task
p0118 N79-17511
Evaluation of kinesthetic-tactual displays using a critical tracking task
p0119 N79-17516
Some ergonomic aspects of adapting workrooms with visual display units to the human possibilities
[IZF-1978-1] p0125 N79-17562
Miniature implantable ultrasonic echosonometer
[NASA-CASE-ARC-11035-1] p0144 N79-18580
Binocular holographic helmet mounted display
[AD-A062761] p0174 N79-20749
Modeling and analysis of man-machine interface information
[AD-A063515] p0178 N79-21772
Effect of optical magnification on the perception of displayed orientation
[AD-A065949] p0196 N79-23660
Physical and mental working environment in a terminal based computer system
[BLL-RTS-11634] p0197 N79-23665
A human engineering specification for legibility of alphanumeric symbology on video monitor displays
[AD-A064960] p0197 N79-23667
Proximity-vision system for protoflight manipulator arm
[NASA-CR-158652] p0197 N79-24658
Improvements in the man-machine interface for data acquisition, display and control
p0224 N79-25983
A photometric and legibility assessment of Aerospace Optics, Incorporated Vivisun 20/20 display
[AD-A067668] p0242 N79-26786
Analysis of visual estimation of system state from arbitrary displays
p0317 N79-33843
DISPLAY SYSTEMS
U DISPLAY DEVICES
DISPOSAL
NT WASTE DISPOSAL
DISSIPATION
NT ENERGY DISSIPATION
DISSOCIATION
Thermodynamic studies on the oxygenation and subunit association of human hemoglobin
p0142 N79-18576
DISTANCE
NT MISSILE RANGES
DISTANCE PERCEPTION
U SPACE PERCEPTION
DISTRIBUTION (PROPERTY)
NT DIFFRACTION PATTERNS
NT LOAD DISTRIBUTION (FORCES)
NT MASS DISTRIBUTION
NT TEMPERATURE DISTRIBUTION
NT VELOCITY DISTRIBUTION
Distribution of bluegreen algae in a Mississippi Gulf Coast salt marsh
[PB-288982/2] p0153 N79-19667
DIURESIS
Fluid shifts during initial phase of immersion diuresis in man
p0185 A79-33804
DIURNAL RHYTHMS
U CIRCADIAN RHYTHMS
DIVING (UNDERWATER)
Intracardial gas bubbles and decompression sickness while flying at 9,000 m within 12-24 h of diving
p0010 A79-12866
Personality profiles of divers involved in research activities
[DLR-FB-78-11] p0281 N79-30935
DNA
U DEOXYRIBONUCLEIC ACID
DOCUMENTATION
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 60
[JPRS-73135] p0175 N79-21745
DOCUMENTS
NT BIBLIOGRAPHIES
NT HANDBOOKS
NT PAPERS
NT USER MANUALS (COMPUTER PROGRAMS)
Publications of the planetary biology program for 1977: A special bibliography
[NASA-TM-80338] p0179 N79-21777
DOGS
Cardiac responses of dogs to nonsynchronous and heart synchronous whole-body vibration
p0162 A79-29728
Frequency response of cardiovascular regulation in canines to sinusoidal acceleration at frequencies below 1 Hz (basis for biodynamic modeling)
p0286 N79-31915
DOMINANCE
NT EYE DOMINANCE
DOPPLER EFFECT
A sample volume tracking unit for pulsed Doppler echocardiography
p0200 A79-36869
DOSAGE
NT RADIATION DOSAGE
DOSIMETERS
Some advances in astronaut radiation dosimetry
[IAF PAPER 78-67] p0003 A79-11228
Electromagnetic fields in biological media. Part 1: Dosimetry - a primer on bioelectromagnetics
[PB-285793/6] p0078 N79-14759
Microwave and RF dosimetry
p0083 N79-15561
A real-world assessment of noise exposure
[AD-A061692] p0155 N79-19680
The design and construction of a miniature dosimeter for the study of the effects of air cavities in radiation therapy
p0176 N79-21757
Review of unfolding methods used in the US and their standardization for dosimetry
[BNWL-SA-6503] p0307 N79-32828
DOSIMETRY
U DOSIMETERS
DOUGLAS MILITARY AIRCRAFT
U MILITARY AIRCRAFT
DOVAP
U DOPPLER EFFECT
DRINKING
Relationship between thermogenic drinking and plasma renin activity in the rat
p0235 A79-43211
Delayed effects of alcohol ingestion on + Gz tolerance
p0272 A79-49730
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
p0273 A79-49984

DRONE AIRCRAFT
A head-up display for mid-air drone recovery
p0090 N79-15615
DRONE HELICOPTERS
U DRONE AIRCRAFT
U HELICOPTERS
DRONE VEHICLES
NT DRONE AIRCRAFT
DROPS (LIQUIDS)
Coacervate drops as a model for precellular structures
p0204 A79-37960
Coacervate drops - Primitive forms of precells
p0204 A79-37962
DROSOPHILA
Reproductive adaptation in Drosophila exposed to oxygen-enriched atmospheres
p0164 A79-30657
Effect of hypoxia on the development of Drosophila melanogaster /Meigen/
p0165 A79-30667
Biological experiments carried out aboard the biological satellite Cosmos-936
p0230 A79-41717
Quantitative analysis of mating behavior in aging male Drosophila Melanogaster
p0252 A79-44799
Effects of weightlessness on the embryonic development and aging of Drosophila
p0022 N79-11670
Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582] p0071 N79-14711
DROWSINESS
U SLEEP
DRUG THERAPY
U CHEMOTHERAPY
DRUGS
NT ADRENERGICS
NT ANTIADRENERGICS
NT ANTIBIOTICS
NT ANTIHISTAMINICS
NT ANTIINFECTIVES AND ANTIBACTERIALS
NT ANTIRADIATION DRUGS
NT DECONGESTANTS
NT INSULIN
NT MARIJUANA
NT MOTION SICKNESS DRUGS
NT NORADRENALINE
NT NOREPINEPHRINE
NT PROMETHAZINE
Indomethacin-antihistamine combination for gastric ulceration control
[NASA-CASE-ARC-11118-2] p0077 N79-14755
DRY HEAT
Thermal resistance of naturally occurring airborne bacterial spores --- Viking spacecraft dry heat decontamination simulation
p0131 A79-26147
DRYING
NT DEHYDRATION
NT FREEZE DRYING
DUCTS
Apparatus for supplying conditioned air at a substantially constant temperature and humidity
[NASA-CASE-GSC-12191-1] p0156 N79-19688
DUMMIES
A biophysical model for evaluating auxiliary heating and cooling systems --- for protective clothing systems design
[ASME PAPER 78-ENAS-33] p0008 A79-12581
Calibration of three year old child dummies
[PB-288961/6] p0157 N79-19692
Evaluation of research on surrogates for humans in motor vehicle crashes
[PB-291012/3] p0178 N79-21774
Performance evaluation of test dummies with flesh parts produced with substitute foaming compounds
[PB-289951/6] p0179 N79-21776
Man, dummy, test vehicle: A comparison of test results for escape systems with the 3 different test methods
p0287 N79-31924
Tentative estimation of the injuries likely to occur during the crash of a SA 341 Gazelle helicopter, from a study on mannequins
p0287 N79-31925
DUNGEYS WIND SHEAR MECHANISM
U WIND SHEAR
DURATION
U TIME
DYES
Effect of fiber and dye degradation products /FDP/ on burn wound healing
p0298 A79-52277
A porcine bioassay study of the physiological effects of fiber and dye degradation products (FDP) on burn wound healing
[AD-A066990] N79-25748
DYNAMIC CHARACTERISTICS
NT AERODYNAMIC STABILITY
NT AIRCRAFT STABILITY
NT DYNAMIC STABILITY
NT FLOW STABILITY
NT FLOW VELOCITY
NT HOVERING STABILITY
NT MOTION STABILITY
NT TRANSIENT RESPONSE
Goal-directed mechanics of controlled manipulators --- Russian book
p0275 A79-50447
Dynamical characteristics of visual functions
p0276 A79-50656
Dynamic measurement of human cyclofusional eye movements
p0142 N79-18575
DYNAMIC CONTROL
The effects of participatory mode and task workload on the detection of dynamic system failures
p0098 A79-21156
Control of robot manipulators from the modeling of their dynamics --- French thesis
p0101 A79-23427
Prosthetic EMG control enhancement through the application of man-machine principles
p0117 N79-17505
DYNAMIC LOADS
The relationship between adult articular cartilage thickness and dynamic loads of a uniaxial joint
p0154 N79-19671
DYNAMIC MODELS
A model for sensorimotor control and learning
p0005 A79-12122
Control of robot manipulators from the modeling of their dynamics --- French thesis
p0101 A79-23427
Problem of modeling the mechanism of heart contraction
p0275 A79-50287
A discrete parameter model of the head and neck with neuromuscular feedback
p0211 N79-24627
Preliminary design specifications of a calcium model
[NASA-CR-160199] p0217 N79-25716
Use of a computer model in the understanding of erythropoietic control mechanisms
[NASA-CR-160201] p0217 N79-25718
User's instructions for the cardiovascular Walters model
[NASA-CR-160204] p0217 N79-25721
Fluid and electrolyte control systems in the human body: A study report
[NASA-CR-160210] p0217 N79-25723
On a basic model of circulatory, fluid, and electrolyte regulation in the human system based upon the model of Guyton
[NASA-CR-160212] p0218 N79-25725
User's instructions for the Guyton circulatory dynamics model using the Univac 1110 batch and demand processing (with graphic capabilities)
[NASA-CR-160215] p0218 N79-25731
Modifications to the steady-state 41-node thermoregulatory model including validation of the respiratory and diffusional water loss equations
[NASA-CR-160219] p0219 N79-25738
Development and utilization of internal models in dynamic systems: A comparison of monitors and operators as failure detectors
[AD-A069730] p0282 N79-30942
The response of a realistic computer model for sitting humans to different types of shocks
p0288 N79-31927
Progress in measuring and modeling the effects of low frequency vibration on performance

p0288 N79-31930
Car driving as a cybernetic task
[IZF-1979-6] p0309 N79-32838
DYNAMIC PROGRAMMING
Selecting the program of motions for a biped walking machine
p0166 A79-31490
DYNAMIC PROPERTIES
U DYNAMIC CHARACTERISTICS
DYNAMIC RESPONSE
NT TRANSIENT RESPONSE
Significance of motor activity for spatial hearing
p0043 A79-14372
On the relationship between pilot rating and pilot dynamics. I - An experimental approach
p0066 A79-18474
On the relationship between pilot rating and pilot dynamics. II - An analytical approach
p0066 A79-18475
Dynamics of an image viewed through a rotating mirror
p0221 A79-36365
Application of pseudo random binary sequence input to identification of respiratory control dynamics
p0268 A79-48011
Lung mechanics: Dynamic response, acoustic generation, and flow limitation
p0017 N79-10727
Dynamic response of vertebral elements related to USAF injury
[AD-A059489] p0071 N79-14713
The internal model: A study of the relative contribution of proprioception and visual information to failure detection in dynamic systems --- sensitivity of operators versus monitors to failures
p0087 N79-15596
Discrete-time pilot model --- human dynamics and digital simulation
p0088 N79-15601
The influence of vehicle aerodynamic and control response characteristics on driver-vehicle performance
p0089 N79-15608
Modelling the human operator of slowly responding systems using linear models
p0117 N79-17492
Multi-channel stimulation of peripheral nerve trunks
p0176 N79-21753
Models and Analogues for the Evaluation of Human Biodynamic Response, Performance and Protection --- conferences, human tolerance of acceleration, vibration, and shock
[AGARD-CP-253] p0284 N79-31901
Reference parameters for shock inputs and shock tolerance limits
p0284 N79-31905
Multiaxis dynamic response of the human head and neck to impact acceleration
p0284 N79-31906
The response of a realistic computer model for sitting humans to different types of shocks
p0288 N79-31927
Some human responses to repeated +G sub z pulses
p0288 N79-31928
The biodynamic response of the human body and its application to standards
p0288 N79-31929
DYNAMIC STABILITY
NT AERODYNAMIC STABILITY
NT AIRCRAFT STABILITY
NT FLOW STABILITY
NT HOVERING STABILITY
NT MOTION STABILITY
Stabilization of the horizontal motion of a bipedal walking robot
p0251 A79-44081
DYNAMIC TESTS
The dynamic oxygen-regulator test stand
[AD-A060978] p0125 N79-17560

E

EAR
NT COCHLEA
NT LABYRINTH
NT MIDDLE EAR
NT SEMICIRCULAR CANALS
NT VESTIBULES
Aeromedical aspects of otolaryngology
p0136 A79-27562
Auditory analysis of complex sound: Electrophysiological investigations --- Russian book
p0167 A79-31899
A mathematical scheme for predicting the electro-acoustic frequency response of hearing aid receiver-earmold-ear systems
p0154 N79-19673
Functional connections of the central auditory nervous system: Thalamocortical corticothalamic and corticotectal connections of the AI, AII and AAF auditory cortical fields
p0246 N79-27839
EAR PRESSURE TEST
Analysis of inert gas exchange in the middle ear
p0017 N79-10723
EAR PROTECTORS
In-flight measures of stress reduction due to wearing expandable foam earplugs
p0273 A79-49986
EARPHONES
Effects of phase manipulation [illegible] speech intelligibility through com[illegible]ation headsets --- light aircraft radio communication
p0164 A79-30654
EARTH (PLANET)
A proposal concerning the origin of life on the planet earth
p0253 A79-45641
EARTH ATMOSPHERE
NT BIOSPHERE
NT PRIMITIVE EARTH ATMOSPHERE
EARTH ENVIRONMENT
The evolution of the environment and its influence on the evolution of life
p0099 A79-22076
A review of recent concepts of the problem of the origin of life
p0221 A79-36081
EARTH RESOURCES
NT FORESTS
NT GEOTHERMAL RESOURCES
NT SPRINGS (WATER)
EARTH RESOURCES PROGRAM
NT SEASAT PROGRAM
EARTH RESOURCES SURVEY PROGRAM
NT SEASAT PROGRAM
EARTH SATELLITES
NT BIOSATELLITES
NT COSMOS SATELLITES
NT COSMOS 782 SATELLITE
NT COSMOS 936 SATELLITE
NT INTERCOSMOS SATELLITES
ECHOCARDIOGRAPHY
A binocular stereoscopic display system for echocardiography
p0130 A79-26072
A sample volume tracking unit for pulsed Doppler echocardiography
p0200 A79-36869
Effects of endurance training on left ventricular dimensions in healthy men
p0237 A79-43706
Clinical applications of new echocardiographic techniques
p0285 A79-51040
The advantages of ultrasonic echocardiography in the cardiological evaluation of fliers
p0030 N79-11718
ECHOES
Miniature implantable ultrasonic echosonometer
[NASA-CASE-ARC-11035-1] p0144 N79-18580
ECOLOGICAL SYSTEMS
U ECOLOGY
ECOLOGY
NT COASTAL ECOLOGY
Ecological physiology of animals. I - General ecological physiology and physiology of adaptations --- Russian book
p0275 A79-50474
Radar, Insect Population Ecology, and Pest Management
[NASA-CP-2070] p0147 N79-19592
Distribution of bluegreen algae in a Mississippi Gulf Coast salt marsh
[PB-288982/2] p0153 N79-19667

Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components
[NASA-CR-158627] p0197 N79-25705
Results of benthic studies at Calvert Cliffs
[PB-294261/3] p0261 N79-29788
ECONOMICS
NT DEMAND (ECONOMICS)
ECOSYSTEMS
A biogeochemical study of the Abu Dhabi algal mats - A simplified ecosystem
p0132 A79-26373
Closed regenerative life support systems for space travel - Their development poses fundamental questions for ecological science
p0228 A79-41702
Ecosystem models, volume 3. A bibliography with abstracts
[NTIS/PS-78/1146/6] p0054 N79-13678
Ecosystem models, volume 2. A bibliography with abstracts
[NTIS/PS-78/1145/8] p0054 N79-13679
Proceedings of the first and second USA-USSR Symposia on the Effects of Pollutants upon aquatic ecosystems. Volume 1: USA Symposium. Volume 2: USSR Symposium
[PB-287219/0] p0112 N79-16546
EDDY DIFFUSION
U TURBULENT DIFFUSION
EDEMA
Changes in lung volume, lung density, and distribution of ventilation during hypobaric decompression
p0185 A79-33806
Evidence for increased intrathoracic fluid volume in man at high altitude
[AD-A065333] p0220 N79-25743
EDITING
Editing procedure for anthropometric survey data
[AD-A060393] p0093 N79-15639
EDUCATION
NT ASTRONAUT TRAINING
NT FLIGHT TRAINING
NT GUNNERY TRAINING
NT PILOT TRAINING
NT SPACE FLIGHT TRAINING
The next decade - Development, training, supervision
p0102 A79-23584
Relations between research and instruction in physiology and aerospace ergonomy in the military health services
p0104 A79-23960
Training of visual recognition
p0160 A79-29250
Psychiatric education in aerospace medicine
p0202 A79-37712
Retention and transfer of training on a procedural task interaction of training strategy and cognitive style
[AD-A058966] p0052 N79-12704
Training implications
p0114 N79-16565
Evaluation of four target-identification training techniques
[AD-A061175] p0123 N79-17548
Training effect of recognition of different alphabets of visual stimuli
p0175 N79-21747
ARPA authoring system
[AD-A064723] p0190 N79-22762
Physiological effects of a military training program on males and females
[AD-A062936] p0220 N79-25744
Stress management: A comparison of educational, aerobic and autosuggestive approaches
p0260 N79-28875
Making it in academic psychology: Demographic and personality correlates of eminence
[NASA-CR-162287] p0289 N79-31932
Advanced training features: Bridging the gap between in-flight and simulator-based models of flying training
[AD-A068142] p0289 N79-31934
EEG (ELECTROENCEPHALOGRAMS)
U ELECTROENCEPHALOGRAPHY
EFFECTIVENESS
NT COST EFFECTIVENESS
NT SYSTEM EFFECTIVENESS
Aircrew personnel restraint subsystems definition of deficiencies and requirements
[AD-A058995] p0053 N79-12711
EFFECTORS
U CONTROL EQUIPMENT
EFFERENT NERVOUS SYSTEMS
Recruitment and discharge properties of motor units in human brachial biceps and adductor pollicis during isometric contractions
p0216 N79-25708
EFFLUENTS
Methods for measuring the acute toxicity of effluents to aquatic organisms
[PB-289605/8] p0170 N79-20719
EJECTION INJURIES
High 'Q' escape protection --- pilot restraint during high speed ejection
p0044 A79-14428
Vertebral fractures in Gnat ejections
p0201 A79-37134
Ejection problems and injuries - Their causes, effects and treatments, and suggestions for preventive measures
p0267 A79-47338
Spinal injury pattern due to ejections
p0272 A79-49734
Spinal injuries in the F/FB-111 crew escape system
p0274 A79-49996
Studies of limb-dislodging forces acting on an ejection seat occupant
[AD-A064882] p0196 N79-23658
Correlation of mechanism of extremity injury and aerodynamic factors in ejections from F-4 aircraft
p0284 N79-31904
EJECTION SEATS
Design considerations for inflatable head/neck restraint systems
p0043 A79-14407
High 'Q' escape protection --- pilot restraint during high speed ejection
p0044 A79-14428
Aerodynamic forces exerted on an articulated human body subjected to windblast
[AD-A059023] p0055 N79-13688
Studies of limb-dislodging forces acting on an ejection seat occupant
[AD-A064882] p0196 N79-23658
ELASTIC CONSTANTS
U ELASTIC PROPERTIES
ELASTIC MODULUS
U MODULUS OF ELASTICITY
ELASTIC PROPERTIES
NT MODULUS OF ELASTICITY
Basic biomechanics equations for cardiovascular flow
p0304 A79-53534
ELASTIC WAVES
NT AIRCRAFT NOISE
NT NOISE (SOUND)
NT SHOCK WAVES
NT SONIC BOOMS
NT SOUND WAVES
NT ULTRASONIC RADIATION
ELASTICITY
U ELASTIC PROPERTIES
ELASTOMERS
A preliminary toxicological study of silastic 386 foam elastomer: catalyst
[LA-7366-MS] p0071 N79-14714
Physical testing of polymers use in circulatory assist devices
[PB-286129/2] p0084 N79-15579
ELECTRIC CHARGE
NT ELECTROSTATIC CHARGE
ELECTRIC COILS
NT MAGNETIC COILS
ELECTRIC CONNECTORS
Simulated EVA operation of a remote connector assembly test report
[NASA-CR-161167] p0156 N79-19687
ELECTRIC CURRENT
NT ELECTRIC DISCHARGES
NT RADIO FREQUENCY DISCHARGE
ELECTRIC DISCHARGES
NT RADIO FREQUENCY DISCHARGE
Synthesis of amino acids under primitive earth conditions in the presence of clay
p0203 A79-37930
Recruitment and discharge properties of motor units in human brachial biceps and adductor pollicis during isometric contractions
p0216 N79-25708

ELECTRIC FIELDS

State of process of oxidation phosphorylation of liver mitochondria on exposure to an electric field
p0075 N79-14742

Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency
[CONF-780541-1] p0307 N79-32827

Feasibility of an epidemiological study of workers occupationally exposed to high voltage electric fields in the electric power industry
[EPRI-EA-1020] p0316 N79-33832

ELECTRIC FILTERS

NT DIGITAL FILTERS

Synchronous brain evoked potential correlates of directed attention in humans
p0110 N79-16537

ELECTRIC GENERATORS

NT THERMOELECTRIC GENERATORS

ELECTRIC POTENTIAL

NT BIOELECTRIC POTENTIAL

Responses of retinal and visual pathway potentials of the guinea pig to nitrogen and helium at high pressure
p0266 A79-47331

ELECTRIC POWER

Development of an electrical energy converter for driving left heart assist blood pumps
[PB-293510/8] p0241 N79-26780

ELECTRIC POWER PLANTS

NT NUCLEAR POWER PLANTS

Application of computer animation for dynamic display in complex energy systems --- for human operator performance improvement
p0186 A79-34172

ELECTRIC POWER TRANSMISSION

A theoretical investigation of power and control configurations for a high g-onset centrifuge drive system
[AD-A070912] p0309 N79-32841

ELECTRIC STIMULI

Phosphorylase a in human skeletal muscle during exercise and electrical stimulation
p0067 A79-18962

Effects of physical conditioning and electric stimulation on metabolic processes in the soleus muscle and structure thereof in hypokinetic man
p0192 N79-23634

ELECTRICAL ENERGY

U ELECTRIC POWER

ELECTRICAL IMPEDANCE

NT ELECTRICAL RESISTANCE

ELECTRICAL PROPERTIES

NT DIELECTRIC PROPERTIES

NT ELECTRICAL RESISTANCE

NT PERMITTIVITY

Electrical parameter values of some human tissues in the radiofrequency radiation range
[AD-A064202] p0189 N79-22754

ELECTRICAL RESISTANCE

Skin-resistance measuring device with higher resolution
p0252 A79-45476

ELECTRO-OPTICS

ISAAC-1 - A color sensing robot
p0138 A79-28168

ELECTROCARDIOGRAMS

U ELECTROCARDIOGRAPHY

ELECTROCARDIOGRAPHY

Simulation study on time series of heart responses
p0037 A79-13197

Selection of astronaut candidates - Contribution of the exercise ECG and spirography
p0047 A79-15489

Value and limits of the electrocardiogram in aviation medicine evaluations
p0048 A79-15495

ST isopotential precordial surface maps in patients with acute myocardial infarction
p0098 A79-21245

Clinical importance of directional statistics for electrocardiographic differentiation of smoking habits
p0098 A79-21246

The effects of filtering the His-Purkinje system electrocardiogram
p0130 A79-26073

Single frequency RF powered ECG telemetry system
p0131 A79-26074

Electrocardiographic abnormalities in Air Force personnel
p0182 A79-33191

Predicting coronary artery disease with treadmill stress testing Changes in R-wave amplitude compared with ST segment depression
p0186 A79-34284

Aerobiotelemetry from a fighter aircraft
p0200 A79-37131

Influence of Beta-Blockade on asymptomatic ST-T wave changes - A follow up study
p0201 A79-37137

Some electrophysiological concepts of the U wave of ECG
p0201 A79-37138

Homomorphic analysis and modeling of ECG signals
p0210 A79-39973

The eccentric spheres model as the basis for a study of the role of geometry and inhomogeneities in electrocardiography
p0226 A79-40649

An inductively powered telemetry system for temperature, EKG, and activity monitoring
p0228 A79-41424

Microwave apexcardiography
p0231 A79-41848

Adjustment of an electronic model for electrocardiogram simulation
p0232 A79-42240

The evolutionary pattern of exercise-induced ST segment depression
p0251 A79-44166

The electrocardiogram recorded by telemetry during a parachute jump, compared to a trace during stress tests - A preliminary study of 29 cases
p0256 A79-46600

Non-invasive information on the P-R segment of the cardiac cycle - An assessment of the clinical potential of the electric and magnetic methods
p0295 A79-51045

Continuous long-duration recording of the heart rate by means of a noncontact technique
p0300 A79-53068

Theoretical foundations of cardiovascular processes --- Book
p0304 A79-53531

Fundamentals of electrical processes in the electrophysiology of the heart
p0304 A79-53532

Analysis of distribution of sequences of R-R intervals in astronauts: Generalized coordinate method
p0015 N79-10707

The significance of T wave abnormalities
p0029 N79-11713

Difficulties posed by left axis deviation in the evaluation of fliers, and their relations to the concept of left anterior hemiblock
p0029 N79-11714

Left Anterior Hemiblock (LAH): Diagnosis and aeromedical risk
p0029 N79-11715

Cardiac conduction and aptitude problem of fliers. The benefits of endocavital recording of the His bundles
p0030 N79-11716

Effects of oxides on nitrogen, Carbon monoxide and photochemical oxidants on the ECG during exercise and on cardiopulmonary function
[PB-291595/7] p0177 N79-21763

A nonlinear mapping approach to discrimination of sleep stages from the human electroencephalogram
p0314 N79-33817

ELECTROCHEMISTRY

Use of platinum electrodes for the electrochemical detection of bacteria
p0131 A79-26146

ELECTRODERMAL RESPONSE

U GALVANIC SKIN RESPONSE

ELECTRODES

NT GLASS ELECTRODES

NT IMPLANTED ELECTRODES (BIOLOGY)

Reliability of determining the cardiac output by the method of quadrupole chest impedance rheography
p0098 A79-21243

Use of platinum electrodes for the electrochemical detection of bacteria
p0131 A79-26146

ELECTROENCEPHALOGRAM
U ELECTROENCEPHALOGRAPHY

ELECTROENCEPHALOGRAPHY
Vigilance and electroencephalogram --- human performance in compensatory target tracking
p0100 A79-22975
Characteristics of EEG changes in rabbits in response to local cooling or heating of the central thermosensory area
p0221 A79-36097
Analysis of electroencephalogram during psychomotor performance
p0209 A79-38820
Computerized clinical electroencephalography in perspective
p0226 A79-40648
Portable device for detection of petit mal epilepsy
p0254 A79-46226
Synchronous brain evoked potential correlates of directed attention in humans
p0110 N79-16537
Effects of filtering electroencephalic signals on auditory evoked brain stem responses
p0176 N79-21758
A computer system for statistical analysis of EEG transients
p0216 N79-25707

ELECTROLYTE METABOLISM
A review of the consequences of fluid and electrolyte shifts in weightlessness
[IAF PAPER 78-50] p0002 A79-11220
Comparison of hormone and electrolyte circadian rhythms in male and female humans
p0004 A79-11948
Thresholds for Na/+/ and Ca/++/ effects on thermoregulation
p0045 A79-14774
Effect of water and electrolyte replacement during exercise in the heat on biochemical indices of stress and performance
p0127 A79-24629
Circadian rhythm of electrolyte uresis in healthy persons
p0257 A79-46681
Effects of space flight factors on electrolyte composition of rat skeletal muscles
p0109 N79-16530
Fluid and Electrolyte Balance model (FEB)
[NASA-CR-160206] p0211 N79-24633
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819
Fluid-electrolyte metabolism in the crew of Salyut-4
p0311 N79-33792
Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite
p0311 N79-33795

ELECTROLYTES
Plasma volume and electrolyte shifts with heavy exercise in sitting and supine positions
p0161 A79-29336
Plasma electrolytes in relation to altitude tolerance in rats
p0163 A79-30652
Hyperthermia and exercise --- plasma fluid and electrolyte effects on human thermoregulation
p0252 A79-44775
A simple model of fluid flow and electrolyte balance in the body
[NASA-CR-160205] p0217 N79-25722
Fluid and electrolyte control systems in the human body: A study report
[NASA-CR-160210] p0217 N79-25723
On a basic model of circulatory, fluid, and electrolyte regulation in the human system based upon the model of Guyton
[NASA-CR-160212] p0218 N79-25725

ELECTROMAGNETIC ABSORPTION
NT ULTRAVIOLET ABSORPTION
NT X RAY ABSORPTION
Electromagnetic power absorption in cylindrical tissue models excited by a loop antenna
p0136 A79-27959
Electromagnetic absorption in a multilayered model of man
p0226 A79-40650
An empirical formula for broad-band SAR calculations of prolate spheroidal models of humans and animals --- Specific Absorption Rate
p0278 A79-51015
Molecular absorption of non-ionizing radiation in biological systems
p0082 N79-15553
Determination of bound water in biological materials from dielectric measurements
p0082 N79-15557
Microwave and RF dosimetry
p0083 N79-15561
Some recent results on the deposition of electromagnetic energy in animals and models of man
p0083 N79-15563
Numerical studies of absorption of electro-magnetic energy by man
p0110 N79-16538

ELECTROMAGNETIC COMPATIBILITY
On the measurement of hazardous e.m. fields radiated through an aperture
p0233 A79-42486

ELECTROMAGNETIC CONTROL
U REMOTE CONTROL

ELECTROMAGNETIC INDUCTION
U MAGNETIC INDUCTION

ELECTROMAGNETIC FIELDS
Electromagnetic fields and power deposition in body-of-revolution models of man
p0130 A79-26007
Space osteoporosis - An electromagnetic hypothesis
p0165 A79-30666
Biological effects of electromagnetic fields
p0184 A79-33711
Biological effects of electromagnetic fields
p0184 A79-33712
Effect of electromagnetic fields in long-, medium-, and short-wave ranges on biological objects
p0185 A79-33713
A mechanism for high-frequency electromagnetical field-induced biological damage
p0231 A79-41847
Effects of electromagnetic field induction on development of the green algae, scenedesmus quadricauda (Turbpin) Breb. and composition of free amino acids in its biomass and medium
p0075 N79-14740
Electromagnetic fields in biological media. Part 1: Dosimetry - a primer on bioelectromagnetics
[PB-285793/6] p0078 N79-14759
Electric field measurements within biological media
p0083 N79-15562
A technical review of the biological effects of non-ionizing radiation
[PB-290166/8] p0171 N79-20728
Decrease in the functional abilities of the heart as a result of exposure of an organism to an electromagnetic field of industrial frequency
p0172 N79-20733
The influence of SHF electromagnetic fields on the secretory function of the stomach
p0173 N79-20740

ELECTROMAGNETIC INTERACTIONS
The Physical Basis of Electromagnetic Interactions with Biological Systems
[HEW-PUB-FDA-78-8055] p0081 N79-15551
Survey of microwave and radiofrequency biological effects and mechanisms
p0082 N79-15552
Molecular absorption of non-ionizing radiation in biological systems
p0082 N79-15553
Millimeter wave and far infrared absorption in biological systems
p0082 N79-15554
Possible mechanisms of weak electromagnetic field coupling in brain tissue
p0082 N79-15555
Classical theory of microwave interactions with biological systems
p0082 N79-15556
Interfacial and intracellular water: Expected anomalies in dielectric properties
p0082 N79-15558

Microwave frequencies and the structure of the double helix
p0082 N79-15559
ELECTROMAGNETIC INTERFERENCE
NT ATMOSPHERICS
NT RADIO FREQUENCY INTERFERENCE
ELECTROMAGNETIC NOISE
NT ATMOSPHERICS
ELECTROMAGNETIC PROPERTIES
NT BRIGHTNESS
NT COLOR
NT DIELECTRIC PROPERTIES
NT ELECTRICAL PROPERTIES
NT ELECTROMAGNETIC ABSORPTION
NT OPTICAL PROPERTIES
NT PERMITTIVITY
ELECTROMAGNETIC PULSES
A mechanism for high-frequency electromagnetical field-induced biological damage
p0231 A79-41847
The combined effects of pulsed magnetic radiation (diapulse) and chemotherapy on tumor bearing mice. The measurement of rodent palatal explants as a device for measurement of the biologic effects of nonionic radiation (EMR)
p0018 N79-10733
ELECTROMAGNETIC RADIATION
NT ELECTROMAGNETIC PULSES
NT FAR INFRARED RADIATION
NT GAMMA RAYS
NT INFRARED RADIATION
NT LIGHT (VISIBLE RADIATION)
NT LIGHT BEAMS
NT MICROWAVE EMISSION
NT MICROWAVES
NT MILLIMETER WAVES
NT MONOCHROMATIC RADIATION
NT RADIO EMISSION
NT RADIO WAVES
NT SUNLIGHT
NT THERMAL RADIATION
NT ULTRAVIOLET RADIATION
Interdisciplinary and international contributions to research on biological effects of electromagnetic waves - Past performances and future challenges
p0129 A79-24878
Cell mechanisms for the biological effects of electromagnetic fields
p0188 A79-35569
Biological effects of nonionizing electromagnetic radiation. Volume 2, number 4: A digest of current literature
[AD-A055569] p0055 N79-13689
Translations on USSR science and technology: Biomedical and behavioral sciences, No. 53. Effects of nonionizing electromagnetic radiation
[JPRS-72606] p0074 N79-14736
Investigation of the activity of some enzymatic systems in response to a super-high frequency electromagnetic field
p0074 N79-14737
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 59. Effects of nonionizing electromagnetic radiation
[JPRS-72956] p0171 N79-20732
Immunological effects of microwave action
p0172 N79-20736
Effect of different doses of centimeter-band electromagnetic oscillations of biochemiluminescence of central nervous system and liver tissues
p0172 N79-20738
Biological effects of nonionizing electromagnetic radiation, volume 3, number 4
[AD-A070242] p0315 N79-33826
ELECTROMAGNETIC SCATTERING
NT LIGHT SCATTERING
NT RAYLEIGH SCATTERING
NT X RAY SCATTERING
ELECTROMAGNETIC SPECTRA
NT INFRARED SPECTRA
NT VIBRATIONAL SPECTRA
ELECTROMAGNETIC WAVE FILTERS
NT DIGITAL FILTERS
NT ELECTRIC FILTERS
ELECTROMAGNETIC WAVE TRANSMISSION
NT LIGHT SCATTERING
NT LIGHT TRANSMISSION
NT RADIO TRANSMISSION
ELECTROMAGNETIC WAVES
U ELECTROMAGNETIC RADIATION
ELECTROMYOGRAMS
U ELECTROMYOGRAPHY
ELECTROMYOGRAPHS
U ELECTROMYOGRAPHY
ELECTROMYOGRAPHY
Effects of vestibular stimuli on the electrical activity of muscles
p0187 A79-35121
Frequency and amplitude analysis of the EMG during exercise on the bicycle ergometer
p0297 A79-52022
Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time
p0297 A79-52025
Prosthetic EMG control enhancement through the application of man-machine principles
p0117 N79-17505
ELECTRON FLUX
U ELECTRONS
ELECTRON MICROSCOPY
Scanning and transmission electron microscopy of the blood-bubble interface in decompressed rats
p0266 A79-47333
Design of polymeric immunomicrospheres for cell labelling and cell separation
p0275 A79-50234
ELECTRON PARAMAGNETIC RESONANCE
ESR studies on different pathological states
[ISS-L-22/9] p0248 N79-27854
ELECTRON RADIATION
NT BETA PARTICLES
ELECTRON SPIN RESONANCE
U ELECTRON PARAMAGNETIC RESONANCE
ELECTRON TUBES
NT CATHODE RAY TUBES
ELECTRONIC CONTROL
Evolution of the man-machine interface in surveillance radar systems
p0001 A79-10322
Control logic design criteria for multifunction switching devices --- in aircraft
p0064 A79-18223
ELECTRONIC EQUIPMENT
NT ELECTRONIC FILTERS
NT ELECTRONIC TRANSDUCERS
NT MINIATURE ELECTRONIC EQUIPMENT
Improved subcutaneous electrode structure
[NASA-CASE-ARC-11117-1] p0084 N79-15576
ELECTRONIC FILTERS
The effects of filtering the His-Purkinje system electrocardiogram
p0130 A79-26073
Computerized clinical electroencephalography in perspective
p0226 A79-40648
ELECTRONIC SWITCHES
U SWITCHING CIRCUITS
ELECTRONIC TRANSDUCERS
Development and application of resistive pulse spectroscopy: Studies on the size, form and deformability of red blood cells
[LBL-8640] p0280 N79-30924
ELECTRONS
The effect of 1 to 5 keV electrons on the reproductive integrity of microorganisms
p0147 N79-19025
ELECTRONYSTAGMOGRAPHY
Nystagmographic characterization of responses to rotation of persons with different vestibular-vegetative stability
p0188 A79-35122
ELECTROPHORESIS
Gel-electrophoresis studies for the taxonomic characterization of soil microorganisms
[NBC/CNR-TT-1924] p0120 N79-17521
Electrophoresis pattern of serum from mice exposed to different concentrations of sulfur dioxide
p0147 N79-19027
A method for separating biological cells
[NASA-CASE-NPS-23883-1] p0175 N79-21743
Preparation of guinea pig macrophage for electrophoretic experiments in space
[NASA-CR-158777] p0243 N79-27814
ELECTROPHYSICS
NT ELECTRO-OPTICS

ELECTROPHYSIOLOGY
Auditory analysis of complex sound: Electrophysiological investigations --- Russian book
p0167 A79-31899
Some electrophysiological concepts of the U wave of ECG
p0201 A79-37138
Electrophysiological investigation of sleep during work-shift regime and production-induced emotional stress
p0276 A79-50655
Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time
p0297 A79-52025
Fundamentals of electrical processes in the electrophysiology of the heart
p0304 A79-53532
Electrophysiological determination of retinal sensitivity to color after intense monochromatic light adaptation
[AD-A063852] p0189 N79-22756
The effects of high nitrogen tensions of the properties of neuronal membranes and synaptic transmission
[AD-A063856] p0213 N79-24647
Effects of sleep at altered ambient temperatures on electrophysiological sleep and thermoregulatory mechanisms in human subjects and in the ground squirrel (Citellus lateralis)
p0216 N79-25709
The effect of impact acceleration on the electrical activity of the brain
p0287 N79-31921

ELECTROPLETHYSMOGRAPHY
Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics
p0296 A79-51118

ELECTRORETINOGRAPHY
An apparatus for studying electroretinographic responses under conditions of space flight
p0006 A79-12517
Primate cone sensitivity to flicker during light and dark adaptation as indicated by the foveal local electroretinogram
p0[illegible] A79-24065
Reciprocal interaction between the photopic and scotopic systems of the visual analyzer in man
p0296 A79-51327

ELECTROSTATIC CHARGE
Investigation of techniques to reduce electrostatic discharge susceptibility of EED's containing plastic plugs
[AD-A059982] p0093 N79-15638
ELECTROSTATIC FIELDS
U ELECTRIC FIELDS
ELEMENT ABUNDANCE
U ABUNDANCE
ELEMENTARY EXCITATIONS
NT PLASMONS
ELEMENTARY PARTICLES
NT BETA PARTICLES
NT ELECTRONS
NT FAST NEUTRONS
NT LIGHT BEAMS
EMBOLISMS
NT AEROEMBOLISM
EMBRYOLOGY
Killfish development in zero-G on COSMOS 782: Fundulus experiment K-104
p0021 N79-11659
Effects of weightlessness on the embryonic development and aging of Drosophila
p0022 N79-11670

EMBRYOS
Role of gravity in early development
[NASA-TM-75590] p0049 N79-12684
EMERGENCIES
An illness-injury severity index
p0050 N79-12688

EMERGENCY BREATHING TECHNIQUES
Evaluation of assisted positive-pressure breathing on +Gz tolerance
p0266 A79-47336

EMERGENCY LIFE SUSTAINING SYSTEMS
Evaluation of the helicopter in aeromedical transfers
p0128 A79-28638

The child in coma
p0094 N79-15890

EMISSION
NT CHEMILUMINESCENCE
NT FLUORESCENCE
NT MICROWAVE EMISSION
NT RADIO EMISSION
EMOTIONAL FACTORS
Mental work and emotions --- Russian book
p0002 A79-10847

EMOTIONS
Effect of psychophysiological self-regulation on emotional stability of aviation cadets in flight and on effectiveness of assimilation of flight training program
p0074 N79-14735

ENCOUNTERS
Human operators in adversary tracking encounters
p0269 A79-48015

ENDOCRINE GLANDS
NT ADRENAL GLAND
NT PARATHYROID GLAND
NT PINEAL GLAND
NT PITUITARY GLAND
NT PROSTATE GLAND
NT THYMUS GLAND
NT THYROID GLAND
ENDOCRINE SECRETIONS
NT ADRENOCORTICOTROPIN (ACTH)
NT ALDOSTERONE
NT HORMONES
NT INSULIN
NT PITUITARY HORMONES
ENDOCRINE SYSTEMS
A review of the consequences of fluid and electrolyte shifts in weightlessness
[IAF PAPER 78-50] p0002 A79-11220
ENDOLYMPH
Influence of high-altitude conditions on the metabolism of nucleic acids and proteins in the thymocytes of the rat
p0069 A79-19425

ENDOSCOPES
Apparatus for endoscopic examination
[NASA-CASE-NPO-14092-1] p0155 N79-19678
ENDOTOXINS
Effects of methylprednisolone sodium succinate on clearance of living E. coli from peripheral blood of dogs
[AD-A062123] p0169 N79-20717
ENDURANCE
Anaerobic threshold alterations caused by endurance training in middle-aged men
p0227 A79-41184

ENERGETIC PARTICLES
NT ELECTRONS
ENERGY ABSORPTION
NT ELECTROMAGNETIC ABSORPTION
NT MOLECULAR ABSORPTION
NT THERMALIZATION (ENERGY ABSORPTION)
NT ULTRAVIOLET ABSORPTION
NT X RAY ABSORPTION
ENERGY CONVERSION
NT BIOMASS ENERGY PRODUCTION
Emergence of biotechnology
[TID-28903] p0211 N79-24626
Development of an electrical energy converter for driving left heart assist blood pumps
[PB-293510/8] p0241 N79-26780
ENERGY DISSIPATION
Energy expenditures of man during long exposure to a periodically changing atmosphere
p0312 N79-33799

ENERGY EXCHANGE
U ENERGY TRANSFER
ENERGY LEVELS
NT INTERMOLECULAR FORCES
ENERGY LOSSES
U ENERGY DISSIPATION
ENERGY REQUIREMENTS
Energy supply and demand in California
p0242 N79-27603

ENERGY SPECTRA
NT NEUTRON SPECTRA
ENERGY TRANSFER
Energy transfer mechanisms in photobiological reactions
[COO-875-180] p0283 N79-31898

ENGINEERING DEVELOPMENT
U PRODUCT DEVELOPMENT
ENGINES
New combined aspirator for sampling developed
p0170 N79-20722

ENHANCEMENT
U AUGMENTATION
ENTOMOLOGY
Capabilities of radar as they might relate to entomological studies
p0148 N79-19598

ENUMERATION
Microbial transformation of nucleosides
[NASA-CR-158696] p0197 N79-25704
ENVIRONMENT EFFECTS
Adaptive control of a robotic manipulator
p0046 A79-15001
Response of the rat erythrocyte to ozone exposure
p0067 A79-18963
The importance of light, postural and social cues in the regulation of the plasma cortisol rhythm in man
p0267 A79-47398
Impact of large scale aquatic biomass systems
[PB-282617/0] p0013 N79-10697
A literature review-problem definition studies on selected toxic chemicals. Volume 5: Occupational health and safety and environmental aspects of zinc chloride
[AD-A056020] p0025 N79-11687
A literature review-problem definition studies on selected toxic chemicals. Volume 8: Environmental aspects of diesel fuel and fog oils SGF number 1 and SGF number 2 and smoke screens generated from them
[AD-A056021] p0025 N79-11688
Intelligence
p0095 N79-15896
Proceedings of the first and second USA-USSR Symposia on the Effects of Pollutants upon aquatic ecosystems. Volume 1: USA Symposium. Volume 2: USSR Symposium
[PB-287219/0] p0112 N79-16546
A real-world assessment of noise exposure
[AD-A061692] p0155 N79-19680
ENVIRONMENT MODELS
Ecosystem models, volume 3. A bibliography with abstracts
[NTIS/PS-78/1146/6] p0054 N79-13678
Ecosystem models, volume 2. A bibliography with abstracts
[NTIS/PS-78/1145/8] p0054 N79-13679
A theoretical and experimental analysis of the outside world perception process
p0091 N79-15625

ENVIRONMENT POLLUTION
NT AIR POLLUTION
NT WATER POLLUTION
Translations on USSR science and technology. Biomedical and behavioral science, no. 54
[JPRS-72650] p0077 N79-14753
Chemicals in environment affect man's physiology
p0077 N79-14754

ENVIRONMENT PROTECTION
A Canadian approach to high altitude protection --- fighter pilot garmentry and high pressure masks
p0045 A79-14435
Aircraft noise and its effect on man: Methods and results of research, consequences for environmental protection --- German book
p0162 A79-29763

ENVIRONMENT SIMULATION
NT ACOUSTIC SIMULATION
NT ALTITUDE SIMULATION
NT SPACE ENVIRONMENT SIMULATION
NT WEIGHTLESSNESS SIMULATION
Porphyrin-like compounds genesis under simulated abiotic conditions
p0099 A79-22078
Applied analysis of computer simulated decompression profiles
p0017 N79-10722

ENVIRONMENTAL CHAMBERS
U TEST CHAMBERS
ENVIRONMENTAL CONTROL
Spacelab environmental control/life support system /ECLS/ for life science experiments
[IAF PAPER 78-59] p0003 A79-11225
The dependence of the CO2 removal efficiency of LiOH on humidity and mesh size --- in spacecraft life support systems
[ASME PAPER 78-ENAS-5] p0006 A79-12554
Animal life support transporters for Shuttle/Spacelab
[ASME PAPER 78-ENAS-10] p0006 A79-12559
The Spacelab flight unit environmental control/life support system
[ASME PAPER 78-ENAS-14] p0007 A79-12563
Physiological requirements for design of environmental control systems - Control of heat stress in high-performance aircraft
[ASME PAPER 78-ENAS-22] p0007 A79-12571
Challenges to life support system's future
[ASME PAPER 78-ENAS-28] p0008 A79-12577
Extended duration orbiter life support system options
[ASME PAPER 78-ENAS-31] p0008 A79-12580
Instrumentation for controlling and monitoring environmental control and life support systems
[ASME PAPER 78-ENAS-40] p0009 A79-12587
Extended duration Orbiter life support definition
[ASME PAPER 78-ENAS-42] p0009 A79-12588
Test evaluation of space station ECLSS maintenance concepts --- Environmental Control and Life Support System
[ASME PAPER 78-ENAS-43] p0009 A79-12589
Generalized environmental control and life support system computer program (G189A), phase 3
[NASA-CR-151836] p0019 N79-10741
Concept definition for an extended duration orbiter ECLSS
[NASA-CR-160164] p0197 N79-23666
ENVIRONMENTAL MONITORING
Environment monitoring in the USSR and hygienic practice --- anthropogenic effects
p0121 N79-17528

ENVIRONMENTAL QUALITY
NT WATER QUALITY
ENVIRONMENTAL SURVEYS
Zinc
[PB-285130/1] p0057 N79-13704
Radiofrequency radiation levels and population exposure in urban areas of the eastern United States
[PB-292855/4] p0241 N79-26779
ENVIRONMENTAL TEMPERATURE
U AMBIENT TEMPERATURE
ENVIRONMENTAL TESTS
NT COLD WEATHER TESTS
NT HIGH TEMPERATURE TESTS
Environmental test and evaluation of a molecular sieve on-board oxygen generation system
[AD-A061531] p0125 N79-17559
ENVIRONMENTS
NT AEROSPACE ENVIRONMENTS
NT EARTH ENVIRONMENT
NT EXTRATERRESTRIAL ENVIRONMENTS
NT HIGH ALTITUDE ENVIRONMENTS
NT HIGH GRAVITY ENVIRONMENTS
NT HIGH TEMPERATURE ENVIRONMENTS
NT JUPITER ATMOSPHERE
NT LOW TEMPERATURE ENVIRONMENTS
NT MARINE ENVIRONMENTS
NT MARS ENVIRONMENT
NT PLANETARY ATMOSPHERES
NT PLANETARY ENVIRONMENTS
NT ROTATING ENVIRONMENTS
NT SPACECRAFT ENVIRONMENTS
NT THERMAL ENVIRONMENTS
The human micro-environment
p0248 N79-27851

ENZYME ACTIVITY
NT FERMENTATION
Coupling of aspartate and serine transport to the transmembrane electrochemical gradient for sodium ions in Halobacterium halobium - Translocation stoichiometries and apparent cooperativity
p0002 A79-10425
In vivo response of ornithine decarboxylase activity to growth hormone as demonstrated by oxidation of L-ornithine-1-/C-14/ in hypophysectomized rats
p0005 A79-12400
Identification of a tripeptidyl aminopeptidase in the anterior pituitary gland - Effect on the chemical and biological properties of rat and

bovine growth hormones p0069 A79-19449

The growth of single crystals from proteins in gravity-free space [AIAA PAPER 79-0311] p0069 A79-19665

Paradoxical reaction of some intracellular antioxidative defense mechanisms during adaptation of the organism to hypoxia p0165 A79-30696

Evolution of enzyme function - The coupled oscillator theory p0205 A79-37970

Relationship between thermogenic drinking and plasma renin activity in the rat p0235 A79-43211

Effect of adaptation to high-altitude hypoxia on cardiac adrenoreactivity and the state of the adenylcyclase and phosphodiesterase systems in the myocardium p0255 A79-46500

Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects p0297 A79-52023

Protein fractions and enzymatic activity thereof in the rat myocardium after the flight on Kosmos-690 biosatellite p0014 N79-10700

Effect of oxygen poisoning on the spectrum of lactate dehydrogenase isozymes of rabbit blood plasma p0017 N79-10721

Responses of crown gall tissue to the space environment: Glutamine synthetase activity --- cosmos 782 p0020 N79-11655

Responses to crown gall tissue to the space environment: Isozyme patterns --- cosmos 782 p0020 N79-11656

COSMOS 936, experiment K204: The effects of space flight on some liver enzymes concerned with carbohydrate and lipid metabolism in the rat p0023 N79-11675

Investigation of the activity of some enzymatic systems in response to a super-high frequency electromagnetic field p0074 N79-14737

Effects of intermittent magnetic field on activity of carbohydrate metabolism enzymes and oxygen uptake in testicular tissue p0075 N79-14738

Effect of 49-day space flight on parameters of immunological reactivity and protein composition of blood in the crew of Salyut-5 p0107 N79-16515

Changes in metabolism of soleus muscle tissue in rats following the flight aboard the Kosmos-690 biosatellite p0108 N79-16518

Comparative study of acetylcholinesterase inactivation in warm-blooded animals and insects with substituted vinyl phosphates p0121 N79-17527

Tissular metabolism in mixed type fibers of rat skeletal muscles after flight aboard Cosmos-690 biosatellite p0244 N79-27823

ENZYMES
NT CATALASE
NT CHOLINESTERASE
NT COENZYMES

Phosphorylase a in human skeletal muscle during exercise and electrical stimulation p0067 A79-18962

Beta-galactosidase and selective neutrality --- amino acid composition of proteins p0132 A79-26169

Evolution of enzyme function - The coupled oscillator theory p0205 A79-37970

Calcium regulation in smooth muscle: Isolation and characterization of the myosin light chain kinase p0024 N79-11680

Information on the comparative physiology of digestive enzymes [BLL-RTS-11203] p0142 N79-18572

Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite p0244 N79-27822

ENZYMOLOGY

Photochemistry and enzymology of photosynthesis [COO-3326-70] p0239 N79-26763

EPIDEMIOLOGY

A new case of autochthonous malaria in the Paris region associated with frequentation of airports - Recommendations of prophylactic procedures p0104 A79-23958

Feasibility of an epidemiological study of workers occupationally exposed to high voltage electric fields in the electric power industry [EPRI-EA-1020] p0316 N79-33832

EPILEPSY

Portable device for detection of petit mal epilepsy p0254 A79-46226

EPINEPHRINE
NT NOREPINEPHRINE
EPOCHS
U TIME MEASUREMENT
EPOXY COMPOUNDS
NT ETHYLENE OXIDE
NT HYOSCINE
EQUATIONS OF MOTION
NT NAVIER-STOKES EQUATION

Selecting the program of motions for a biped walking machine p0166 A79-31490

Multibody dynamics including translation between the bodies, with application to head-neck systems [AD-A062114] p0174 N79-20747

EQUIVALENCE

Evidence for the equivalent-background hypothesis in cones --- for dark adaptation thresholds p0232 A79-42233

ERECTION
U CONSTRUCTION
ERGOMETERS

Anaerobic threshold alterations caused by endurance training in middle-aged men p0227 A79-41184

Frequency and amplitude analysis of the EMG during exercise on the bicycle ergometer p0297 A79-52022

Cardiovascular, metabolic, and respiratory responses of sedentary females to equal metabolic workloads on the bicycle ergometer and treadmill p0024 N79-11681

Standardized examination methods in ergometry p0029 N79-11710

Effect of impermeable clothing and respirator on work performance. Part 1: Laboratory studies [SAND-77-2132] p0034 N79-11748

Ergometric tests in expert medical certification of flight personnel p0109 N79-16527

Possibility of improving assessment of cardio-pulmonary function by submaximal exercise on a bicycle ergometer [BLL-RTS-11657] p0279 N79-30918

ERGONOMICS
U HUMAN FACTORS ENGINEERING
ERROR ANALYSIS

Subjective data in human reliability estimates p0046 A79-15398

A numerical method of film analysis with differentiation --- curve fitting with harmonic analysis p0061 A79-17585

Perception of graphic displays of space p0062 A79-18205

Predictive validity of flight simulators as a function of simulator motion p0181 A79-32627

Error rate information in attention allocation pilot models p0115 N79-17483

Perceived quantization error. Effect of quantization function, reconstruction function and number of levels [FOA-C-56015-H9] p0124 N79-17556

ERROR SIGNALS

The human as a detector of changes in variance and bandwidth p0117 N79-17496

ERRORS
NT PILOT ERROR

NT POSITION ERRORS
NT VELOCITY ERRORS
ERYTHROCYTES
Studies on the erythron and the ferrokinetic responses in beagles adapted to hypergravity
p0010 A79-12869
Response of the rat erythrocyte to ozone exposure
p0067 A79-18963
Aggregation of red cells and blood viscosity as models of materials experimentation in the space environment
[AIAA PAPER 79-0310] p0069 A79-19664
RBC-/Cr-51/ half-life and albumin turnover in growing Beagle dogs during chronic radial acceleration
p0135 A79-27553
Erythropoietic effects of space flight
p0231 A79-42193
Experiment K-002: Results of histological examination of inguinal lymph nodes, supplementary report --- COSMOS 782 satellite
p0021 N79-11662
Alterations in erythrocyte survival parameters in rats after 19.5 days aboard COSMOS 782
p0021 N79-11663
Effect of weightlessness and centrifugation (LXG) on erythrocyte survival in rats subjected to prolonged space flight
p0023 N79-11674
The effects of ozone on human erythrocytes and phospholipid vesicles
p0049 N79-12687
Mechanism of effects of microwaves on erythrocyte permeability for potassium and sodium ions
p0075 N79-14743
Assessment of factors possibly contributing to the susceptibility of sickle trait erythrocytes to mild hypoxia. Volume 1: Design considerations and research protocol
[AD-A059412] p0084 N79-15577
Use of a mathematical model of erythropoiesis for evaluation of effects of space flight factors
p0192 N79-23630
Sterols bound with blood plasma proteins and erythrocyte membranes during hypokinesia
p0193 N79-23636
Increased hemoglobin and content of rat blood serum as a result of decreased resistance of erythrocyte membranes to hyperbaric oxygenation, and the protective effect of urea
p0193 N79-23637
Validation of a model for investigating red cell mass changes during weightlessness
[NASA-CR-160188] p0211 N79-24634
User's instructions for the erythropoiesis regulatory model
[NASA-CR-160193] p0216 N79-25711
Use of a computer model in the understanding of erythropoietic control mechanisms
[NASA-CR-160201] p0217 N79-25718
Development and application of resistive pulse spectroscopy: Studies on the size, form and deformability of red blood cells
[LBL-8640] p0280 N79-30924
Obtaining growth hormone from calf blood
[NASA-TM-75326] p0283 N79-31895
Effect of impact accelerations on chemical resistance of rat erythrocytes
p0313 N79-33811
Studies of metabolism, function and mechanism of destruction of red cells
[AD-A070240] p0315 N79-33828
ESA
U EUROPEAN SPACE AGENCY
ESCAPE SYSTEMS
High 'Q' escape protection --- pilot restraint during high speed ejection
p0044 A79-14428
Cardiac reactions in tests on the wearing of the Yankee Escape System harness during minus G accelerations in the z direction
p0103 A79-23953
Spinal injuries in the F/FB-111 crew escape system
p0274 A79-49996
Man, dummy, test vehicle: A comparison of test results for escape systems with the 3 different test methods
p0287 N79-31924
ESCHERICHIA
Beta-galactosidase and selective neutrality --- amino acid composition of proteins
p0132 A79-26169
Effects of methylprednisolone sodium succinate on clearance of living E. coli from peripheral blood of dogs
[AD-A062123] p0169 N79-20717
ESRO
U EUROPEAN SPACE AGENCY
ESTERS
NT LACTATES
NT ORGANIC NITRATES
Preparation of some prostaglandin E sub 1 omega-homo-prostaglandin E sub 1 esters and their inhibiting properties on rat blood platelet aggregation
p0239 N79-26765
ESTIMATES
Estimating percentiles of nonnormal anthropometric populations - Final report
p0065 A79-18226
ESTIMATING
Time estimation as a technique to measure workload --- of aircraft pilot in flight simulation
p0062 A79-18203
Application of pseudo random binary sequence input to identification of respiratory control dynamics
p0268 A79-48011
Adaptive estimation schemes for minimizing uncertainty in manual control tasks
p0269 A79-48013
Estimating percentiles of nonnormal anthropometric populations
[AD-A061151] p0122 N79-17535
Magnitude estimation as a hearing aid selection procedure
p0246 N79-27838
ETHYL ALCOHOL
Effect of alcohol and marijuana on eye movements
p0101 A79-23469
Photochemical synthesis of amino acids from aqueous solutions of ethyl alcohol, ammonia/nitrogen under varied conditions
p0105 A79-24520
Current role of alcohol as a factor in civil aircraft accidents
p0136 A79-27561
Delayed effects of alcohol ingestion on + Gz tolerance
p0272 A79-49730
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
p0273 A79-49984
Evaluation of oxidizability of air in closed areas
p0313 N79-33808
ETHYLENE
A study of the mechanism of thigmomorphogenesis in plants, with special reference to the role of ethylene and its significance to research with plants in space
[NASA-CR-158506] p0190 N79-23625
ETHYLENE OXIDE
A system for sterilizing objects --- such as water systems on the space shuttle using ethylene oxide
[NASA-CASE-KSC-11085-1] p0318 N79-33848
EUCLIDEAN GEOMETRY
NT ANALYTIC GEOMETRY
NT PROLATE SPHEROIDS
EUROPEAN SPACE AGENCY
The European life sciences experiments onboard the first Spacelab mission
[ASME PAPER 78-ENAS-24] p0007 A79-12573
EUROPEAN SPACE RESEARCH ORGANIZATION
U EUROPEAN SPACE AGENCY
EUTROPHICATION
Algal growth under multiple nutrient limiting conditions
p0013 N79-10692
Eutrophication. Volume 2: A bibliography with abstracts
[NTIS/PS-78/0771/2] p0013 N79-10695
Eutrophication. Volume 3: A bibliography with abstracts
[NTIS/PS-78/0772/0] p0013 N79-10696
Distribution of phytoplankton in North Carolina lakes
[PB-286387/6] p0084 N79-15573

EVACUATING (TRANSPORTATION)
Evaluation of the helicopter in aeromedical transfers p0128 A79-24638

EVALUATION
NT TRAINING EVALUATION
Quantifying operator preference during human factors test and evaluation --- in helicopter design p0062 A79-18202
System operability - Concept and measurement in test and evaluation --- man system compatibility indices in F-18 aircraft example p0062 A79-18204
Test and evaluation process for life support systems p0184 A79-33643
Shalit Perceptual Organisation and Reduction Questionnaire (SPORQ): The instrument, design, administration and scoring [FOA-C-55021-H6] p0249 N79-27859
A method for semi-automatic analysis of eye movements [DLR-MITT-79-02] p0283 N79-30946

EVAPORATION RATE
Human skin wettedness and evaporative efficiency of sweating p0162 A79-29726

EVENTS
NT CONSECUTIVE EVENTS

EVOKED RESPONSE (PSYCHOPHYSIOLOGY)
Bilateral and interhemispheric asymmetry of acoustic evoked potentials during monoaural acoustic stimulation p0159 A79-28735
Objective determination of human visual acuity from the visual evoked potential p0228 A79-41423
Light adaptation in a normal and a rod monochromat - Psychophysical and VEP increment threshold comparisons p0232 A79-42234
On the latency of human visually evoked response to sinusoidal gratings p0232 A79-42236
Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time p0297 A79-52025

EVOLUTION (DEVELOPMENT)
NT ABIOGENESIS
NT BIOLOGICAL EVOLUTION
NT CHEMICAL EVOLUTION
NT GALACTIC EVOLUTION
NT PLANETARY EVOLUTION
Evolutionary relationship based on a biochemical study of energy-acquiring system between Nitrosomonas europaea and Thiobacillus novellus p0205 A79-37966
Control by episome on salt-resistance in bacteria p0205 A79-37969
Role of gravity in early development [NASA-TM-75590] p0049 N79-12684
Meteorological limits on the growth and development of screwworm populations [NASA-CR-151873] p0107 N79-16512
Prebiotic coordination chemistry: The potential role of transition-metal complexes in the chemical evolution [NASA-TM-75381] p0169 N79-20715
Between incident and accident p0292 N79-31953

EVOLUTION (LIBERATION)
NT GAS EVOLUTION

EXAMINATION
NT EYE EXAMINATIONS
Shalit Perceptual Organisation and Reduction Questionnaire (SPORQ): The instrument, design, administration and scoring [FOA-C-55021-H6] p0249 N79-27859

EXCHANGING
NT GAS EXCHANGE

EXECUTIVE AIRCRAFT
U GENERAL AVIATION AIRCRAFT

EXERCISE (PHYSIOLOGY)
U PHYSICAL EXERCISE

EXERTION
U PHYSICAL WORK

EXHAUST FLOW SIMULATION
NT FLIGHT SIMULATION

EXHAUST GASES
A literature review-problem definition studies on selected toxic chemicals. Volume 1: Occupational health and safety aspects of diesel fuel and white smoke generated from it [AD-A056018] p0025 N79-11686
Human health damages from mobile source air pollution: A delphi method, volume 1 [PB-288319/7] p0145 N79-18585
In-flight toxicology of fixed and rotary wing aircraft crew stations p0149 N79-19619
Health effects associated with diesel exhaust emissions, literature review and evaluation [PB-289817/9] p0171 N79-20727

EXHAUST JETS
U EXHAUST GASES

EXHAUSTION
Heat- and exercise-induced hyperthermia - Effects on high-energy phosphates p0266 A79-47332

EXOBIOLOGY
Life sciences and space research XVI; Proceedings of the Open Meetings of the Working Group on Space Biology, Tel Aviv, Israel, June 7-18, 1977 p0005 A79-12508
Life support systems for biological specimens in the Shuttle/Spacelab [ASME PAPER 78-ENAS-38] p0009 A79-12585
Spacelab and beyond - Bioscience problems in the use of space [DGLR PAPER 78-129] p0041 A79-14081
Biological implications of the Viking mission to Mars p0045 A79-14595
The Viking biological investigations - Review and status p0100 A79-22083
The physical appearance of intelligent aliens p0105 A79-24519
Space biology and medicine p0132 A79-26344
The response of selected terrestrial organisms to the Martian environment - A modeling study p0136 A79-27928
The importance of the physical laws on the origin and evolution of life p0207 A79-37983
Life sciences and space research XVII; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 10, 1978, and Symposium on Gravitational Physiology, Innsbruck, Austria, June 2, 3, 1978 p0228 A79-41701
Biological experiments carried out aboard the biological satellite Cosmos-936 p0230 A79-41717
Influence of orbital flight conditions on formation of genitals in Muscari racemosum and Anethum graveolens p0230 A79-41718
Space biology and aerospace medicine, vol. 12, no. 5, 1978 [JPRS-72115] p0013 N79-10698
US experiments flown on the Soviet Satellite COSMOS 782 [NASA-TM-78525] p0020 N79-11651
US experiments flown on COSMOS 782 p0020 N79-11652
Absence of gastric ulceration in rats after flight on the COSMOS 782 p0021 N79-11660
Experiment K-002: Results of histological examination of inguinal lymph nodes, supplementary report --- COSMOS 782 satellite p0021 N79-11662
Effects of space flight on plasma and glandular concentrations of pituitary hormones --- COSMOS 782 satellite p0021 N79-11664
Space biology and aerospace medicine, vol. 12, no. 6 [JPRS-72487] p0072 N79-14716
Exobiology and the origin of life --- organic compounds in planetary atmospheres and interstellar matter [NASA-CR-157988] p0081 N79-14782
Publications of the planetary biology program for 1977: A special bibliography [NASA-TM-80338] p0179 N79-21777

Space biology and aerospace medicine, no. 2, 1979 [JPRS-73377] p0190 N79-23627
Space biology and aerospace medicine, v. 13, no. 3, 1979 [JPRS-73784] p0243 N79-27817
BIOSPEX: Biological space experiments, a compendium of life sciences experiments carried on US spacecraft [NASA-TM-58217] p0251 N79-29784
Space Biology and Aerospace Medicine, no. 4, 1979 [JPRS-74330] p0310 N79-33789

EXPANDABLE STRUCTURES
NT GAS BAGS
NT INFLATABLE STRUCTURES

EXPECTATION
The effect of expectations on slow oculomotor control. I - Periodic target steps. II - Single target displacements p0225 A79-40185

EXPERIMENTAL DESIGN
Experimental designs for investigating complex human operator/machine systems p0040 A79-13225
The European life sciences experiments onboard the first Spacelab mission p0100 A79-22254
Importance of temperature control for HEFLEX, a biological experiment for Spacelab 1 --- plant gravitational physiology study p0230 A79-41716
Design, fabrication and utility of a flight oriented performance test p0271 A79-49728
Prospective Medicine Opportunities in Aerospace Medicine --- conferences [AGARD-CP-231] p0026 N79-11692
Early diagnosis for decompression sickness. Changes in the blood found shortly after decompression. Part 2: Experiments on rats [NBL-1978-7] p0120 N79-17524
A construct validation of adaptive achievement testing [AD-A063148] p0173 N79-20742
Knee flail design limits: Background, experimentation and design criteria [AD-A062384] p0220 N79-25746
Some of the problems involved in planning biological experiments p0312 N79-33805

EXPERIMENTATION
The Meduza experiment: An orbital complex ten weeks in flight [NASA-TM-75394] p0169 N79-20714

EXPIRATION
Modeling the effect of axial bronchial tension on expiratory flow p0067 A79-18957
Mechanics of breathing during graded exercise measured with the bodyplethysmograph p0029 N79-11709
Density dependence of maximum expiratory flow p0050 N79-12691

EXPIRED AIR
Metabolic rate meter and method [NASA-CASE-MSC-12239-1] p0175 N79-21750

EXPLORATION
NT SPACE EXPLORATION

EXPLOSIVE DECOMPRESSION
Scanning and transmission electron microscopy of the blood-bubble interface in decompressed rats p0266 A79-47333

EXPLOSIVE DEVICES
Safety evaluation tests of personal protective equipment for ordnance operations [AD-A058987] p0053 N79-12712
Investigation of techniques to reduce electrostatic discharge susceptibility of EED's containing plastic plugs [AD-A059982] p0093 N79-15638

EXPOSURE
Assessment of human exposures to atmospheric benzene [PB-284203/7] p0051 N79-12701
Developmental and hematological responses to low level continuous exposure of nitrogen dioxide in mice p0147 N79-19026
Electrophoresis pattern of serum from mice exposed to different concentrations of sulfur dioxide p0147 N79-19027
Radiation protection activities, 1977 [PB-290215/3] p0176 N79-21759
Radiofrequency radiation levels and population exposure in urban areas of the eastern United States [PB-292855/4] p0241 N79-26779
Direct exposure of monolayers of mammalian cells to airborne pollutants in a unique culture system [AD-A069822] p0283 N79-31897
Effects on populations of exposure to low levels of ionizing radiation: Implications for nuclear energy and medical radiation [LBL-9084] p0316 N79-33833

EXTENSIONS
Concept definition for an extended duration orbiter ECLSS [NASA-CR-160164] p0197 N79-23666

EXTRAGALACTIC LIGHT
U EXTRATERRESTRIAL RADIATION
U LIGHT (VISIBLE RADIATION)

EXTRATERRESTRIAL ENVIRONMENTS
NT JUPITER ATMOSPHERE
NT MARS ENVIRONMENT
NT PLANETARY ATMOSPHERES
NT PLANETARY ENVIRONMENTS
Development opportunities in the space environment p0095 N79-15897

EXTRATERRESTRIAL INTELLIGENCE
The physical appearance of intelligent aliens p0105 A79-24519
Extraterrestrial intelligence research [GPO-35-355] p0094 N79-15645

EXTRATERRESTRIAL LIFE
On the reality of extraterrestrial biogenesis [IAF PAPER 78-A-51] p0003 A79-11344
Public health considerations associated with a Mars surface sample return mission p0005 A79-12510
Biological implications of the Viking mission to Mars p0045 A79-14595
Lifecloud: The origin of life in the universe --- Book p0061 A79-17123
The Viking biological investigations - Review and status p0100 A79-22083
Chemical fingerprints of life in terrestrial soils and their possible use for the detection of life on Mars and other planets p0136 A79-27929
A review of recent concepts of the problem of the origin of life p0221 A79-36041
Solar-driven chemical energy source for a Martian biota p0254 A79-46464
Some comments on interpretations of Viking biological experiments p0255 A79-46465
Publications of the planetary biology program for 1978: A special bibliography [NASA-TM-80745] p0319 N79-33854

EXTRATERRESTRIAL RADIATION
NT GALACTIC RADIATION
NT SOLAR RADIATION
NT SUNLIGHT
Space radiation dosimetry onboard COSMOS 936: US portion of experiment K-206 p0023 N79-11677

EXTRAVEHICULAR ACTIVITY
Manual alignment of structural components in space [AIAA PAPER 79-0535] p0129 A79-25855
Construction in space - Toward a fresh definition of the man/machine relation p0187 A79-34985
The biomedical implications of extended duration zero-g extravehicular activities [IAF PAPER 79-ST-06] p0303 A79-53447
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/ p0303 A79-53486
Manned maneuvering unit: User's guide [NASA-CR-151864] p0113 N79-16553
Simulated EVA operation of a remote connector assembly test report [NASA-CR-161167] p0156 N79-19687
Probability of caisson disease while wearing a space suit when exiting from a spacecraft with

an atmosphere close to that of earth
p0244 N79-27826
EXTRAVEHICULAR MOBILITY UNITS
NT ASTRONAUT LOCOMOTION
NT ASTRONAUT MANEUVERING EQUIPMENT
EXTREMA
U RANGE (EXTREMES)
EYE (ANATOMY)
NT CORNEA
NT FOVEA
NT NYSTAGMUS
NT OCULOMOTOR NERVES
NT PUPILS
NT RETINA
Light flashes in space --- cosmic ray interaction with astronaut visual system
p0100 A79-22261
Contributions of the retina and of the eye optical system to the modulation lowering of the aerial image
p0100 A79-22771
Hyper-resolution in human perception of movement in visual displays
p0132 A79-26240
Extrapolation of pulsed light data in scanned displays --- laser radiation eye exposure limits
p0138 A79-28170
Low level laser light effects --- on vision
p0138 A79-28171
Survey on eye comfort in aircraft. I - Flight attendants
p0165 A79-30665
Deductive derivation of a mathematical model for spectral sensitivity of the human organ of sight. I, II
p0166 A79-31178
A bioengineering simulator of the human visual apparatus
p0166 A79-31180
Better definition of eye to aortic valve distance in high acceleration cockpit /HAC/ seating geometries
p0183 A79-33632
Nonlinear optical susceptibility of the human eye to IR radiation in the 800 to 1355 micron range
p0188 A79-35363
The visual perception of motion in depth
p0210 A79-39087
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
p0301 A79-53163
Changes in critical duration during dark-adaptation
p0304 A79-54252
Cosmic ray effects on the eyes of rats flown on COSMOS 782
p0022 N79-11669
Cosmic ray effects on the eyes of stationary and centrifuged rats flown on COSMOS 936, experiment K-207
p0024 N79-11678
Contrast sensitivity of the human eye to various display phosphor types
[AD-A058383] p0056 N79-13695
The physiological significance of light for human beings
[RAE-LIB-TRANS-1976] p0077 N79-14757
The want and feasibility to temper sunlight for the eyes
[IZF-1977-21] p0122 N79-17538
Official method for determining ocular irritation
[BLL-RTS-11221] p0142 N79-18571
Contrast sensitivity of the human visual system at one luminance level while adapted to a stimulus at another luminance level
[AD-A064370] p0190 N79-22759
Effects of vestibular factors on color-discriminating function of the human eyes following color preadaptation
p0192 N79-23632
Intraocular pressure reduction and regulation system
[NASA-TM-79187] p0260 N79-28881
The limited range of the human eye for optical aircraft acquisition
p0291 N79-31948
Contribution to the theory of photopic vision: Retinal phenomena
[NASA-TM-75507] p0315 N79-33823
Measurements in the laser irradiated eye
[AD-A069842] p0315 N79-33825
EYE DISEASES
NT GLAUCOMA
NT HYPEROPIA
EYE DOMINANCE
The perceived direction of the binocular image
p0104 A79-24069
A further investigation of visual dominance
p0186 A79-33949
EYE EXAMINATIONS
NT ELECTRONYSTAGMOGRAPHY
Visual acuity of the aging hyperopic eye in the intermediate range
p0037 A79-13198
Correlation of binocular vision test results with synaptophore evaluation
p0201 A79-37136
The use of synchronous demodulation for the measurement of eye movements by means of an ocular magnetic search coil
p0210 A79-39974
Laser Doppler technique for measurement of eye movement
p0233 A79-42450
An analysis of the saccadic system by means of double step stimuli
p0270 A79-49480
The peripheral critical flicker frequency
p0271 A79-49482
Advanced transport operation effects on pilot scan patterns
p0295 A79-51098
Lightweight helmet-mounted eye movement measurement system
p0303 A79-53516
The retinal resolving power measured by laser interference fringes
p0304 A79-54091
Mechanisms of retinal damage from chronic laser radiation: Thresholds and mechanisms
[AD-A058449] p0056 N79-13698
EYE MOVEMENTS
NT ELECTRONYSTAGMOGRAPHY
NT NYSTAGMUS
NT SACCADIC EYE MOVEMENTS
Lateral orientation and cerebral activation - Considerations for information display
p0037 A79-13194
Selection and techniques for analysis of indices of visual data reception. II --- aircraft pilot eye movements
p0047 A79-15494
Effects of information processing requirements on reaction time of the eye
p0064 A79-18219
Visual target acquisition and ocular scanning performance
p0069 A79-19000
Eye movements and symmetry - Foundations for a quantitative analysis of eye movements as they depend on the structure of the perception field --- German thesis
p0098 A79-20756
Effect of alcohol and marijuana on eye movements
p0101 A79-23469
Linearization and sensitivity analysis of model for human eye movements
p0102 A79-23783
Choice and techniques of analysis of indices for the perception of visual information. III --- by pilots
p0103 A79-23954
Contrast effects on smooth-pursuit eye movement velocity
p0104 A79-24068
Velocity precision in smooth pursuit eye movements
p0129 A79-25399
Visual-vestibular interactions. I - Influence of peripheral vision on suppression of the vestibulo-ocular reflex and visual acuity
p0135 A79-27552
Smooth pursuit eye movements - Is perceived motion necessary
p0139 A79-28375
Information transmission during eye movements
p0209 A79-38360
Methodological considerations of visual workloads of helicopter pilots
p0209 A79-38363

The use of synchronous demodulation for the measurement of eye movements by means of an ocular magnetic search coil
p0210 A79-39974

The role of perceived motion in smooth pursuit eye movements
p0225 A79-40184

The effect of expectations on slow oculomotor control. I - Periodic target steps. II - Single target displacements
p0225 A79-40185

The influence of rapid prism adaptation upon fixation disparity
p0231 A79-42230

Laser Doppler technique for measurement of eye movement
p0233 A79-42450

Eye torsion and visual tilt are mediated by different binocular processes
p0256 A79-46651

Spatial summation in human vision - Simple reaction time measurements
p0265 A79-47115

Eye movements and visual perception --- Russian book
p0267 A79-47429

Forms of oculomotor activity under conditions of positive visual feedback
p0276 A79-50657

Lightweight helmet-mounted eye movement measurement system
p0303 A79-53516

Optokinetic reactions in man elicited by localized retinal motion stimuli
p0304 A79-54251

Eye torsion in response to a tilted visual stimulus
p0305 A79-54254

Modeling of visual-vestibular interaction and the fast components of nystagmus
p0050 N79-12692

Effects of information processing requirements on reaction time of the eye
[AD-A060099] p0080 N79-14778

Lightweight helmet-mounted eye movement measurement system
p0090 N79-15619

A relationship between eye movement patterns and performance in a precognitive tracking task
p0116 N79-17490

Dynamic measurement of human cyclofusional eye movements
p0142 N79-18575

A method for semi-automatic analysis of eye movements
[DLR-MITT-79-02] p0283 N79-30946

EYE PROTECTION

Laser eye protection for flight personnel
p0135 A79-27555

Test and evaluation in the acquisition process - A look at the PLZT goggle
p0184 A79-33642

No harmful effects through infrared light emitting diodes
p0184 A79-33650

Health and safety hazards associated with solar concentration systems
p0200 A79-36628

Thermal effects during the exposure of ocular fundus tissues to laser radiation
p0234 A79-43057

Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798

Suprathreshold retinal damage due to single 6 picosecond 1060 nm laser light pulses
p0266 A79-47330

Responses of retinal and visual pathway potentials of the guinea pig to nitrogen and helium at high pressure
p0266 A79-47331

Laser eye protection for flight personnel, volume 1
[AD-A057417] p0034 N79-11747

The want and feasibility to temper sunlight for the eyes
[IZF-1977-21] p0122 N79-17538

Sunglasses for drivers?
[IZF-1977-24] p0122 N79-17539

EYEPIECES

Providing an eye separator on a color cathode tube --- enhancing visual acuity
p0152 N79-19639

F

F-4 AIRCRAFT

F-4J/N instructional system development: Phase 1
[AD-A061098] p0156 N79-19684

Air-to-air combat skills: Contribution of platform motion to inertial training
[AD-A062738] p0173 N79-20743

Correlation of mechanism of extremity injury and aerodynamic factors in ejections from F-4 aircraft
p0284 N79-31904

F-110 AIRCRAFT

U F-4 AIRCRAFT

F-15 AIRCRAFT

Biodynamic effects of canopy loss in the TF-15 aircraft
p0163 A79-30651

F-16 AIRCRAFT

Life cycle costing of simulated vs actual equipment for intermediate maintenance training --- for F-16 avionics
p0064 A79-18217

Application of learning curves of aircraft produced at more than one location to the F-16 lightweight fighter
[AD-A065881] p0196 N79-23664

Application of biodynamic models to the analysis of F-16 canopy birdstrike
p0285 N79-31911

Application of a structured decision process for proper inclusion of human resources in the design of a power unit support stand
[AD-A069978] p0309 N79-32840

F-18 AIRCRAFT

The application of computer aided evaluative techniques to system test and evaluation --- of fighter aircraft pilot performance
p0036 A79-13190

System operability - Concept and measurement in test and evaluation --- man system compatibility indices in F-18 aircraft example
p0062 A79-18204

F-104 AIRCRAFT

Oculogravic illusion in response to straight-ahead acceleration of a CF-104 aircraft
p0164 A79-30660

F-111 AIRCRAFT

Spinal injuries in the F/FB-111 crew escape system
p0274 A79-49996

FABRICATION

NT SPACE MANUFACTURING

FABRICS

Development of integrated tubing fabric for liquid conditioning undergarments
p0044 A79-14415

Bioassay of thermal protection afforded by candidate flight suit fabrics
p0298 A79-52280

Evaluation of four thermally protective fabrics using the USAARL bioassay method
[AD-A067351] p0223 N79-25762

FABRY-PEROT LASERS

U LASERS

FACE (ANATOMY)

Development of a specialized head/face protective device for test parachuting operations
p0045 A79-14437

Field evaluation of experimental crash-crew firefighter's facepiece
[AD-A066544] p0223 N79-25765

FACTOR ANALYSIS

Vigilance and electroencephalogram --- human performance in compensatory target tracking
p0100 A79-22975

Analysis of electroencephalogram during psychomotor performance
p0209 A79-38820

Time-sharing ability in complex performance: An expanded replication
[FAA-AM-78-33] p0145 N79-18591

A study of some of the factors influencing the left ventricular diastolic pressure-volume relationship and myocardial metabolism
p0154 N79-19674

FAILURE
NT SYSTEM FAILURES
The internal model: A study of the relative contribution of proprioception and visual information to failure detection in dynamic systems --- sensitivity of operators versus monitors to failures
p0087 N79-15596

FAILURE ANALYSIS
Development and utilization of internal models in dynamic systems: A comparison of monitors and operators as failure detectors
[AD-A069730] p0282 N79-30942

FAIRCHILD MILITARY AIRCRAFT
U MILITARY AIRCRAFT

FAR INFRARED RADIATION
Millimeter wave and far infrared absorption in biological systems
p0082 N79-15554

FAST FOURIER TRANSFORMATIONS
Computerized clinical electroencephalography in perspective
p0226 A79-40648

FAST NEUTRONS
Atmospheric neutrons
[NASA-CR-3126] p0211 N79-24631

FATIGUE (BIOLOGY)
NT FLIGHT FATIGUE
NT MUSCULAR FATIGUE
The assessment of rotary wing aviator precision performance during extended helicopter flights
p0040 A79-13221
How does the saccadic eye movement controller adapt for pathological states
p0046 A79-14961
Cardiorespiratory assessment of decongestant-antihistamine effects on altitude, +Gz, and fatigue tolerances
p0127 A79-24628
Saccadic velocity characteristics - Intrinsic variability and fatigue
p0165 A79-30663
Characteristics of somatic and autonomic regulation during work of small muscle groups as a function of loading regime
p0276 A79-50653
Honest 1: Personality, heart rate, urinary catecholamine, and subjective fatigue measures related to night nap-of-the-earth flying
[AD-A054888] p0055 N79-13692
Minuteman missile crew fatigue and 24-hour alerts
[AD-A056561] p0056 N79-13696
Comparative experiments on performance and fatigue effects on pilots using tracking tests and physiological measurement parameters
[RAE-LIB-TRANS-1971] p0080 N79-14774
Effects of fatigue on human behavior and performance. A bibliography with abstracts
[NTIS/PS-79/0071/5] p0177 N79-21762
Stress and fatigue in the driving environment --- physiological and psychological effects of heat and noise experienced inside automobiles
p0211 N79-24629

FATIGUE TESTS
Physical testing of polymers use in circulatory assist devices
[PB-286129/2] p0084 N79-15579
Evaluation of the Sierra Engineering Company lightweight helmet
[AD-A061799] p0157 N79-19689

FATS
Influences of dietary fats on coronary flow rate and left ventricular work of the isolated rat heart
p0239 N79-26766
Effects of dietary fats on the coronary flow rate and the left ventricular function of the isolated rat heart
p0239 N79-26767

FATTY ACIDS
NT ACETIC ACID
Effects of dietary fats on atherosclerosis and thrombosis
p0240 N79-26776

FEASIBILITY ANALYSIS
A safety margin and flight reference system and display for powered-lift aircraft
p0090 N79-15618

FECES
Automated biowaste sampling system feces monitoring system
[NASA-CR-160301] p0281 N79-30937

FEDERAL REPUBLIC OF GERMANY
U GERMANY

FEEDBACK
NT SENSORY FEEDBACK
A model of human decisionmaking in fault diagnosis tasks that include feedback and redundancy
p0163 A79-30222
Evaluation of biofeed therapy
[PB-287777/7] p0123 N79-17543
A discrete parameter model of the head and neck with neuromuscular feedback
p0211 N79-24627

FEEDBACK CONTROL
Simulation and control of a human temperature regulation system
p0041 A79-13613
Augmented feedback in adaptive motor skill training
p0062 A79-18208
Biped stability considerations with vestibular models
p0066 A79-18287
Transfer of landing skill after training with supplementary visual cues
p0138 A79-28167
A rationale for human operator pulsive control behavior
p0186 A79-34520
Pilot-optimal augmentation of the air-to-air tracking task
[AIAA 79-1747] p0252 A79-45388
A structural model of the adaptive human pilot
[AIAA 79-1784] p0252 A79-45411
Closed loop models for analyzing the effects of simulator characteristics --- digital simulation of human operators
p0087 N79-15598
The effects of closed loop tracking on a subjective tilt threshold in the roll axis
p0090 N79-15620
The effects of deviate internal representations in the optimal model of the human operator
p0114 N79-17477
A dual-loop model of the human controller
p0115 N79-17480
Evaluation of clinical biofeedback
[PB-287776/9] p0123 N79-17544
Investigations of respiratory control systems simulation
[NASA-CR-160213] p0218 N79-25726

FEEL
U SENSORY FEEDBACK

FEMALES
Response of women mountaineers to maximal exercise during hypoxia
p0234 A79-43201
Considerations associated with the introduction of female crewmembers in spacecraft and space stations
[IAF PAPER 79-A-22] p0303 A79-53424
Cardiovascular, metabolic, and respiratory responses of sedentary females to equal metabolic workloads on the bicycle ergometer and treadmill
p0024 N79-11681
Physiological responses of women to simulated weightlessness: A review of the first female bed-rest study
[NASA-SP-430] p0054 N79-13686
A comparison of the physiological responses in young men and women to heat and cold stress
[AD-A061024] p0155 N79-19679
Masculinity, femininity, androgyny. What really works at work
[AD-A061177] p0156 N79-19683
Urine collection apparatus
[NASA-CASE-MSC-18381-1] p0195 N79-23657
Air Force female pilots program: Initial performance and attitudes
[AD-A065641] p0241 N79-26783
Analysis of body size measurements for US Navy women's clothing and pattern design
[AD-A068600] p0290 N79-31939

FEMUR
Changes in properties of rat femur as a result of crural exarticulation and hypokinesia

p0108 N79-16522

FERMENTATION
Nitrate fermentation in Clostridium perfringens and significance in metabolic evolution
p0205 A79-37968

FERMIONS
NT FAST NEUTRONS

FEVER
Investigations about the quantitative changes of carbon dioxide production in humans. Report 2: Carbon dioxide production during fever and its relationship with heat production
[NASA-TM-75452] p0211 N79-24632

FFT
U FAST FOURIER TRANSFORMATIONS

FIBERS
A porcine bioassay study of the physiological effects of fiber and dye degradation products (FDP) on burn wound healing
[AD-A066990] N79-25748

FIBRIN
Tissue gas and blood analyses of human subjects breathing 80% argon and 20% oxygen
p0164 A79-30655

FIBRINOGEN
An investigation to determine the effect of physical conditioning upon fibrinolytic reactivity in normal young men
p0110 N79-16536

FIBROBLASTS
NT COLLAGENS

FIBROUS MATERIALS
U FIBERS

FIELD STRENGTH
Measurements of radiofrequency field intensity in buildings with close proximity to broadcast stations
[PB-290944/8] N79-25750

FIGHTER AIRCRAFT
NT F-4 AIRCRAFT
NT F-15 AIRCRAFT
NT F-18 AIRCRAFT
NT F-104 AIRCRAFT
NT F-111 AIRCRAFT
NT JAGUAR AIRCRAFT
Physiological requirements for design of environmental control systems - Control of heat stress in high-performance aircraft
[ASME PAPER 78-ENAS-22] p0007 A79-12571
Investigation of arrangement of multipurpose displays and use of tailored control logic in a fighter aircraft cockpit
p0038 A79-13205
Multifunction keyboard configurations for single-seat, air-to-ground fighter cockpits
p0039 A79-13213
A Canadian approach to high altitude protection --- fighter pilot garmentry and high pressure masks
p0045 A79-14435
U.S. Navy development of an on-board oxygen generation /OBOG/ system
p0183 A79-33634
Aerobiotelemetry from a fighter aircraft
p0200 A79-37131
Measurements of pilot workload during low altitude and high speed maneuvers of F-1 supersonic jet fighter
p0209 A79-38821
Prediction, evaluation, and specification of flying qualities by means of step target tracking
p0088 N79-15604
Optimisation of pilot capability and avionic system design
[AGARD-AR-118] p0113 N79-16560
Optimisation of pilot capability and avionic system design, introduction
p0113 N79-16561
The design of air combat aircraft
p0114 N79-16566
An adaptive controller which displays human operator limitations for a fighter type aircraft
p0177 N79-21767
Application of learning curves of aircraft produced at more than one location to the F-16 lightweight fighter
[AD-A065881] p0196 N79-23668
An adaptive controller which displays human operator limitations for a fighter type aircraft
[AD-A066193] p0223 N79-25763
Medical and operational factors of accidents in advanced fighter aircraft
p0290 N79-31944
Analysis of the intervention of the human factor as a principal cause or influence in accidents of Mirage aircraft in the Belgian Air Force
p0290 N79-31945

FILTRATION
NT SPATIAL FILTERING

FINGERS
Object-handling system for manual industry
p0101 A79-23464
Hemodynamics in teenagers and asthmatic children during exercise
p0133 A79-27102

FIRE CONTROL
Pilot-optimal augmentation of the air-to-air tracking task
[AIAA 79-1747] p0252 A79-45388
Human factors evaluation of the AN/UYQ-21 display console
[AD-A056383] p0020 N79-10743
Visual effects of helicopter maneuvre on weapon aiming performance
p0150 N79-19626

FIRE DAMAGE
Effect of fiber and dye degradation products /FDP/ on burn wound healing
p0298 A79-52277

FIRE FIGHTING
Firefighters Integrated Response Equipment System
[ASME PAPER 78-ENAS-39] p0009 A79-12586
Protective clothing and equipment for firefighters: Current standards and practices
[PB-286990/7] p0113 N79-16557
Aluminized firefighters' crash-rescue protective hood: Facepiece-visor redesign study
[AD-A065492] p0223 N79-25764
Field evaluation of experimental crash-crew firefighter's facepiece
[AD-A066544] p0223 N79-25765
Insulated firefighters' crash-crew rescue boots and components: Field and laboratory evaluation
[AD-A068264] p0262 N79-29795

FIRE PREVENTION
Evaluation of four thermally protective fabrics using the USAARL bioassay method
[AD-A067351] p0223 N79-25762
Aluminized firemen's (fire proximity) handwear: Redesign of experimental prototype
[AD-A069895] p0290 N79-31940

FIRES
Arousal from sleep by emergency alarms: Implications from the scientific literature
[PB-284044/5] p0051 N79-12700
Human responses to fire: Three designs for research
[PB-284959/4] p0058 N79-13708
Biomedical constraints on thermal protective flight clothing design: A bioengineering analysis
p0153 N79-19662

FISH
U FISHES

FISHES
Killfish development in zero-G on COSMOS 782: Fundulus experiment K-104
p0021 N79-11659
The application of remote sensors to a model for fish mapping
[INPE-1379-PE/176] p0071 N79-14712
Methods for measuring the acute toxicity of effluents to aquatic organisms
[PB-289605/8] p0170 N79-20719

FISHTAILING
U YAW

FITNESS
NT FLIGHT FITNESS
NT PHYSICAL FITNESS

FITTING
The fitting of Canadian Forces aircrew helmets - Why the difference
p0184 A79-33645

FIXED WINGS
In-flight toxicology of fixed and rotary wing aircraft crew stations
p0149 N79-19619

FIXED-WING AIRCRAFT
U FIXED WINGS

FLAME RETARDANTS
Effect of fiber and dye degradation products /FDP/ on burn wound healing
p0298 A79-52277
FLAP CONTROL
U AIRCRAFT CONTROL
FLASH BLINDNESS
Restoration of color perception after deadapting flashes
p0193 N79-23640
FLAW DETECTION
U NONDESTRUCTIVE TESTS
FLEXING
Simulation of head and neck response to -G sub x and +G sub z impacts
p0285 N79-31908
FLEXURE
U FLEXING
FLICKER
Primate cone sensitivity to flicker during light and dark adaptation as indicated by the foveal local electroretinogram
p0104 A79-24065
FLICKER FUSION FREQUENCY
U CRITICAL FLICKER FUSION
FLIGHT ALTITUDE
The effects of ambient illumination, aircraft velocity and feedback on absolute distance judgments during simulated night nap-of-the-earth flight
p0038 A79-13204
FLIGHT CLOTHING
USAF life support equipment costs
p0043 A79-14402
Development of integrated tubing fabric for liquid conditioning undergarments
p0044 A79-14415
The helmet protects the aviator's head - Or does it
p0044 A79-14429
An assessment of the RAE Type 'B' full pressure suit automatic head enclosure
p0044 A79-14432
Development of the Air Force S-1030 full pressure suit assembly
p0044 A79-14433
Joint testing of the RAF high altitude protective ensemble
p0044 A79-14434
Development of a specialized head/face protective device for test parachuting operations
p0045 A79-14437
An overview of helicopter mission specific survival equipment
p0183 A79-33625
Aircrew helmet protection against potential cerebral concussion in low-magnitude impacts
p0201 A79-37705
Prediction of body temperatures during exercise in flying clothing
p0273 A79-49989
Bioassay of thermal protection afforded by candidate flight suit fabrics
p0298 A79-52280
Cold water survival suits for aircrew
p0298 A79-52282
Development of the CWU-48/P high temperature resistant aramid knit flyer's coverall
[AD-A059128] p0059 N79-13716
Visual and optical assessment of gas protective face masks
p0152 N79-19642
Biomedical constraints on thermal protective flight clothing design: A bioengineering analysis
p0153 N79-19662
Evaluation of four thermally protective fabrics using the USAARL bioassay method
[AD-A067351] p0223 N79-25762
FLIGHT COMPUTERS
U AIRBORNE/SPACEBORNE COMPUTERS
FLIGHT CONDITIONS
Influence of orbital flight conditions on formation of genitals in Muscari racemosum and Anethum graveolens
p0230 A79-41718
FLIGHT CONTROL
NT AUTOMATIC FLIGHT CONTROL
Investigation of arrangement of multipurpose displays and use of tailored control logic in a fighter aircraft cockpit
p0038 A79-13205
Refinement of a computer simulation model for evaluating DAIS display concepts --- Digital Avionics Information System
p0038 A79-13209
NASA flight management research
p0040 A79-13218
Experimental and psychological investigations in aviation and astronautics --- Russian book
p0041 A79-13998
Increasing pilot's performance capacity during flight through use of a control element serving as information carrier
[DGLR PAPER 78-152] p0042 A79-14097
Ergonomic problems regarding the interactive touch input via screens in onboard and ground-based flight control
p0061 A79-17695
Effects of space flight on plasma and glandular concentrations of pituitary hormones --- COSMOS 782 satellite
p0021 N79-11664
Pilot-optimal augmentation synthesis
p0088 N79-15603
Pilot decision making in a computer-aided flight management situation
p0093 N79-15633
Error rate information in attention allocation pilot models
p0115 N79-17483
An adaptive controller which displays human operator limitations for a fighter type aircraft
[AD-A066193] p0223 N79-25763
Multipurpose digital switching and flight control workload
[AD-A069606] p0281 N79-30934
Adaptive estimation of information values in continuous decision making and control of advanced aircraft
[AD-A069741] p0282 N79-30941
FLIGHT CREWS
NT SPACECREWS
NASA flight management research
p0040 A79-13218
Coordinated crew performance in commercial aircraft operations
p0040 A79-13219
Recurrent training/supernumerary system
p0041 A79-13283
Air Combat Maneuvering Range /ACMR/ - Has operational performance measurement entered a Golden Age
p0064 A79-18221
Conduction difficulties of vagal origin in flight personnel - Significance of intrathoracic data on the bundle of His --- neural activity effects on heart block
p0103 A79-23955
Pneumothorax and flight personnel --- incidence, etiology and treatment
p0103 A79-23956
Psychosis in air force flight personnel during the last 25 years
p0103 A79-23957
The value of measuring ocular tonus as a test for detecting glaucoma in flight personnel
p0104 A79-23959
Army Aviation Training - Research now and then
[SAE PAPER 781008] p0130 A79-25890
Laser eye protection for flight personnel
p0135 A79-27555
Age trends in the cardiovascular dynamics of aircrewmen
p0136 A79-27560
Paroxysmal disorders of consciousness due to flight factors
p0161 A79-29300
Survey on eye comfort in aircraft. I - Flight attendants
p0165 A79-30665
Investigation of psychological compatibility of crew members of multiseat aircraft
p0166 A79-31165
Incidence of cardiovascular problems among flying personnel and their evaluation
p0182 A79-33186
Ensuring medical fitness on entry and during service in aircrew in IAF
p0182 A79-33187

Accident injuries and flying fitness
p0182 A79-33189

Ageing and flying fitness
p0182 A79-33190

Electrocardiographic abnormalities in Air Force personnel
p0182 A79-33191

Disability pattern amongst civil aircrew
p0182 A79-33192

Human error accidents - Some case studies --- for aircraft
p0183 A79-33193

An overview of helicopter mission specific survival equipment
p0183 A79-33625

Current trends in UK military aircrew survival equipment
p0183 A79-33633

Improved headgear for fixed wing Navy aircrewmen
p0184 A79-33641

The fitting of Canadian Forces aircrew helmets - Why the difference
p0184 A79-33645

Positive pressure breathing as a protective technique in +Gz acceleration
p0201 A79-37132

Fighter index of thermal stress /FITS/ - guidance for hot-weather aircraft operations
p0202 A79-37715

Sources of noise stress on flying personnel
p0227 A79-41169

Hyperventilation in aircrew - A review
p0235 A79-43212

Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
p0266 A79-47334

Spinal injuries in the F/FB-111 crew escape system
p0274 A79-49996

Automatic audiometry in the practice of flight-personnel examination
p0295 A79-51084

Cold water survival suits for aircrew
p0298 A79-52292

Effects of vibration and noise on some indices of efficiency of MI-8 helicopter crews
p0015 N79-10711

Prospective Medicine Opportunities in Aerospace Medicine --- conferences
[AGARD-CP-231] p0026 N79-11692

Distinguishing borderline hypertensives from normotensives: A clinical study of 300 aircrewmen
p0027 N79-11699

Psychosocial aspects of syncope and vertigo in aircrew
p0027 N79-11701

Specific Findings in Cardiology and Pulmonary Function with Special Emphasis on Assessment criteria for Flying
[AGARD-CP-232] p0028 N79-11705

Detection of coronary artery disease in apparently healthy, asymptomatic aircrew members using thallium-201 myocardial perfusion scintigraphy
p0029 N79-11712

Left Anterior Hemiblock (LAH): Diagnosis and aeromedical risk
p0029 N79-11715

Effect of age on relaxed +G sub z tolerance of aircrewmen
p0030 N79-11719

The impact of coronary vascular risk factors on professional aircrew license loss in the United Kingdom
p0031 N79-11724

Cardiovascular diseases as a cause of unfitness for flying service in aircrews of Italian Air Force: Etiopathogenesis, influence of performance in flight, and prevention
p0031 N79-11725

Study of crew task loading on the C-141A aircraft
[AD-A057346] p0034 N79-11746

Aircrew personnel restraint subsystems definition of deficiencies and requirements
[AD-A058995] p0053 N79-12711

Aircrew inflight physiological data acquisition system 2
[AD-A055638] p0055 N79-13690

Fighter index of thermal stress: Development of interim guidance for hot-weather USAF operations
[AD-A053471] p0056 N79-13699

Development of the CWU-48/P high temperature resistant aramid knit flyer's coverall
[AD-A059128] p0059 N79-13716

A survey of existing computer programs for aircrew workload assessment
[AD-A058518] p0059 N79-13718

Dynamic medical monitoring of flight crews in the course of long-term flights
p0072 N79-14719

Effect of psychophysiological self-regulation on emotional stability of aviation cadets in flight and on effectiveness of assimilation of flight training program
p0074 N79-14735

A simulator study of the interaction of pilot workload with errors, vigilance, and decisions
[NASA-TM-78482] p0079 N79-14769

Engineering test and evaluation during high G. Volume 2: Anti-G valves
[AD-A059521] p0081 N79-14780

Lightweight helmet-mounted eye movement measurement system
p0090 N79-15619

Ergometric tests in expert medical certification of flight personnel
p0109 N79-16527

A review of individual performance in air-to-ground target detection and identification studies
[AD-A061580] p0124 N79-17551

Characteristics of medically disqualified airman applicants in calendar years 1975 and 1976
[FAA-AM-78-25] p0144 N79-18582

Backache in UH-1D helicopter crews
p0149 N79-19620

Evaluation of aircrew fatigue during operational helicopter flight mission
p0149 N79-19622

Implementation of a divisional aviation program to decrease flight crew fatigue
p0150 N79-19624

TADRAP: A computer-aided technique for reducing aircrew task analysis data --- helicopter design considering human factors
p0150 N79-19628

A system of training in aviation physiology and human factors for Army and Navy helicopter aircrew
p0151 N79-19635

The effective acoustic environment of helicopter crewmen
p0152 N79-19645

F-4J/N instructional system development: Phase 1
[AD-A061098] p0156 N79-19684

Evaluation of the Sierra Engineering Company lightweight helmet
[AD-A061799] p0157 N79-19689

Aircrew modularized inflight data acquisition system
[AD-A064725] p0190 N79-22766

Survival and protection of aircrew in the event of accidental immersion in cold water
[AGARD-AG-211(ENG)] p0196 N79-23661

The effect of a reclined sitting position on psychomotor performance during exposure to high, sustained +Gsub z acceleration
[FPRC-1362] p0248 N79-27856

The effect of acceleration and seat back angle on performance of a reaction time task
[FPRC-1364] p0248 N79-27857

The influence of seat back angle on acceleration tolerance
[FPRC-1365] p0248 N79-27858

A human body and crew station modelling system for motion studies
p0287 N79-31922

Progress in measuring and modeling the effects of low frequency vibration on performance
p0298 N79-31930

FLIGHT FATIGUE

Evaluation of aircrew fatigue during operational helicopter flight mission
p0149 N79-19622

Changes in the rotary wing aviator's ability to perform an uncommon low altitude rearward hover maneuver as a function of extended flight requirements and aviator fatigue
p0150 N79-19623

Implementation of a divisional aviation program to decrease flight crew fatigue
p0150 N79-19624

US Army aviation fatigue-related accidents,
1971-1977
[AD-A062486] p0171 N79-20725
FLIGHT FITNESS
Results of tests of the equilibrium organ of
candidates for payload expert for the first
Spacelab mission
[DGLR PAPER 78-134] p0042 A79-14084
Aviation-medicine appraisal as part of the fitness
regulations in transportation
p0129 A79-25373
Ensuring medical fitness on entry and during
service in aircrew in IAF
p0182 A79-33187
Obesity and flying fitness
p0182 A79-33188
Accident injuries and flying fitness
p0182 A79-33189
Ageing and flying fitness
p0182 A79-33190
Disability pattern amongst civil aircrew
p0182 A79-33192
Evaluation of physiological indices during
preflight medical examination of pilots
p0188 A79-35138
Influence of Beta-Blockade on asymptomatic ST-T
wave changes - A follow up study
p0201 A79-37137
Reproducibility of +Gz tolerance testing
p0267 A79-47337
Radiological diagnosis of spinal injuries and
deformities
p0272 A79-49735
Assessment of spinal disabilities in relation to
flying
p0272 A79-49736
Automatic audiometry in the practice of
flight-personnel examination
p0295 A79-51084
Male and female characteristics in vestibular
testing - A step toward the selection of the
best participants for space flight
[IAF PAPER 79-80] p0301 A79-53288
Preliminary selection of candidates for space
flights
[IAF PAPER 79-83] p0302 A79-53289
Assessment of factors possibly contributing to the
susceptibility of sickle trait erythrocytes to
mild hypoxia. Volume 1: Design considerations
and research protocol
[AD-A059412] p0084 N79-15577
Ergometric tests in expert medical certification
of flight personnel
p0109 N79-16527
Radiological examination of the Rachis and fitness
for employment as a helicopter pilot
p0151 N79-19634
Technical evaluation report on the Aerospace
Medical Panel London Specialists' Meeting, Fall
1977 --- disease prevention, flight fitness, and
findings in cardiology and pulmonary function
[AGARD-AR-131] p0171 N79-20729
Prospective medicine opportunities in aerospace
medicine
p0171 N79-20730
Specific findings in cardiology and pulmonary
function with special emphasis on assessment
criteria for flying
p0171 N79-20731
Three decades of USAF efforts to reduce human
error accidents, 1947-1977
p0290 N79-31943
FLIGHT HAZARDS
Intracardial gas bubbles and decompression
sickness while flying at 9,000 m within 12-24 h
of diving
p0010 A79-12866
Pilot incapacity in flight
p0291 N79-31950
FLIGHT INSTRUMENTS
NT APPROACH INDICATORS
NT AUTOMATIC PILOTS
Arrangement of aircraft flight indicators with the
help of optimal theoretical models for man as
the controller
[DGLR PAPER 78-149] p0042 A79-14094
Helicopter night operations - Feasibility and
impact on the overall system --- helmet mounted
FLIR detectors and image intensifier goggles
p0048 A79-16235
An analysis of helicopter pilot control behavior
and workload during instrument flying tasks
p0150 N79-19630
FLIGHT OPERATIONS
NT CREW PROCEDURES (INFLIGHT)
FLIGHT RULES
NT INSTRUMENT FLIGHT RULES
FLIGHT SAFETY
USAF life support equipment costs
p0043 A79-14402
Application of performance model to assess aviator
critical incidence
p0063 A79-18209
Current role of alcohol as a factor in civil
aircraft accidents
p0136 A79-27561
USAF life support system 412A - 1978 corporate
report
p0183 A79-33602
Oral/nasal breathing systems in the year 2000
p0183 A79-33621
Aircrew helmet protection against potential
cerebral concussion in low-magnitude impacts
p0201 A79-37705
Ejection problems and injuries - Their causes,
effects and treatments, and suggestions for
preventive measures
p0267 A79-47338
Psychological training - One of the most important
factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] p0303 A79-53426
Prospective Medicine Opportunities in Aerospace
Medicine --- conferences
[AGARD-CP-231] p0026 N79-11692
A safety margin and flight reference system and
display for powered-lift aircraft
p0090 N79-15614
Implementation of a divisional aviation program to
decrease flight crew fatigue
p0150 N79-19624
Disorientation in Royal Naval helicopter pilots
p0152 N79-19648
Operational consideration of AN/PVS-5 night vision
goggles for helicopter night flight
p0152 N79-19649
FLIGHT SIMULATION
Piloted aircraft simulation - Advantages,
disadvantages, and practical problems
[SAE PAPER 780548] p0001 A79-10407
The effects of ambient illumination, aircraft
velocity and feedback on absolute distance
judgments during simulated night
nap-of-the-earth flight
p0038 A79-13204
Multifunction keyboard configurations for
single-seat, air-to-ground fighter cockpits
p0039 A79-13213
The multiloop concept of the pilot work load as a
basis of future experiments and studies
[ONERA, TP NO. 1978-10] p0045 A79-14795
Time estimation as a technique to measure workload
--- of aircraft pilot in flight simulation
p0062 A79-18203
Pilot performance during flight simulation with
peripherally presented visual signals
p0063 A79-18213
Recent studies of simulation training effectiveness
[SAE PAPER 781006] p0130 A79-25888
Windshield quality and pilot performance
measurement utilizing computer-generated imagery
p0137 A79-28165
Training effectiveness versus simulation realism
p0138 A79-28166
Transfer of landing skill after training with
supplementary visual cues
p0138 A79-28167
Helicopter commands at the touch of a hand
[AHS 79-13] p0270 A79-49066
Synthetic training and evaluation - Some current
issues
p0275 A79-50550
Technique for simulating G-induced tunnel vision
p0299 A79-52286
Lightweight helmet-mounted eye movement
measurement system
p0303 A79-53516
Dynamics of impairment of pilot performance in the
presence of hypoxia

p0073 N79-14724
Vestibular influences on other sensory and motor processes --- human performance in flight simulation studies
p0094 N79-15893
Motion cue models for pilot-vehicle analysis
[AD-A061477] p0125 N79-17561
Vestibular models and thresholds of motion perception. Result of tests in a flight simulator
[VTH-LR-265] p0146 N79-18595
Aircraft flight simulation of spacelab experiment using an implanted telemetry system to obtain cardiovascular data from the monkey
p0147 N79-19022
Airline pilot scan patterns during simulated ILS approaches
[NASA-TP-1250] p0155 N79-19682
Air-to-air combat skills: Contribution of platform motion to inertial training
[AD-A062738] p0173 N79-20743
User's instructions for the whole-body algorithms
[NASA-CR-160233] p0219 N79-25735
Flight simulator training, volume 2. A bibliography with abstracts
[NTIS/PS-79/0277/8] p0222 N79-25758
Sensory mechanism modeling
[AD-A069439] p0262 N79-29796
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view
[AD-A070231] p0308 N79-32832
A theoretical investigation of power and control configurations for a high g-onset centrifuge drive system
[AD-A070912] p0309 N79-32841
FLIGHT SIMULATORS
NT COCKPIT SIMULATORS
Flight management research utilizing an oculometer --- pilot scanning behavior during simulated approach and landing
p0001 A79-10389
A computer-based simulator simulator --- computer-assisted pilot training
p0039 A79-13215
AWAVS, a research facility for defining flight trainer visual system requirements
p0062 A79-18207
A visual simulator with transformation of the perspective in the raster of television pictures --- German book on pilot training systems
p0069 A79-19375
Psychologists vs engineers --- flight simulators training requirements
p0132 A79-26499
Visual system for the Boom Operator Part Task Trainer --- KC-135 aerial refueling task simulator
p0137 A79-28162
Component performance of a 360 deg non-programmed visual display --- laser image flight simulator
p0137 A79-28163
The holographic Pancake Window --- magnifier for flight simulation display
p0138 A79-28172
Predictive validity of flight simulators as a function of simulator motion
p0181 A79-32627
Psychophysical assessment of angular vibration - Comparison of vertical and roll vibrations
p0234 A79-43206
The relationship between flight simulator motion and training requirements
p0267 A79-47766
Soviet civil aviation training programs
p0270 A79-49221
Compensation for transport delays produced by computer image generation systems
[AD-A056720] p0019 N79-10738
Subjective motion discrimination in the simulator for air-to-air combat
[AD-A059742] p0079 N79-14770
A model for the pilot's use of roll-axis motion cues in steady-state tracking tasks
[AD-A059594] p0079 N79-14772
The development and evaluation of objective frequency domain based pilot performance measures in ASUPT
[AD-A059477] p0080 N79-14776
Influence of motion wash-out filters on pilot tracking performance
[NLR-MP-78005-U] p0124 N79-17554
Oculomotor performance of aviators during an autorotation maneuver in a helicopter simulator
p0151 N79-19638
Aviator visual performance: A comparative study of a helicopter simulator and the UH-1 helicopter
p0153 N79-19652
Stress and simulation in pilot training
[AD-A066670] p0222 N79-25757
Flight simulator training, volume 2. A bibliography with abstracts
[NTIS/PS-79/0277/8] p0222 N79-25758
Helmet weight simulator
[NASA-CASE-LAR-12320-1] p0223 N79-25761
A lower body negative pressure box for +Gz simulation in the upright seated position
[AD-A069326] p0259 N79-28868
Effects on A-6E bombardier/navigator flight training with the introduction of device 2F114, A-6E weapon system trainer
[AD-A068607] p0289 N79-31933
Advanced training features: Bridging the gap between in-flight and simulator-based models of flying training
[AD-A068142] p0289 N79-31934
FLIGHT STRESS
The effect of Nap-of-the-Earth (NOE) helicopter flying on pilot blood and urine biochemicals
[AD-A055204] p0055 N79-13693
FLIGHT STRESS (BIOLOGY)
NT SPACE FLIGHT STRESS
Case report - Intracardial gas bubbles in relation to altitude decompression chokes
p0011 A79-12871
Physiological biorhythm as a correlate of pilot error accidents and incidents
p0065 A79-18228
Speed and load stress as determinants of performance in a time sharing task
p0068 A79-18999
Physiological aspects of flight --- Book
p0134 A79-27298
Paroxysmal disorders of consciousness due to flight factors
p0161 A79-29300
Oculogravic illusion in response to straight-ahead acceleration of a CF-104 aircraft
p0164 A79-30660
Rotation at 30 RPM about the Z axis after 6 hours in the 10-deg head-down position - Effect on susceptibility to motion sickness
p0165 A79-30662
Physiologic and performance measurements in simulated airborne combined stress environments
p0202 A79-37710
Frequency analysis of heart rate variability under flight conditions
p0202 A79-37713
Concurrent loss of consciousness and sino-atrial block during +Gz stress
p0202 A79-37714
Fighter index of thermal stress /FITS/ - guidance for hot-weather aircraft operations
p0202 A79-37715
Sources of noise stress on flying personnel
p0227 A79-41169
The vestibule and flying --- pilot disorientation
p0255 A79-46598
Aero Medical Society of India, Annual Meeting, 21st, Bangalore, India, December 15, 16, 1978, Proceedings
p0271 A79-49726
Design, fabrication and utility of a flight oriented performance test
p0271 A79-49728
In-flight measures of stress reduction due to wearing expandable foam earplugs
p0273 A79-49986
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
[IAF PAPER 79-76] p0301 A79-53285
Reproducibility of human cardiovascular responses to orthostatic stress
p0030 N79-11720
Modeling the effects of high-G stress on pilots in a tracking task
p0087 N79-15593
Quantification and validation of percept-genetic defense mechanisms. A hierarchical analysis of

behavior of pilots under stress
[FOA-C-55020-H6] p0128 N79-17555
Human exposure to mechanical vibration at lying posture in the ambulance helicopter UH-1D
p0149 N79-19617
Backache in UH-1D helicopter crews
p0149 N79-19620
Prediction of whole-body response to impact forces in flight environments
p0288 N79-31902
Unsteady-state response of the vascular system to transient and sustained aerospace acceleration profiles
p0286 N79-31917
Medical and operational factors of accidents in advanced fighter aircraft
p0290 N79-31944
Between incident and accident
p0292 N79-31953

FLIGHT SURGEONS
Psychiatric education in aerospace medicine
p0202 A79-37712

FLIGHT TECHNICAL ERROR
U PILOT ERROR

FLIGHT TESTS
Joint testing of the RAF high altitude protective ensemble
p0044 A79-14434
Human factors considerations in establishing aircraft collision avoidance system alert thresholds
p0045 A79-14438
Special test for astronaut selection - Tests of tolerance in the centrifuge and in flight
p0047 A79-15491
Flight experience with manually controlled unconventional aircraft motions
p0088 N79-15602

FLIGHT TRAINING
NT SPACE FLIGHT TRAINING
Transfer of a computer-assisted instrument procedures trainer to flight
p0039 A79-13216
Development of automated performance measures for introductory air combat maneuvers
p0040 A79-13223
Recurrent training/supernumerary system
p0041 A79-132.3
Army Aviation Training - Research now and then
[SAE PAPER 781008] p0130 A79-25890
Universal airborne approach to pilot performance assessment
[SAE PAPER 781009] p0130 A79-25891
Training effectiveness versus simulation realism
p0138 A79-28166
The evaluation of a complex computer-based flight procedures trainer
p0161 A79-29717
Aeromedical aspects of flying training with special reference to instructor pupil relationship
p0201 A79-37139
Initial training and retraining of technical agricultural flight personnel
p0227 A79-41166
A7 training effectiveness through performance analysis --- carrier landing instruction
[AD-A056230] p0031 N79-11728
Effect of psychophysiological self-regulation on emotional stability of aviation cadets in flight and on effectiveness of assimilation of flight training program
p0074 N79-14735
A system of training in aviation physiology and human factors for Army and Navy helicopter aircrew
p0151 N79-19635
Training requirements for helicopter operation with night vision goggles
p0153 N79-19650
F-4J/N instructional system development: Phase 1
[AD-A061090] p0156 N79-19684
Stress and simulation in pilot training
[AD-A066670] p0222 N79-25757
Air Force female pilots program: Initial performance and attitudes
[AD-A065641] p0241 N79-26783
Effects on A-6E bombardier/navigator flight training with the introduction of device 2F114, A-6E weapon system trainer
[AD-A068607] p0289 N79-31933
Advanced training features: Bridging the gap between in-flight and simulator-based models of flying training
[AD-A068142] p0289 N79-31934
Development of an objective grading system along with procedures and aids for its effective implementation in flight
[AD-A071106] p0318 N79-33846

FLIR DETECTORS
Helicopter night operations - Feasibility and impact on the overall system --- helmet mounted FLIR detectors and image intensifier goggles
p0048 A79-16235
Real-time reconnaissance systems simulator
p0139 A79-28175
Human factors aspects of low light level television and forward looking infrared sensor displays. 11: A feasibility study of scaled subjective complexity of still scenes applied to computer image generation
[AD-A050938] p0058 N79-13715

FLORA
U PLANTS (BOTANY)

FLOW CHARACTERISTICS
NT FLOW STABILITY
NT FLOW VELOCITY

FLOW MEASUREMENT
A fluid-mechanical study of the closure of heart valves
p0161 A79-29540
Specific problems in cardiovascular fluid dynamics measurements
p0210 A79-39506
Disorder in pulsatile flow - Biomedical measurements with hot film, laser and ultrasound anemometers
p0210 A79-39509
Quantitative flow estimation with transcutaneous Doppler ultrasound
p0295 A79-51042
Density dependence of maximum expiratory flow
p0050 N79-12691
Techniques of measurement
p0247 N79-27850

FLOW RATE
U FLOW VELOCITY

FLOW STABILITY
Lung mechanics: Dynamic response, acoustic generation, and flow limitation
p0017 N79-10727

FLOW VELOCITY
Quantitative flow estimation with transcutaneous Doppler ultrasound
p0295 A79-51042
A directional pulsed-Doppler ultrasonic blood flowmeter
p0050 N79-12693
Aortic blood flow velocity during exercise in man
p0216 N79-25710

FLOW VISUALIZATION
Noninvasive assessment of pulmonary hypertension
[PB-285121/0] p0057 N79-13701

FLOWMETERS
NT ROTAMETERS
Ultrasonic doppler directional blood flow velocity meter
[RAE-LIB-TRANS-1918] p0279 N79-30920

FLUID DYNAMICS
Application of numerical methods to physiological flows --- Navier-stokes equation, prosthetic heart valves and vasoconstriction
p0146 N79-18945
Physiological fluid dynamics
[VKI-LECTURE-SERIES-32] p0247 N79-27843
Respiration
p0247 N79-27845
Mechanics of arterial blood flow
p0247 N79-27846

FLUID FLOW
NT BLOOD FLOW
NT CAPILLARY FLOW
NT CAVITATION FLOW
NT CONVECTIVE FLOW
NT GAS FLOW
NT UNSTEADY FLOW
A simple model of fluid flow and electrolyte balance in the body
[NASA-CR-160205] p0217 N79-25722

FLUID MECHANICS
NT FLUID DYNAMICS
NT HYDROSTATICS
A fluid-mechanical study of the closure of heart valves
p0161 A79-29540
FLUORESCENCE
Applications of chlorophyll fluorescence transient measurements to the functional analysis of photosynthetic processes
p0243 N79-27813
FLUORESCENT EMISSION
U FLUORESCENCE
FLUORINE COMPOUNDS
NT FLUOROPOLYMERS
NT POLYTETRAFLUOROETHYLENE
FLUORINE ORGANIC COMPOUNDS
NT FLUOROPOLYMERS
FLUORO COMPOUNDS
NT FLUOROPOLYMERS
NT POLYTETRAFLUOROETHYLENE
FLUOROPOLYMERS
NT POLYTETRAFLUOROETHYLENE
Evaluation of fluoropolymer membranes in oxygenators
[PB-286698/6] p0112 N79-16547
FLUOROSCOPY
Real-time computerized fluoroscopic cardiac imaging
p0294 A79-51035
FLUTTER
Lung mechanics: Dynamic response, acoustic generation, and flow limitation
p0017 N79-10727
FLUX DENSITY
NT LUMINANCE
NT LUMINOUS INTENSITY
FLUX QUANTIZATION
Perceived quantization error. Effect of quantization function, reconstruction function and number of levels
[FOA-C-56015-H9] p0124 N79-17556
FLUXMETERS
U MEASURING INSTRUMENTS
FLYING PERSONNEL
NT AIRCRAFT PILOTS
NT ASTRONAUTS
NT COSMONAUTS
NT FLIGHT CREWS
NT PILOTS (PERSONNEL)
NT SPACECREWS
Some tests used in the practice of aviation medical examination for differential diagnosis of heart diseases
p0188 A79-35136
Detection and supervision of obstructed respiratory flow in fliers. Advantages of debit-volume graphs
p0028 N79-11707
Measuring systolic time intervals at rest and under stress by external methods. Advantages in the evaluation of fliers
p0030 N79-11717
The advantages of ultrasonic echocardiography in the cardiological evaluation of fliers
p0030 N79-11718
FLYING PLATFORM STABILITY
U AERODYNAMIC STABILITY
FOAMS
A preliminary toxicological study of silastic 386 foam elastomer: catalyst
[LA-7366-MS] p0071 N79-14714
FOCUSING
Night vision goggles and in-flight evaluation of the inside/outside refocusing problems in a UH-1H helicopter
p0063 A79-18215
FOG
Manual landings in Category 3 conditions
p0297 A79-52055
FOOD
A technology assessment of vegetable substitutes for animal protein in human food. Volume 1: The study
[PB-284681/4] p0059 N79-13719
A technology assessment of vegetable substitutes for animal protein in human food. Volume 2: Appendices
[PB-284682/2] p0059 N79-13720
Nitrogen fixation with photosynthetic marine microorganisms
[PB-286000/5] p0083 N79-15570
The Department of the Army's food irradiation program: Is it worth continuing
[PB-286399/1] p0094 N79-15644
FOOD INTAKE
Effects of dietary composition on nutritional state in rats during exposure to high altitude
p0134 A79-27118
Changes in the circadian rhythm of performance and mood in healthy young men exposed to prolonged, heavy physical work, sleep deprivation, and caloric deficit
p0234 A79-43202
Inhibition of the pituitary-adrenal response to stress during deprivation-induced feeding
p0235 A79-43605
Effects of endogenous factors on the process of gas bubble formation in the body related to decompression
p0015 N79-10713
FOREARM
Hemodynamics in teenagers and asthmatic children during exercise
p0133 A79-27102
FORECASTING
NT DELPHI METHOD (FORECASTING)
NT PERFORMANCE PREDICTION
NT PREDICTION ANALYSIS TECHNIQUES
NT TECHNOLOGICAL FORECASTING
Eye-ball control
p0270 A79-49225
FORECASTS
U FORECASTING
FOREIGN BODIES
Official method for determining ocular irritation
[BLL-RTS-11221] p0142 N79-18571
FOREIGN POLICY
NT INTERNATIONAL COOPERATION
FORESTS
Dispersal of forest insects
p0148 N79-19596
FORGING
Nonionizing radiation protection special study: Infrared radiation hazard evaluation of the rotary forge, Watervliet Arsenal, Watervliet, New York, March - April 1978
[AD-A055643] p0055 N79-13691
FORM PERCEPTION
U SPACE PERCEPTION
FORMALDEHYDE
Experimental approach to the chemical evolution in the primeval sea. I - Formation of amino acids and amino acid polymers in modified sea mediums
p0203 A79-37935
FORMING TECHNIQUES
NT FORGING
FORWARD LOOKING INFRARED DETECTORS
U FLIR DETECTORS
FOSSIL METEORITE CRATERS
U FOSSILS
FOSSILS
Epimerization of L-isoleucine on Na-montmorillonite and its implication to Precambrian chemical fossils
p0206 A79-37979
FOURIER ANALYSIS
Piecewise Fourier analysis of images and the role of occipital, temporal and parietal cortex in visual perception
p0160 A79-29248
FOURIER TRANSFORMATION
NT FAST FOURIER TRANSFORMATIONS
FOVEA
Contribution to the theory of photopic vision: Retinal phenomena
[NASA-TM-75507] p0315 N79-33823
FRACTURING
Vertebral fractures in Gnat ejections
p0201 A79-37134
FREE RADICALS
NT HYDROXYL RADICALS
FREEZE DRYING
Mechanisms of deterioration of nutrients --- improved quality of freeze-dried foods
[NASA-CR-160128] p0156 N79-19686
FREEZING
System for and method of freezing biological tissue
[NASA-CASE-GSC-12173-1] p0013 N79-10694

FREQUENCIES
NT AUDIO FREQUENCIES
NT BROADBAND
NT LOW FREQUENCIES
NT MICROWAVE FREQUENCIES
NT RADIO FREQUENCIES
NT SUPERHIGH FREQUENCIES
NT ULTRAHIGH FREQUENCIES

FREQUENCY RESPONSE
A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles
p0294 A79-51038

FRESNEL LENSES
Application of Fresnel lenses to virtual image display --- for training simulators
p0139 A79-28173

FRINGE PATTERNS
U DIFFRACTION PATTERNS

FROGS
Ultrastructural development of the vestibular system of frog larvae in 0g simulation
[IAF PAPER 79-78] p0301 A79-53287

FROZEN FOODS
Method and arrangement for the preparation of solid foodstuffs for long-term storage
[BLL-RTS-11445] p0145 N79-18590
Mechanisms of deterioration of nutrients --- improved quality of freeze-dried foods
[NASA-CR-160128] p0156 N79-19686

FUELS
NT DIESEL FUELS
NT JET ENGINE FUELS
NT SYNTHETIC FUELS

FUNCTIONAL ANALYSIS
NT HARMONIC ANALYSIS
A survey of existing computer programs for aircrew workload assessment
[AD-A058518] p0059 N79-13718
Applications of chlorophyll fluorescence transient measurements to the functional analysis of photosynthetic processes
p0243 N79-27813
The systemic principles of building a man-machine control staff --- functional analysis
p0249 N79-27861

FUNCTIONS (MATHEMATICS)
NT DISCRETE FUNCTIONS
NT NORMAL DENSITY FUNCTIONS
NT PEARSON DISTRIBUTIONS
NT TIME FUNCTIONS
NT WEIGHTING FUNCTIONS

FUNGI
NT ASPERGILLUS
NT SACCHAROMYCES
NT SPORES
Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582] p0071 N79-14711
Orenburg symposium on mycotoxins
p0175 N79-21749
Effects of different values of urine pH during long-term storage on microflora composition
p0194 N79-23643

FUSIFORM SHAPES
U CONES

F4H AIRCRAFT
U F-4 AIRCRAFT

G

G FORCE
U ACCELERATION (PHYSICS)

GAGES
U MEASURING INSTRUMENTS

GALACTIC EVOLUTION
Chirality of compounds essential for the existence of life, and the possibility of its evolution in the universe
p0186 A79-34464

GALACTIC RADIATION
Personnel neutron monitoring in space
[NASA-CR-151865] p0111 N79-16541

GALVANIC SKIN RESPONSE
Skin-resistance measuring device with higher resolution
p0252 A79-45476

GAMMA GLOBULIN
Investigation of albumin and globulin composition of blood of the crew of the Salyut-3 orbital station
p0244 N79-27820

GAMMA RADIATION
U GAMMA RAYS

GAMMA RAYS
3'5'-cyclic AMP content in rat tissues during hypoxic adaptation and gamma irradiation
p0069 A79-19426
Role of n-aminobenzoic acid in repairing UV and gamma radiation damage
p0301 A79-53211
Changes in blood sugar content of dogs exposed to chronic gamma radiation for six years
p0014 N79-10706
Comparative analysis of causes of animal deaths during chronic exposure to gamma radiation and the aftereffect period
p0016 N79-10718
Spermatogenesis in dogs during many years of chronic exposure to gamma radiation and in the aftereffect period
p0073 N79-14727
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation
p0312 N79-33808

GANGLIA
NT NERVES
NT NEURONS
Enchancement of luminance flicker by color-opponent mechanisms
p0252 A79-44582

GAS ANALYSIS
Transient changes in arterial blood gases and heart rate during and after acutely induced hypoxia and hyperoxia to rabbits
p0134 A79-27120
Tissue gas and blood analyses of human subjects breathing 80% argon and 20% oxygen
p0164 A79-30655
Investigation of composition of trace contaminants in the air environment of the Soyuz-22 spacecraft
p0072 N79-14720

GAS BAGS
Design considerations for inflatable head/neck restraint systems
p0043 A79-14407
An inflatable restraint system --- for helicopter crash protection
p0044 A79-14408

GAS CHROMATOGRAPHY
Concentration of trace contaminants during gas chromatography and chromato-mass spectrometry in biomedical research
p0109 N79-16528

GAS COMPOSITION
NT CARBON DIOXIDE CONCENTRATION

GAS DENSITY
The effect of the reduction of inspired gas density on external respiration
p0296 A79-51115

GAS DISCHARGE COUNTERS
U COUNTERS

GAS EVOLUTION
Inverse assimilation - A general principle of evolution of planetary surfaces
p0207 A79-37989

GAS EXCHANGE
Analysis of Pco2 differences during rebreathing due to slow pH equilibration in blood
p0067 A79-18958
Cerebral gas exchange in rats adapted to hypoxia during inspiration of oxygen-poor mixtures
p0097 A79-20623
The role of lesser circulation hemodynamic changes in pulmonary gas exchange
p0300 A79-53066
Analysis of inert gas exchange in the middle ear
p0017 N79-10723
Gas exchange under environmental stress
[AD-A058242] p0056 N79-13697
External respiration and gas exchange reactions to exercise during rotation of man on a short-radius centrifuge
p0193 N79-23639
Energy expenditures of man during long exposure to a periodically changing atmosphere

p0312 N79-33799
Adaptive optimization of exchange of gases in plants in a sealed phytotron
p0313 N79-33806
External respiration and gas exchange reactions of man during rotation on a short-arm centrifuge
p0313 N79-33812
GAS FLOW
Respiration
p0247 N79-27845
GAS GENERATOR ENGINES
U ENGINES
U GAS GENERATORS
GAS GENERATORS
Environmental test and evaluation of a molecular sieve on-board oxygen generation system
[AD-A061531] p0125 N79-17559
GAS GIANT PLANETS
Abundance of organic compounds photochemically produced in the atmospheres of the Outer Planets
p0210 A79-39075
GAS MIXTURES
NT AIR
NT EXPIRED AIR
Helium-oxygen mixture and the organism hyperbaric aspect
p0243 N79-27818
GAS TRANSPORT
A revised model of gas transport in human lungs
p0253 A79-45768
Physiological fluid dynamics
[VKI-LECTURE-SERIES-32] p0247 N79-27843
GAS-ION INTERACTIONS
Ion-molecule condensation reactions - A mechanism for organic synthesis in ionized reducing atmospheres
p0099 A79-22079
GASEOUS CAVITATION
U CAVITATION FLOW
U GAS FLOW
GASEOUS DIFFUSION
Gas diffusion liquid storage bag and method of use for storing blood
[NASA-CASE-NPO-13930-1] p0076 N79-14749
Percutaneous absorption of toxic agents. Part 2: The nerve bases and some other toxic organophosphates. A survey of the literature.
[PML-1978-9] p0123 N79-17542
GASES
NT AIR
NT ARGON
NT CARBON DIOXIDE
NT CARBON MONOXIDE
NT CARBON SUBOXIDES
NT EXHAUST GASES
NT EXPIRED AIR
NT GAS MIXTURES
NT HELIUM
NT HIGH PRESSURE OXYGEN
NT HYDROGEN IONS
NT NEON ISOTOPES
NT NITROGEN
NT OXYGEN
NT OZONE
NT RARE GASES
NT TRITIUM
GASTROINTESTINAL SYSTEM
NT INTESTINES
NT STOMACH
Absence of gastric ulceration in rats after flight on the COSMOS 782
p0021 N79-11660
Study report on a double isotope method of calcium absorption
[NASA-CR-160194] p0216 N79-25712
GAUSSIAN DISTRIBUTIONS
U NORMAL DENSITY FUNCTIONS
GAUSSIAN NOISE
U RANDOM NOISE
GAUSSMETERS
U MAGNETOMETERS
GENERAL AVIATION AIRCRAFT
NT AGRICULTURAL AIRCRAFT
Effects of phase manipulation on speech intelligibility through communication headsets --- light aircraft radio communication
p0164 A79-30654
GENERAL DYNAMICS AIRCRAFT
NT F-111 AIRCRAFT
GENERAL DYNAMICS MILITARY AIRCRAFT
U MILITARY AIRCRAFT
GENETIC CODE
Speculations of the evolution of the genetic code. II
p0099 A79-22080
Evolution of a genetic code simulated with the computer
p0100 A79-22081
Nucleotide-binding site data and the origin of the genetic code
p0206 A79-37974
The origin of the protein synthesis mechanism
p0207 A79-37986
Carbon suboxide and the genetic code --- in biochemical evolution
p0252 A79-44865
Results of a 64Cu-loading test applied to patients with an inherited defect in their Cu-metabolism (Menkes' disease)
[IRI-133-77-04] p0240 N79-26774
GENETICS
NT GENETIC CODE
NT MUTATIONS
Genetic effects of balloon flight in Drosophila melanogaster
p0006 A79-12520
The augmentation algorithm and molecular phylogenetic trees
p0070 A79-20267
Evolution of the biosphere /2nd enlarged edition/ --- Russian book
p0270 A79-48310
Effects of weightlessness on the genetics and aging process of drosophila melanogaster
p0023 N79-11673
Variability in human body size
p0032 N79-11736
Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75502] p0071 N79-14711
Intelligence
p0095 N79-15896
GENITOURINARY SYSTEM
NT BLADDER
NT PROSTATE GLAND
NT TESTES
GEOCHEMISTRY
NT BIOGEOCHEMISTRY
A critical assessment of the origin of life
p0207 A79-37985
GEOCHRONOLOGY
The evolution of the environment and its influence on the evolution of life
p0099 A79-22076
GEOGRAPHY
Geographical disorientation and flight safety
p0291 N79-31951
GEOLOGY
NT GEOCHRONOLOGY
A critical assessment of the origin of life
p0207 A79-37985
GEOMAGNETIC EFFECTS
U MAGNETIC EFFECTS
GEOMETRY
NT ANALYTIC GEOMETRY
NT PROLATE SPHEROIDS
GEOPHYSICAL SATELLITES
NT INTERCOSMOS SATELLITES
GEOTHERMAL RESOURCES
Amino acids in southern Kamchatka hot springs
p0182 A79-33122
GEOTROPISM
Geotropism of hornet comb construction under persistent acceleration
p0006 A79-12514
Convective control of long-range coherence in plant growth regulation
p0006 A79-12515
Cardiopulmonary readjustments in passive tilt
p0277 A79-50901
GERMANY
Psychological selection of Spacelab payload specialists: The evaluation of German applicants
[DLR-FB-78-29] p0281 N79-30936
Analyses of midair collisions in German airspace: Methodology and results
p0291 N79-31949

GERMINATORS
U PHYTOTRONS
GLANDS (ANATOMY)
NT ADRENAL GLAND
NT MAMMARY GLANDS
NT PARATHYROID GLAND
NT PINEAL GLAND
NT PITUITARY GLAND
NT PROSTATE GLAND
NT TESTES
NT THYMUS GLAND
NT THYROID GLAND
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation
p0312 N79-33804

GLASS ELECTRODES
Apparatus and method of inserting a microelectrode in body tissue or the like using vibration means
[NASA-CASE-NPO-13910-1] p0246 N79-27836
GLAUCOMA
The value of measuring ocular tonus as a test for detecting glaucoma in flight personnel
p0104 A79-23959

GLAUERT COEFFICIENT
U AERODYNAMIC FORCES
GLIDE LANDINGS
Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators
p0297 A79-52276

GLIDERS
Balance training of the equilibrium organ and its effect on flight strategy
p0242 N79-27074

GLOBULINS
NT GAMMA GLOBULIN
Obtaining growth hormone from calf blood
[NASA-TM-75326] p0283 N79-31895
GLOVES
Evaluation of British and Canadian conductive rubber heating elements for handwear: Preliminary report
[AD-A052826] p0093 N79-15637
Aluminized firemen's (fire proximity) handwear: Redesign of experimental prototype
[AD-A069895] p0290 N79-31940
GLUCOSE
Glucose metabolism in rat lung during exposure to hyperbaric O2
p0221 A79-36047
Insulin-like effect of bovine growth hormone in vivo as demonstrated by oxidation of C/14/-U-glucose in diabetic rats
p0252 A79-44797
Changes in blood sugar content of dogs exposed to chronic gamma radiation for six years
p0014 N79-10706
GLUTAMINE
Responses of crown gall tissue to the space environment: Glutamine synthetase activity --- cosmos 782
p0020 N79-11655

GLYCOGENS
Phosphorylase a in human skeletal muscle during exercise and electrical stimulation
p0067 A79-18962
Effects of glycogen depletion and work load on postexercise O2 consumption and blood lactate
p0277 A79-50903

GNOTOBIOTICS
Microbiological evaluation of the mobile biological isolator system
[NASA-CR-162293] p0307 N79-32822
GOATS
A study of cerebral blood flow in the goat. A. Correlations between the ventilatory and cerebrovascular responses to carbon monoxide inhalation. B. The dynamics of the cerebral blood flow response to hypoxia by frequency response analysis
p0107 N79-16510

GOGGLES
Night vision goggles and in-flight evaluation of the inside/outside refocusing problems in a UH-1H helicopter
p0063 A79-10215
The objective evaluation of aircrew protective breathing equipment. III - Improved types of mask/goggles combinations. IV - Fullface masks and hoods suitable for flight attendant use
p0184 A79-33638
Test and evaluation in the acquisition process - A look at the PLZT goggle
p0184 A79-33642
Visual and optical assessment of gas protective face masks
p0152 N79-19642
Operational consideration of AN/PVS-5 night vision goggles for helicopter night flight
p0152 N79-19649
Training requirements for helicopter operation with night vision goggles
p0153 N79-19650
GOVERNMENT PROCUREMENT
Test and evaluation in the acquisition process - A look at the PLZT goggle
p0184 A79-33642

GOVERNMENTS
Radiation protection activities, 1977
[PB-290215/3] p0176 N79-21759
GRADIENTS
NT POTENTIAL GRADIENTS
NT TEMPERATURE GRADIENTS
GRADIOMETERS
U MAGNETOMETERS
GRADUATION
U CALIBRATING
GRASSES
NT SEA GRASSES
Bacteria in a North Carolina salt marsh. Standing crop and importance in the decomposition of Spartina alterniflora
[PB-288816/2] p0153 N79-19668
GRATINGS
Experimental investigation of the visual system using one-dimensional Walsh gratings
p0160 A79-29249

GRATINGS (SPECTRA)
Visual contrast sensitivity functions obtained with colored and achromatic gratings
p0181 A79-32628
Effects of stimulus onset and image motion on contrast sensitivity
p0231 A79-42231
On the latency of human visually evoked response to sinusoidal gratings
p0232 A79-42236
Direction-selective adaptation with very slow motion
p0265 A79-47118
Motion and vision. I - Stabilized images of stationary gratings
p0278 A79-50986
GRAVIMETRY
The pulmonary circulation: Studies on alveolar hypoxia and vascular smooth muscle metabolism
p0195 N79-23650

GRAVIRECEPTORS
NT OTOLITH ORGANS
The vestibule and flying --- pilot disorientation
p0255 A79-46598

GRAVITATION
NT REDUCED GRAVITY
GRAVITATIONAL EFFECTS
Life sciences and space research XVI: Proceedings of the Open Meetings of the Working Group on Space Biology, Tel Aviv, Israel, June 7-18, 1977
p0005 A79-12508
Geotropism of hornet comb construction under persistent acceleration
p0006 A79-12514
Cerebral accident subsequent to G-force loading - A case report
p0165 A79-30664
A model for vestibular function in altered gravitational states
p0229 A79-41710
Physiological effect of high, sustained +Gz forces on man
p0229 A79-41711
Influence of the ambient acceleration field upon acute acceleration tolerance in chickens
p0230 A79-41715
Importance of temperature control for HEFLEX, a biological experiment for Spacelab 1 --- plant gravitational physiology study
p0230 A79-41716
Radiographic comparison of human lung shape during normal gravity and weightlessness

p0305 A79-54269
Effects of weightlessness on the genetics and aging process of drosophila melanogaster
p0023 N79-11673
Role of gravity in early development
[NASA-TM-75590] p0049 N79-12684
Engineering test and evaluation during high G. Volume 2: Anti-G valves
[AD-A059521] p0081 N79-14780
GREENHOUSE EFFECT
Habitable zones about main sequence stars
p0136 A79-27930
GREENHOUSES
U PHYTOTRONS
GRIDS
Visual angle constancy for the subjective checkerboard pattern, as an indication of cortical origination of size constancy
p0231 A79-42232
The effect of active area on the legibility of dot matrix displays
[AD-A058014] p0052 N79-12708
GROUND BASED CONTROL
NT AIR TRAFFIC CONTROL
Human factors considerations in establishing aircraft collision avoidance system alert thresholds
p0045 A79-14438
Ergonomic problems regarding the interactive touch input via screens in onboard and ground-based flight control
p0061 A79-17695
Short-term memory factors in ground controller/pilot communication
p0181 A79-32626
Effects of space flight on plasma and glandular concentrations of pituitary hormones --- COSMOS 782 satellite
p0021 N79-11664
GROUND CREWS
Electrocardiographic abnormalities in Air Force personnel
p0182 A79-33191
Initial training and retraining of technical agricultural flight personnel
p0227 A79-41166
Soviet civil aviation training programs
p0270 A79-49221
Normal and pathological cardiovascular findings in applicants to the Air Force service
p0031 N79-11722
Minuteman missile crew fatigue and 24-hour alerts
[AD-A056561] p0056 N79-13696
Field evaluation of experimental crash-crew firefighter's facepiece
[AD-A066544] p0223 N79-25765
GROUND TESTS
Piloted aircraft simulation - Advantages, disadvantages, and practical problems
[SAE PAPER 780548] p0001 A79-10407
GROUND TRUTH
Radar observation of insects: Mosquitoes
p0148 N79-19600
GROUP BEHAVIOR
U GROUP DYNAMICS
GROUP DYNAMICS
Team performance - A model for research
p0065 A79-18227
GROUP THEORY
NT HOMOMORPHISMS
GROUP 7A COMPOUNDS
U HALOGEN COMPOUNDS
GROWTH
NT CROP GROWTH
NT CRYSTAL GROWTH
NT VEGETATION GROWTH
In vivo response of ornithine decarboxylase activity to growth hormone as demonstrated by oxidation of L-ornithine-1-/C-14/ in hypophysectomized rats
p0005 A79-12400
The effects of temperature, salinity, and other factors on the growth and formation of UV-absorbing substances by the fungus Aspergillus
p0005 A79-12512
Convective control of long-range coherence in plant growth regulation
p0006 A79-12515
Growth of pulmonary circulation in normal pig - Structural analysis and cardiopulmonary function
p0067 A79-18961
Killfish development in zero-G on COSMOS 782: Fundulus experiment K-104
p0021 N79-11659
Purification and cultivation of human pituitary growth hormone secreting cells
[NASA-CR-151853] p0051 N79-12697
The growth kinetics of freshwater algae
p0174 N79-21740
GROWTH CHAMBERS
U PHYTOTRONS
GRUMMAN AIRCRAFT
NT F-111 AIRCRAFT
GUIDANCE (MOTION)
NT TERMINAL GUIDANCE
GUIDANCE SENSORS
Terminal guidance sensor system
[NASA-CASE-NPO-14521-1] p0174 N79-20746
GULFS
NT PERSIAN GULF
GUMBEL THEORY
U RANGE (EXTREMES)
GUNFIRE
Tentative evaluation of annoyance caused by noise from gunfire
[IZF-1978-21] p0310 N79-32843
GUNNERY TRAINING
AAA gunnermodel based on observer theory --- predicting a gunner's tracking response
p0087 N79-15594
GUNS (ORDNANCE)
NT ARTILLERY
GUSTATORY PERCEPTION
U TASTE
GYMNASTICS
U PHYSICAL EXERCISE
GYRATION
NT AUTOROTATION
NT ROTATION
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs
p0312 N79-33803
GYROPLANES
U HELICOPTERS

H

HABITABILITY
Habitable zones about main sequence stars
p0136 A79-27930
Establishing habitability factors for the design of office environments
[AD-A056463] p0020 N79-10744
The organism and the habitation atmosphere
[NASA-TM-75536] p0049 N79-12685
HABITATS
Wildlife monitoring program plan
[NASA-TM-78578] p0190 N79-23626
HABITS
Selective attention: The influences of subject sex and degree of prior habituation on performance of an attention task with distraction
p0260 N79-28876
HALIDES
NT SODIUM CHLORIDES
NT ZINC CHLORIDES
HALOGEN COMPOUNDS
NT FLUOROPOLYMERS
NT POLYTETRAFLUOROETHYLENE
NT SODIUM CHLORIDES
NT ZINC CHLORIDES
Relationship between proton motive force and potassium ion transport in Halobacterium halobium envelope vesicles
p0227 A79-40775
HALOGENS
NT IODINE
HALOPHILES
Gating effects in Halobacterium halobium membrane transport
p0268 A79-47849
Light-driven solute transport in Halobacterium halobium
p0270 A79-49194
HAND (ANATOMY)
Compact artificial hand

[NASA-CASE-NPO-13906-1] p0214 N79-24652
HANDBOOKS
NT USER MANUALS (COMPUTER PROGRAMS)
Anthropometric source book. Volume 2: A handbook of anthropometric data
[NASA-RP-1024-VOL-2] p0058 N79-13711
Manned maneuvering unit: User's guide
[NASA-CR-151864] p0113 N79-16553
HANDLING QUALITIES
U CONTROLLABILITY
HARDWARE
Test and evaluation process for life support systems
p0184 A79-33643
HARMONIC ANALYSIS
A numerical method of film analysis with differentiation --- curve fitting with harmonic analysis
p0061 A79-17585
HARNESSES
Cardiac reactions in tests on the wearing of the Yankee Escape System harness during minus G accelerations in the z direction
p0103 A79-23953
Aircrew personnel restraint subsystems definition of deficiencies and requirements
[AD-A058995] p0053 N79-12711
HAZARDS
NT AIRCRAFT HAZARDS
NT FLIGHT HAZARDS
NT OPERATIONAL HAZARDS
NT RADIATION HAZARDS
NT TOXIC HAZARDS
HEAD (ANATOMY)
Design considerations for inflatable head/neck restraint systems
p0043 A79-14407
Development of a specialized head/face protective device for test parachuting operations
p0045 A79-14437
SPH-4 helmet damage and head injury correlation
p0127 A79-24633
Quality of retinal image stabilization during small natural and artificial body rotations in man
p0225 A79-40187
Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798
Analysis of naval aviation head and neck injuries (1969-1978)
[AD-A057657] p0026 N79-11689
Changes in human renal function in passive head-up and head-down positions
p0072 N79-14722
A discrete parameter model of the head and neck with neuromuscular feedback
p0211 N79-24627
Multiaxis dynamic response of the human head and neck to impact acceleration
p0284 N79-31906
A head injury model
p0286 N79-31918
Correlation of head injury with mechanical forces based on helmet damage duplication
p0287 N79-31920
HEAD MOVEMENT
Voluntary movement control and adaptation to cross-coupled stimulation --- motion sickness avoidance
p0009 A79-12860
Optokinetic motion sickness - Attenuation of visually-induced apparent self-rotation by passive head movements
p0135 A79-27558
Head acceleration and psychomotor performance --- related to crash accident survival rates
p0135 A79-27559
Information transmission during eye movements
p0209 A79-38360
Dynamics of the eye and head during movement between displays - A qualitative and quantitative guide for designers
p0209 A79-38362
A comparison of oculomotor and motion parallax cues of egocentric distance
p0305 A79-54253
Head tracking at large angles from the straight ahead position
p0090 N79-15618
HEAD-UP DISPLAYS
Light weight solid state helmet symbol display and position system
p0046 A79-15177
Helicopter night operations - Feasibility and impact on the overall system --- helmet mounted FLIR detectors and image intensifier goggles
p0048 A79-16235
A head-up display for mid-air drone recovery
p0090 N79-15615
The role of cognitive switching in head-up displays --- to determine pilot ability to accurately extract information from either of two sources
[NASA-CR-3137] p0318 N79-33851
HEADSETS
U EARPHONES
HEALING
NT WOUND HEALING
HEALTH
NT HEALTH PHYSICS
NT MENTAL HEALTH
NT PUBLIC HEALTH
Morbidity experience of air traffic control personnel - 1967-77
p0101 A79-23466
Effects of endurance training on left ventricular dimensions in healthy men
p0237 A79-43706
A literature review-problem definition studies on selected toxic chemicals. Volume 5: Occupational health and safety and environmental aspects of zinc chloride
[AD-A056020] p0025 N79-11687
The morbidity experience of air traffic control personnel, 1967-1977
[AD-A056053] p0051 N79-12696
Air traffic controller health change study
[FAA-AM-78-39] p0122 N79-17534
Telehealth handbook: A guide to telecommunications technology for rural health care
[PB-292557/6] p0241 N79-26778
The effects of whole-body vibration on health
[AD-A068478] p0284 N79-31900
HEALTH PHYSICS
NT PUBLIC HEALTH
Study of specific effects of hyperfrequencies on the central nervous system. II - Exploratory research on rat /Wistar/ behaviour
p0047 A79-15493
Electromagnetic power absorption in cylindrical tissue models excited by a loop antenna
p0136 A79-27959
Aircraft noise and its effect on man: Methods and results of research, consequences for environmental protection --- German book
p0162 A79-29763
Space osteoporosis - An electromagnetic hypothesis
p0165 A79-30666
Electromagnetic absorption in a multilayered model of man
p0226 A79-40650
Pulmonary functional tolerance to ionizing radiation - An experimental study
p0256 A79-46601
Radiation protection activities, 1977
[PB-290215/3] p0176 N79-21759
Biological effects of laser radiation, volume 1. A bibliography with abstracts
[NTIS/PS-79/0019/4] p0176 N79-21760
Biological effects of laser radiation, volume 2. A Bibliography with abstracts
[NTIS/PS-79/0020/2] p0176 N79-21761
Atmospheric neutrons
[NASA-CR-3126] p0211 N79-24631
Systems identification and application systems development for monitoring the physiological and health status of crewmen in space
[NASA-CR-160235] p0212 N79-24642
Dose-rate conversion factors for external exposure to photon and electron radiation from radionuclides occurring in routine releases from nuclear fuel cycle facilities
[NUREG-CR-0494] p0259 N79-28873
Biological effects of microwaves, volume 1. A bibliography with abstracts
[NTIS/PS-79/0432/9] p0280 N79-30929

Biological effects of microwaves, volume 2. A bibliography with abstracts
[NTIS/PS-79/0433/7] p0280 N79-30930

Some considerations of hazards in the use of lasers for artistic displays
[PB-294513/7] p0281 N79-30931

Radiation protection
[GPO-35-583] p0283 N79-31899

Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency
[CONF-780541-1] p0307 N79-32827

Biological effects of nonionizing electromagnetic radiation, volume 3, number 4
[AD-A070242] p0315 N79-33826

Health effects of low-level ionizing radiation
[LBL-9018] p0316 N79-33834

HEARING

A mathematical scheme for predicting the electro-acoustic frequency response of hearing aid receiver-earmold-ear systems
p0154 N79-19673

Magnitude estimation as a hearing aid selection procedure
p0246 N79-27838

HEARING LOSS
U AUDITORY DEFECTS

HEART
NT CARDIAC VENTRICLES
NT MYOCARDIUM

The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations
p0300 A79-52894

Noninvasive ultrasonic blood flow characterization
p0017 N79-10726

Development of an electrical energy converter for circulatory device
[PB-286738/0] p0111 N79-16545

Observability of electrical heart activity studied with singular value decomposition
[TR-78-E-81] p0148 N79-18584

Decrease in the functional abilities of the heart as a result of exposure of an organism to an electromagnetic field of industrial frequency
p0172 N79-20733

Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations
p0312 N79-33800

HEART DISEASES
NT CORONARY ARTERY DISEASE

Regional coronary blood flow at rest and during high sustained +Gz in a miniature swine with subclinical, ischemic, coronary heart disease due to coronary stenosis
p0010 A79-12865

Clinical importance of directional statistics for electrocardiographic differentiation of smoking habits
p0098 A79-21246

Some tests used in the practice of aviation medical examination for differential diagnosis of heart diseases
p0188 A79-35136

Myocardial infarction in young men
p0188 A79-35137

Predictive accuracy of Q-X/Q-T ratio, Q-Tc interval, S-T depression and R wave amplitude during stress testing --- heart pathology
p0225 A79-40464

Comparative study of hypoxia and other non-invasive stress tests for evaluation of ischaemic heart disease
p0272 A79-49731

Magnetocardiography - An overview
p0274 A79-50107

Noninvasive cardiovascular measurements --- Book
p0293 A79-51026

Computer quantitation of angiocardiographic images
p0293 A79-51028

Clinical usefulness of radiopaque markers in left ventricular function
p0293 A79-51029

Cardiac blood flow measurement - A component of the comprehensive cardiac examination
p0295 A79-51041

Clinical magnetocardiography
p0295 A79-51044

Temporal relation between onset of cell anoxia and ischemic contractile failure
p0300 A79-52895

Experience with periodic aviation medical examinations
p0026 N79-11696

The significance of rhythm disturbances in asymptomatic persons
p0027 N79-11698

Cardiovascular diseases as a cause of unfitness for flying service in aircrews of Italian Air Force: Etiopathogenesis, influence of performance in flight, and prevention
p0031 N79-11725

Cardiovascular diseases, volume 3. A bibliography with abstracts
[NTIS/PS-79/0063/2] p0260 N79-28874

The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces
[AD-A069865] p0316 N79-33829

HEART FUNCTION
NT HEART MINUTE VOLUME

Biomagnetism and artificial magnetic stimulation of living structures
[IAF PAPER 78-52] p0002 A79-11222

Intracardial gas bubbles and decompression sickness while flying at 9,000 m within 12-24 h of diving
p0010 A79-12866

Influences of physical conditioning and deconditioning on coronary vasculature of dogs
p0067 A79-18955

Effect of physical conditioning on cardiac mitochondrial function
p0068 A79-18966

Norepinephrine uptake by the isolated heart of rats adapted and deadapted to hypoxia
p0097 A79-20621

Reliability of determining the cardiac output by the method of quadrupole chest impedance rheography
p0098 A79-21243

Mitral prolapse and acceleration --- in aircraft pilots
p0103 A79-23951

Cardiac reactions in tests on the wearing of the Yankee Escape System harness during minus G accelerations in the z direction
p0103 A79-23953

Conduction difficulties of vagal origin in flight personnel - Significance of intrathoracic data on the bundle of His --- neural activity effects on heart block
p0103 A79-23955

Systolic time intervals during combined hand cooling and head-up tilt
p0135 A79-27554

Organ blood flow, cardiac output, arterial blood pressure, and vascular resistance in rats exposed to various oxygen pressures
p0135 A79-27557

Age trends in the cardiovascular dynamics of aircrewmen
p0136 A79-27560

Conjoint effect of physical stress and noise stress on information processing performance and cardiac response
p0161 A79-29715

Early cardiovascular adaptation to simulated zero gravity
p0162 A79-29727

Cardiac responses of dogs to nonsynchronous and heart synchronous whole-body vibration
p0162 A79-29728

Cardiac response to whole-body heating
p0165 A79-30661

Electrocardiographic abnormalities in Air Force personnel
p0182 A79-33191

Cardiac changes during behavioral stress in dogs
p0200 A79-36575

A tethering system for direct measurement of cardiovascular function in the caged baboon
p0200 A79-36576

Influence of Beta-Blockade on asymptomatic ST-T wave changes - A follow up study
p0201 A79-37137

Some electrophysiological concepts of the U wave of ECG

p0201 A79-37138

Concurrent loss of consciousness and sino-atrial block during +Gz stress
p0202 A79-37714

Homomorphic analysis and modeling of ECG signals
p0210 A79-39973

Adjustment of an electronic model for electrocardiogram simulation
p0232 A79-42240

Effects of endurance training on left ventricular dimensions in healthy men
p0237 A79-43706

Effect of adaptation to high-altitude hypoxia on cardiac adrenoreactivity and the state of the adenylcyclase and phosphodiesterase systems in the myocardium
p0255 A79-46500

Isolation of a shock-induced circulating cardiodepressant substance
p0257 A79-46967

Problem of modeling the mechanism of heart contraction
p0275 A79-50287

Possibility of quantitative evaluation of the heart's mechanical activity from seismocardiosignals
p0276 A79-50658

Modification of cardiac function by synchronized oscillating acceleration
p0278 A79-50908

Application of an isolated heart model to investigate blood-oxygen delivery
p0296 A79-51112

Difficulties posed by left axis deviation in the evaluation of fliers, and their relations to the concept of left anterior hemiblock
p0029 N79-11714

Cardiac conduction and aptitude problem of fliers. The benefits of endocavital recording of the His bundles
p0030 N79-11716

Measuring systolic time intervals at rest and under stress by external methods. Advantages in the evaluation of fliers
p0030 N79-11717

Functional outcomes of prosthetic cardiac valve replacement
p0076 N79-14746

Temperature effects on shape and function of human granulocytes
[AD-A063750] p0189 N79-22757

Characterization of cardiovascular function by automated monitoring of cardiac contractility and left ventricular wall motion activity
p0247 N79-27842

HEART MINUTE VOLUME

Studies of hemodynamics and phase structure of cardiac cycle in the crew of Salyut-4
p0072 N79-14718

HEART RATE
NT ARRHYTHMIA
NT BRADYCARDIA
NT SYSTOLE

Comparison of circadian rhythms in male and female humans
p0004 A79-11947

Simulation study on time series of heart responses
p0037 A79-13197

Effects of brief exposure of domestic fowl to very intense acceleration fields
p0127 A79-24631

Transient changes in arterial blood gases and heart rate during and after acutely induced hypoxia and hyperoxia to rabbits
p0134 A79-27120

Physical performance and peak aerobic power at different body temperatures
p0221 A79-36046

Frequency analysis of heart rate variability under flight conditions
p0202 A79-37713

Similarity in the number of lifespan heartbeats among non-hibernating homeothermic animals
p0298 A79-52281

Continuous long-duration recording of the heart rate by means of a noncontact technique
p0300 A79-53068

Analysis of distribution of sequences of R-R intervals in astronauts: Generalized coordinate method
p0015 N79-10707

The significance of rhythm disturbances in asymptomatic persons
p0027 N79-11698

Honest 1: Personality, heart rate, urinary catecholamine, and subjective fatigue measures related to night nap-of-the-earth flying
[AD-A054888] p0055 N79-13692

Studies of hemodynamics and phase structure of cardiac cycle in the crew of Salyut-4
p0072 N79-14718

A simulator study of the interaction of pilot workload with errors, vigilance, and decisions
[NASA-TM-78482] p0079 N79-14769

Heart rate: Physiological characteristics and quantification methods for use in behavioral studies
[CSIR-SR-PERS-276] p0121 N79-17531

A study of some of the factors influencing the left ventricular diastolic pressure-volume relationship and myocardial metabolism
p0154 N79-19674

Hybrid computation of left ventricular performance using noninvasive techniques
[AD-A063749] p0190 N79-22758

HEART VALVES

A continuous wave, frequency modulated, ultrasonic device with auditory output for observing the heart
p0045 A79-14602

Mitral prolapse and acceleration --- in aircraft pilots
p0103 A79-23951

A fluid-mechanical study of the closure of heart valves
p0161 A79-29540

Better definition of eye to aortic valve distance in high acceleration cockpit /HAC/ seating geometries
p0183 A79-33632

HEAT
NT DRY HEAT

HEAT ACCLIMATIZATION

Temperature-dependent morphological changes in membranes of Bacillus stearothermophilus
p0005 A79-12475

Sweating responses during heat acclimation and moderate conditioning
p0185 A79-33803

Thermoregulation in swimmers and runners
p0227 A79-41186

Intestinal transport of hexoses in the rat following chronic heat exposure
p0236 A79-43701

Heat and acute dehydration effects on acceleration response
p0237 A79-43705

Effect of rate of change in skin temperature on local sweating rate
p0268 A79-47853

Deconditioning-induced exercise responses as influenced by heat acclimation
p0273 A79-49985

A comparison of sweating responses in men and women before and after acclimation to humid heat
p0175 N79-21752

The effects of active and passive heat acclimatization procedures on the cardiovascular, thermoregulatory, and sweat rate responses to work in the heat in male humans
p0195 N79-23651

HEAT CONDUCTION
U CONDUCTIVE HEAT TRANSFER

HEAT DISSIPATION
U COOLING

HEAT DISSIPATION CHILLING
U COOLING

HEAT EFFECTS
U TEMPERATURE EFFECTS

HEAT EQUATIONS
U THERMODYNAMICS

HEAT GAIN
U HEATING

HEAT REGULATION
U TEMPERATURE CONTROL

HEAT RESISTANCE
U THERMAL RESISTANCE

HEAT SOURCES
NT GEOTHERMAL RESOURCES
HEAT STROKE
Thermal bounds to the time of stay of human beings in enclosures
p0231 A79-41770
Increased survival in experimental dog heatstroke after reduction of gut flora
p0266 A79-47335
HEAT TESTS
U HIGH TEMPERATURE TESTS
HEAT TOLERANCE
Physiological requirements for design of environmental control systems - Control of heat stress in high-performance aircraft
[ASME PAPER 78-ENAS-22] p0007 A79-12571
Effect of water and electrolyte replacement during exercise in the heat on biochemical indices of stress and performance
p0127 A79-24629
Cardiac response to whole-body heating
p0165 A79-30661
Tracking-task performance during heat stress simulating cockpit conditions in high-performance aircraft
p0236 A79-43675
Heat- and exercise-induced hyperthermia - Effects on high-energy phosphates
p0266 A79-47332
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
p0297 A79-52023
Criteria for maximum tolerable heat stress. A proposal
[IZF-1978-13] p0144 N79-18583
A comparison of sweating responses in men and women before and after acclimation to humid heat
p0175 N79-21752
Stress and fatigue in the driving environment --- physiological and psychological effects of heat and noise experienced inside automobiles
p0211 N79-24629
HEAT TRANSFER
NT CONDUCTIVE HEAT TRANSFER
Heat transfer and temperature distribution in the human body
p0041 A79-13612
Heat transfer principles in personal protection applications
p0043 A79-14405
Bio-heat transfer processes, for human thermoregulatory and circulatory characteristics measurements
p0304 A79-53536
Pattern of heat loss from a subject wearing CF temperate-climate combat clothing
[AD-A057746] p0093 N79-15636
The human micro-environment
p0248 N79-27851
HEAT TRANSMISSION
NT CONDUCTIVE HEAT TRANSFER
RT HEAT TRANSFER
HEATING
NT RADIO FREQUENCY HEATING
NT TRANSIENT HEATING
The effects of different levels of heat production induced by diathermy and eccentric work on thermoregulation during exercise at a given skin temperature
p0128 A79-24698
Criteria for maximum tolerable heat stress. A proposal
[IZF-1978-13] p0144 N79-18583
HEAVY ELEMENTS
NT AMERICIUM 241
HELICOPTER ATTITUDE INDICATORS
U HELICOPTERS
HELICOPTER CONTROL
Night vision goggles and in-flight evaluation of the inside/outside refocusing problems in a UH-1H helicopter
p0063 A79-18215
Helicopter commands at the touch of a hand
[AHS 79-13] p0270 A79-49066
An analysis of helicopter pilot control behaviour and workload during instrument flying tasks
[NLR-MP-78003-U] p0124 N79-17553
An analysis of helicopter pilot control behavior and workload during instrument flying tasks
p0150 N79-19630
Performance and workload analysis of inflight helicopter missions
[NLR-MP-77013-U] p0308 N79-32834
HELICOPTER DESIGN
Quantifying operator preference during human factors test and evaluation --- in helicopter design
p0062 A79-18202
The importance of providing stereoscopic vision in training for nap-of-the-earth /NOE/ flight
p0062 A79-18206
Operational Helicopter Aviation Medicine
[AGARD-CP-255] p0148 N79-19605
Human factors evaluations of today's helicopters as an aid to future systems design
p0150 N79-19627
TADRAP: A computer-aided technique for reducing aircrew task analysis data --- helicopter design considering human factors
p0150 N79-19628
The use of biostereometry in helicopter cockpit design --- using a simulator and analytic geometry
p0150 N79-19629
Human factor engineering test and evaluation of the US Navy LAMPS helicopter system
p0151 N79-19632
Visual requirements for the helicopter pilot
p0151 N79-19636
HELICOPTER PERFORMANCE
The assessment of rotary wing aviator precision performance during extended helicopter flights
p0040 A79-13221
An inflatable restraint system --- for helicopter crash protection
p0044 A79-14408
Helicopter night operations - Feasibility and impact on the overall system --- helmet mounted FLIR detectors and image intensifier goggles
p0048 A79-16235
Evaluation of the helicopter in aeromedical transfers
p0128 A79-24638
An overview of helicopter mission specific survival equipment
p0183 A79-33625
HELICOPTER ROTORS
U ROTARY WINGS
HELICOPTERS
NT MILITARY HELICOPTERS
NT UH-1 HELICOPTER
Methodological considerations of visual workloads of helicopter pilots
p0209 A79-38363
Eye-ball control
p0270 A79-49225
The influence of low frequency vibration on pilot performance /as measured in a fixed base simulator/
p0299 A79-52326
An evaluation of perceptual-motor workload during a helicopter hover maneuver
[AD-A058016] p0052 N79-12709
The effect of Nap-of-the-Earth (NOE) helicopter flying on pilot blood and urine biochemicals
[AD-A055204] p0055 N79-13693
The Helicopter
p0114 N79-16568
Protective approaches in the moderation of the physiological effects of extreme ambient conditions in helicopter operations
p0149 N79-19618
In-flight toxicology of fixed and rotary wing aircraft crew stations
p0149 N79-19619
Evaluation of aircrew fatigue during operational helicopter flight mission
p0149 N79-19622
Changes in the rotary wing aviator's ability to perform an uncommon low altitude rearward hover maneuver as a function of extended flight requirements and aviator fatigue
p0150 N79-19623
Observation of night shipboard helicopter operations from a 210 foot US Coast Guard cutter
p0151 N79-19637

Oculomotor performance of aviators during an autorotation maneuver in a helicopter simulator p0151 N79-19638
Visual performance/workload of helicopter pilots during instrument flight p0152 N79-19640
Sensorial aspects of helicopter operations p0152 N79-19644
The effective acoustic environment of helicopter crewmen p0152 N79-19645
Operational consideration of AN/PVS-5 night vision goggles for helicopter night flight p0152 N79-19649
Effect of helicopter noise on passenger annoyance [NASA-TM-80106] p0241 N79-26782
Tentative estimation of the injuries likely to occur during the crash of a SA 341 Gazelle helicopter, from a study on mannequins p0287 N79-31925
Workload and the certification of helicopters for IFR operation [AD-A072758] p0318 N79-33850

HELIUM
The response of the microvascular canal to a hypoxic helium-containing medium p0208 A79-38151
Helium-oxygen mixture and the organism hyperbaric aspect p0243 N79-27818
Toxicity of oxygen mixed with helium p0245 N79-27829

HELIUM-OXYGEN ATMOSPHERES
Voice communication in artificial atmospheres --- Russian book p0048 A79-16500
Effect of decompression per se on nitrogen elimination p0067 A79-18964
Tissular respiration of the brain after exposure of rats to hypertoxic helium and oxygen mixtures at atmospheric and elevated pressure p0015 N79-10712

HELMETS
The helmet protects the aviator's head - Or does it p0044 A79-14429
An assessment of the RAE Type 'B' full pressure suit automatic head enclosure p0044 A79-14432
Development of a specialized head/face protective device for test parachuting operations p0045 A79-14437
Light weight solid state helmet symbol display and position system p0046 A79-15177
Human factors considerations in the design and evaluation of a helmet mounted display using a light emitting diode matrix p0063 A79-18214
SPH-4 helmet damage and head injury correlation p0127 A79-24633
Improved headgear for fixed wing Navy aircrewmen p0184 A79-33641
The fitting of Canadian Forces aircrew helmets - Why the difference p0184 A79-33645
Aircrew helmet protection against potential cerebral concussion in low-magnitude impacts p0201 A79-37705
Lightweight helmet-mounted eye movement measurement system p0303 A79-53516
Lightweight helmet-mounted eye movement measurement system p0090 N79-15619
Head aiming/tracking accuracy in a helicopter environment p0153 N79-19651
Evaluation of the Sierra Engineering Company lightweight helmet [AD-A061799] p0157 N79-19689
Binocular holographic helmet mounted display [AD-A062761] p0174 N79-20749
An interface evaluation of the XM-29 protective mask and the AH-1S telescopic sight unit [AD-A064203] p0190 N79-22764
Impact tests on crash helmets for motor cyclists [AD-A065966] p0197 N79-24655
Helmet weight simulator [NASA-CASE-LAR-12320-1] p0223 N79-25761
Correlation of head injury with mechanical forces based on helmet damage duplication p0287 N79-31920

HEMATOCRIT
Effects of regional hemoconcentration during LBNP on plasma volume determinations --- Lower Body Negative Pressure p0265 A79-47326

HEMATOLOGY
Studies on the erythron and the ferrokinetic responses in beagles adapted to hypergravity p0010 A79-12869
Developmental and hematological responses to low level exposure of carbon monoxide in mice p0048 A79-16099
Some forms of adaptation to extreme influences in the blood system p0256 A79-46679
The importance of light, postural and social cues in the regulation of the plasma cortisol rhythm in man p0267 A79-47398
Studies on the bioassayable growth hormone-like activity of plasma p0267 A79-47848

HEMATOPOIESIS
Recovery of hemopoiesis in rats exposed to radiation during space flight p0014 N79-10701
Effects of long-term and chronic radiation on hemopoiesis p0016 N79-10719
Dynamic regulation of erythropoiesis: A computer model of general applicability [NASA-CR-160203] p0217 N79-25720
Improvements and validation of the erythropoiesis control model for bed rest simulation [NASA-CR-160187] p0218 N79-25728

HEMATOPOIETIC SYSTEM
Use of a computer model in the understanding of erythropoietic control mechanisms [NASA-CR-160201] p0217 N79-25718
The application of systems analysis and mathematical models to the study of erythropoiesis during space flight [NASA-CR-160218] p0219 N79-25739

HEMODYNAMIC RESPONSES
Special tests for astronaut selection - Study of cardiovascular reactions by the orthostatism test p0047 A79-15490
Developmental and hematological responses to low level exposure of carbon monoxide in mice p0048 A79-16099
Exercise performance and hemodynamics during dietary potassium depletion in dogs p0067 A79-18959
Response of the rat erythrocyte to ozone exposure p0067 A79-18963
Hemodynamic indices under orthostatic and vestibular effects p0098 A79-20692
Interaction between hypothalamic and bulbar levels of regulating blood circulation p0098 A79-21242
Cardiovascular regulatory response to lower body negative pressure following blood volume loss p0101 A79-23470
Hemodynamics in teenagers and asthmatic children during exercise p0133 A79-27102
RBC-/Cr-51/ half-life and albumin turnover in growing Beagle dogs during chronic radial acceleration p0135 A79-27553
Systolic time intervals during combined hand cooling and head-up tilt p0135 A79-27554
Organ blood flow, cardiac output, arterial blood pressure, and vascular resistance in rats exposed to various oxygen pressures p0135 A79-27557
Early cardiovascular adaptation to simulated zero gravity p0162 A79-29727
Fluid shifts during initial phase of immersion diuresis in man p0185 A79-33804

Control of skin blood flow during exercise - Thermal and nonthermal factors
p0185 A79-33807

Effects of chronic changes in hemoglobin-O2 affinity in rats
p0185 A79-33808

Circulatory response to arterial hyperoxia
p0221 A79-36048

Effects of regional hemoconcentration during LBNP on plasma volume determinations --- Lower Body Negative Pressure
p0265 A79-47326

The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations
p0300 A79-52894

Compensatory reactions of the kidneys to orthostatic factors
p0015 N79-10708

Effects of endogenous factors on the process of gas bubble formation in the body related to decompression
p0015 N79-10713

Correction of transcapillary exchange in man under the influence of rotation on a centrifuge while immersed in water
p0110 N79-16533

Developmental and hematological responses to low level continuous exposure of nitrogen dioxide in mice
p0147 N79-19026

Studies of venous circulation in the crew of the Salyut-5 orbital station
p0310 N79-33791

HEMODYNAMICS

Cardiac and vascular components of the systemic response of blood circulation to orthostatic influence
p0097 A79-20651

Regional blood supply under hypoxic hypoxia
p0097 A79-20652

Central and cerebral hemodynamics and metabolism of the healthy man during head-down tilting
p0127 A79-24634

Pulmonary blood volume and interventricular circulation time in physically trained and untrained subjects
p0128 A79-24700

Age trends in the cardiovascular dynamics of aircrewmen
p0136 A79-27560

Individual differences in hypoxic responses at high altitudes
p0159 A79-28738

Diagnostics of initial deficiency in cerebral circulation
p0166 A79-31164

Neural regulation of coronary circulation
p0208 A79-38148

The bloodflow in skeletal muscle capillaries in normoxia and arterial hypoxemia /Microcinematographic studies/
p0208 A79-38150

The response of the microvascular canal to a hypoxic helium-containing medium
p0208 A79-38151

Specific problems in cardiovascular fluid dynamics measur[illegible]
p0210 A79-39506

Dyna[illegible]lase activity of the blood of athle[illegible] influence of local decompression
p0271 A79-49699

Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics
p0296 A79-51118

The role of lesser circulation hemodynamic changes in pulmonary gas exchange
p0300 A79-53066

Studies of hemodynamics and phase structure of cardiac cycle in the crew of Salyut-4
p0072 N79-14718

Development and application of resistive pulse spectroscopy: Studies on the size, form and deformability of red blood cells
[LBL-8640] p0280 N79-30924

HEMOGLOBIN

NT OXYHEMOGLOBIN

Hemoglobinemia in rats exposed to high altitude is not due to an overload of catabolic mechanisms
p0101 A79-23467

Effects of chronic changes in hemoglobin-O2 affinity in rats
p0185 A79-33808

Investigation of the content of hemoglobin and its fractions in permanent inhabitants of the Tien Shan and Pamir
p0188 A79-35124

Effects of regional hemoconcentration during LBNP on plasma volume determinations --- Lower Body Negative Pressure
p0265 A79-47326

Polyglutaraldehyde - A new reagent for coupling proteins to microspheres and for labeling cell-surface receptors
p0274 A79-50230

Noninvasive estimation of bilirubin and hemoglobin oxygen saturation in the skin by reflection spectrophotometry
p0054 N79-13684

Thermodynamic studies on the oxygenation and subunit association of human hemoglobin
p0142 N79-18576

Analysis of visible spectra and thermodynamic parameters in hemeprotein systems
p0144 N79-18579

Mathematical studies of oxygen transport to tissue
p0170 N79-20723

Studies of metabolism, function and mechanism of destruction of red cells
[AD-A070240] p0315 N79-33828

HEMORRHAGES

Ruptured arteriovenous anomaly in a former woman astronaut candidate
p0128 A79-24640

Isolation of a shock-induced circulating cardiodepressant substance
p0257 A79-46967

HEPARINS

Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
p0313 N79-33813

HERING-BREUER REFLEX

Axiomatic summary and deductions from Hering's principles of visual direction
p0228 A79-41421

HETEROCYCLIC COMPOUNDS

NT ADENOSINES
NT ASCORBIC ACID
NT AZINES
NT HYOSCINE
NT INDOLES
NT NICOTINE
NT PROMETHAZINE
NT THYMIDINE
NT TOCOPHEROL
NT TRYPTOPHAN

HEXOSES

Intestinal transport of hexoses in the rat following chronic heat exposure
p0236 A79-43701

HIBERNATION

Similarity in the number of lifespan heartbeats among non-hibernating homeothermic animals
p0298 A79-52281

HIERARCHIES

Adaptive control of a robotic manipulator
p0046 A79-15001

HIGH ACCELERATION

Tolerance of domestic fowl to high sustained +Gz
p0127 A79-24630

Effects of brief exposure of domestic fowl to very intense acceleration fields
p0127 A79-24631

Multibody dynamics including translation between the bodies, with application to head-neck systems
[AD-A062114] p0174 N79-20747

HIGH ALTITUDE

Oxygen affinity of blood in altitude Sherpas
p0268 A79-47854

Composition of cerebral fluids in goats adapted to high altitude
p0277 A79-50902

Evidence for increased intrathoracic fluid volume in man at high altitude
p0305 A79-54266

Flight test evaluation of an RAF high altitude
partial pressure protective assembly
[NASA-TM-72864] p0214 N79-24654
Evidence for increased intrathoracic fluid volume
in man at high altitude
[AD-A065333] p0220 N79-25743
Altitude hypoxia, volume 1. A bibliography with
abstracts
[NTIS/PS-79/0427/9] p0280 N79-30927
Altitude hypoxia, volume 2. A bibliography with
abstracts
[NTIS/PS-79/0428/7] p0280 N79-30928
HIGH ALTITUDE BREATHING
Oxygen systems for Army helicopters
p0044 A79-14421

Individual differences in hypoxic responses at
high altitudes
p0159 A79-28738

Oral/nasal breathing systems in the year 2000
p0183 A79-33621

Changes in lung volume, lung density, and
distribution of ventilation during hypobaric
decompression
p0185 A79-33806

Oxygen equipment and rapid decompression studies
[AD-A070285] p0289 N79-31937
HIGH ALTITUDE ENVIRONMENTS
An assessment of the RAE Type 'N' full pressure
suit automatic head enclosure
p0044 A79-14432

Development of the Air Force S-1030 full pressure
suit assembly
p0044 A79-14433

A Canadian approach to high altitude protection
--- fighter pilot garmentry and high pressure
masks
p0045 A79-14435

Influence of high-altitude conditions on the
metabolism of nucleic acids and proteins in the
thymocytes of the rat
p0069 A79-19425

Thermal sweat rate response to an acute short
exposure at a simulated altitude of 4,600 m
p0102 A79-23474

Effects of dietary composition on nutritional
state in rats during exposure to high altitude
p0134 A79-27118

Plasma electrolytes in relation to altitude
tolerance in rats
p0163 A79-30652

Immunophysiological aspects of man's adaptation to
highland
p0188 A79-35123

Investigation of the content of hemoglobin and its
fractions in permanent inhabitants of the Tien
Shan and Pamir
p0188 A79-35124

Response of women mountaineers to maximal exercise
during hypoxia
p0234 A79-43201

Effect of adaptation to high-altitude hypoxia on
cardiac adrenoreactivity and the state of the
adenylcyclase and phosphodiesterase systems in
the myocardium
p0255 A79-46590

HIGH ALTITUDE FLIGHT
U HIGH ALTITUDE
HIGH ALTITUDE TESTS
New inventory for the assessment of symptom
occurrence and severity at high altitude
p0273 A79-49991

HIGH GRAVITY (ACCELERATION)
U HIGH GRAVITY ENVIRONMENTS
HIGH GRAVITY ENVIRONMENTS
Thermoregulation in unrestrained rats during and
after exposure to 1.5-4 G
p0227 A79-41185

Modeling the effects of high-G stress on pilots in
a tracking task
p0087 N79-15593

HIGH LATITUDES
U POLAR REGIONS
HIGH PASS FILTERS
Influence of motion wash-out filters on pilot
tracking performance
[NLR-MP-78005-U] p0124 N79-17554
HIGH PRESSURE
Positive pressure breathing as a protective
technique in +Gz acceleration
p0201 A79-37132
Increased hemoglobin and content of rat blood
serum as a result of decreased resistance of
erythrocyte membranes to hyperbaric oxygenation,
and the protective effect of urea
p0193 N79-23637

Helium-oxygen mixture and the organism hyperbaric
aspect
p0243 N79-27818

HIGH PRESSURE OXYGEN
Hyperbaric oxygenation. A bibliography with
abstracts
[NTIS/PS-79/0744/7] p0317 N79-33837
HIGH RESOLUTION
A 25-inch precision color display for simulator
visual systems
p0137 A79-28164

Skin-resistance measuring device with higher
resolution
p0252 A79-45476

HIGH TEMPERATURE ENVIRONMENTS
A composite view of task performance in hot
environments
p0036 A79-13186

Cockpit thermal stress and aircrew thermal strain
during routine Jaguar operations
p0266 A79-47334

HIGH TEMPERATURE TESTS
A comparison of sweating responses in men and
women before and after acclimation to humid heat
p0175 N79-21752

HIGHLANDS
Immunophysiological aspects of man's adaptation to
highland
p0188 A79-35123

HILLER MILITARY AIRCRAFT
U MILITARY AIRCRAFT
HINDRANCE
U CONSTRAINTS
HINGE MOMENTS
U TORQUE
HINGED ROTOR BLADES
U ROTARY WINGS
HIPPOCAMPUS
Origin of neuron responses of the superior
colliculus to light flashes
p0233 A79-42294

Effect of cerebrocranial trauma on reactive
distinctions of hypothalamic and hippocampal
vessels in the presence of hypoxia
p0074 N79-14733

HIS BUNDLE
Conduction difficulties of vagal origin in flight
personnel - Significance of intrathoracic data
on the bundle of His --- neural activity effects
on heart block
p0103 A79-23955

Cardiac conduction and aptitude problem of fliers.
The benefits of endocavital recording of the His
bundles
p0030 N79-11716

HISTOCHEMICAL ANALYSIS
Histological and histochemical studies of the
liver of rats flown aboard Kosmos-690 biosatellite
p0014 N79-10703

HISTOLOGY
Histological and histochemical studies of the
liver of rats flown aboard Kosmos-690 biosatellite
p0014 N79-10703

Diffraction-based characterization of biological
tissue with ultrasound --- acoustic scattering
from liver tissue
p0054 N79-13683

HISTORIES
NT CASE HISTORIES
HOLOGRAPHY
The holographic Pancake Window --- magnifier for
flight simulation display
p0138 A79-28172

Binocular holographic helmet mounted display
[AD-A062761] p0174 N79-20749
HOMEOSTASIS
Cardiovascular regulatory response to lower body
negative pressure following blood volume loss
p0101 A79-23470

Control theory and biosystems: Analysis of
homeostatic properties --- Russian book
p0186 A79-34506

The role of the neurohormone system of the hypothalamus in physiology and pathology --- Russian book
p0251 A79-43835

Acid-base homeostasis in the human system
[NASA-CR-160222] p0212 N79-24640

HOMEOTHERMS

Neurophysiology of thermal reception
p0043 A79-14374

The local and time-dependent temperature field in the body of a homeothermic organism in case of sudden changes of quantity and local distribution of internal heat production
p0128 A79-24699

Similarity in the number of lifespan heartbeats among non-hibernating homeothermic animals
p0298 A79-52281

HOMOMORPHISMS

Homomorphic analysis and modeling of ECG signals
p0210 A79-39973

HORMONE METABOLISMS

Comparison of hormone and electrolyte circadian rhythms in male and female humans
p0004 A79-11948

Energetic aspects of adaptation --- Russian book on metabolic responses to stress
p0167 A79-31906

Insulin-like effect of bovine growth hormone in vivo as demonstrated by oxidation of C/14/-U-glucose in diabetic rats
p0252 A79-44797

HORMONES

NT ADRENOCORTICOTROPIN (ACTH)
NT ALDOSTERONE
NT CORTICOSTEROIDS
NT PITUITARY HORMONES

In vivo response of ornithine decarboxylase activity to growth hormone as demonstrated by oxidation of l-ornithine-1-/C-14/ in hypophysectomized rats
p0005 A79-12400

The role of the neurohormone system of the hypothalamus in physiology and pathology --- Russian book
p0251 A79-43835

The effect of 17alpha-ethynylestradiol on the radiation sensitivity of mice
p0141 N79-18557

HOT WEATHER

Effect of water and electrolyte replacement during exercise in the heat on biochemical indices of stress and performance
p0127 A79-24629

Fighter index of thermal stress /FITS/ - guidance for hot-weather aircraft operations
p0202 A79-37715

Fighter index of thermal stress: Development of interim guidance for hot-weather USAF operations
[AD-A053471] p0056 N79-13699

HOT-FILM ANEMOMETERS

Disorder in pulsatile flow - Biomedical measurements with hot film, laser and ultrasound anemometers
p0210 A79-39509

HOVERING

Analysis of a VTOL hover task with predictor displays using an optimal control model of the human operator
p0088 N79-15605

Changes in the rotary wing aviator's ability to perform an uncommon low altitude rearward hover maneuver as a function of extended flight requirements and aviator fatigue
p0150 N79-19623

HOVERING STABILITY

An evaluation of perceptual-motor workload during a helicopter hover maneuver
[AD-A058016] p0052 N79-12709

An evaluation of the effects of a stability augmentation system upon aviator performance/workload during a MEDEVAC high hover operation
p0148 N79-19612

HU-1 HELICOPTER
U UH-1 HELICOPTER

HUGHES MILITARY AIRCRAFT
U MILITARY AIRCRAFT

HUMAN BEHAVIOR

Comparison of plasma and urinary steroids in men with type A and type B behavior patterns
p0028 N79-11704

Human responses to fire: Three designs for research
[PB-284959/4] p0058 N79-13708

A formal model of the adaptive and discrete control behaviors of human operators
[AD-A059039] p0059 N79-13717

Translations on USSR science and technology: Biomedical and behavioral sciences, no. 47
[JPRS-72134] p0071 N79-14708

Translations on USSR science and technology. Biomedical and behavioral science, no. 54
[JPRS-72650] p0077 N79-14753

Modeling the human as a controller in a multitask environment
p0087 N79-15595

Prospects of a mathematical theory of human behavior in complex man-machine systems tasks --- time sharing computer analogy of automobile driving
p0088 N79-15599

Petri nets as a modeling tool for discrete concurrent tasks of the human operator --- describing sequential and parallel demands on human operators
p0088 N79-15600

Use of reward-penalty structures in human experimentation
p0089 N79-15607

A decision model applied to alcohol effects on driver signal light behavior
p0092 N79-15630

Translations on USSR science and technology: Biomedical and behavioral sciences, no. 57
[JPRS-72808] p0121 N79-17526

Masculinity, femininity, androgyny. What really works at work
[AD-A061177] p0156 N79-19683

Translations on USSR science and technology: Biomedical and behavioral sciences, no. 60
[JPRS-73135] p0175 N79-21745

A two level model of human steering behavior in a motor vehicle
[FB-27] p0197 N79-24657

Personality profiles of divers involved in research activities
[DLR-FB-78-11] p0281 N79-30935

Methodological and operational aspects of programmed environment research
[AD-A068587] p0289 N79-31936

Car driving as a cybernetic task
[IZF-1979-6] p0309 N79-32838

HUMAN BEINGS

Acid-base curve nomogram for chimpanzee blood and comparison with human blood characteristics
p0133 A79-27105

Central and reflex mechanisms of controlling movements --- Russian book
p0251 A79-43950

Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
p0305 A79-54267

Influence of skin temperature on sweating and aerobic performance during severe work
p0305 A79-54268

Numerical studies of absorption of electro-magnetic energy by man
p0110 N79-16538

The effect of infection with herpes simplex viruses types 1 and 2 on cell DNA synthesis and thymidine kinase activities in cultured human cells
p0141 N79-18558

Human health damages from mobile source air pollution: Additional Delphi data analysis, volume 2
[PB-288320/5] p0145 N79-18586

Man and materiel in the cold regions, part 1
[AD-A063752] p0178 N79-21771

Investigations about the quantitative changes of carbon dioxide production in humans. Report 2: Carbon dioxide production during fever and its relationship with heat production
[NASA-TM-75452] p0211 N79-24632

Acid-base homeostasis in the human system
[NASA-CR-160222] p0212 N79-24640

Chemicals identified in human biological media, a pilot literature survey
[PB-290690/7] p0214 N79-24649

Man, dummy, test vehicle: A comparison of test results for escape systems with the 3 different test methods p0287 N79-31924

HUMAN BODY

Digital enhancement of computerized axial tomograms p0004 A79-11544

Heat transfer and temperature distribution in the human body p0041 A79-13612

Anatomical coordinate systems for human body segments p0065 A79-18231

Electromagnetic fields and power deposition in body-of-revolution models of man p0130 A79-26007

Model of human heat exchange and identification of its parameters Physiological studies and mathematical modeling p0159 A79-28739

Thermal conduction effects in human skin p0265 A79-47329

Comparison of physiological effects of head-down tilting and immersion on the human body p0298 A79-52279

A spherical representation of a human body for visualizing movement p0301 A79-53096

Radiographic comparison of human lung shape during normal gravity and weightlessness p0305 A79-54269

Variability in human body size p0032 N79-11736

Anthropometry p0032 N79-11737

Range of joint motion p0033 N79-11740

Human muscular strength p0033 N79-11741

Anthropometry in sizing and design p0033 N79-11742

The effects of ozone on human erythrocytes and phospholipid vesicles p0049 N79-12687

Isokinetic exercise: A review of the literature [NASA-CR-151881] p0051 N79-12695

Purification and cultivation of human pituitary growth hormone secreting cells [NASA-CR-151853] p0051 N79-12697

Review of chest deflection measurement techniques and transducers [PB-283654/2] p0051 N79-12702

Aerodynamic forces exerted on an articulated human body subjected to windblast [AD-A059023] p0055 N79-13688

The distribution of cadmium and other metals in human tissues [PB-285200/2] p0057 N79-13703

Zinc [PB-285130/1] p0057 N79-13704

Analysis and validation of human biodynamic models [AD-A059013] p0058 N79-13714

Effects of hyperhydration on human endurance of orthostatic and LBNP tests p0072 N79-14721

Changes in human renal function in passive head-up and head-down positions p0072 N79-14722

Stability of circadian system of the body p0073 N79-14723

Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body p0073 N79-14725

Some recent results on the deposition of electromagnetic energy in animals and models of man p0083 N79-15563

Development opportunities in the space environment p0095 N79-15897

Space biology and aerospace medicine, volume 13, no. 1, 1979 [JPRS-72826] p0107 N79-16514

Effects of LBNP on catecholamines and adrenal cortex p0110 N79-16532

Correction of transcapillary exchange in man under the influence of rotation on a centrifuge while immersed in water p0110 N79-16533

Rehabilitation measures used to restore physical fitness of man after long-term restriction of movement p0110 N79-16534

Instrumentation and techniques for the measurement of muscular strength and endurance in the human body [AD-A061023] p0155 N79-19681

Design specification for the whole-body algorithm [NASA-CR-160226] p0212 N79-24641

Study report on combining diagnostic and therapeutic considerations with subsystem and whole-body simulation [NASA-CR-160231] p0213 N79-24644

Study report on interfacing major physiological subsystem models: An approach for developing a whole-body algorithm [NASA-CR-160232] p0218 N79-25729

The development of a whole-body algorithm [NASA-CR-160214] p0218 N79-25730

Pneumotachographic distinctions of external respiration in man in the presence of excess intrapulmonary pressure on ground level and at high altitudes p0245 N79-27827

Refinement and validation of a mathematical model of the human torso p0247 N79-27841

The human micro-environment p0248 N79-27851

Effects of vibration on the human organism p0249 N79-27862

Models and Analogues for the Evaluation of Human Biodynamic Response, Performance and Protection --- conferences, human tolerance of acceleration, vibration, and shock [AGARD-CP-253] p0284 N79-31901

Transient intraventricular conduction defects observed during experimental impact in human subjects p0285 N79-31907

A human body and crew station modelling system for motion studies p0287 N79-31922

The biodynamic response of the human body and its application to standards p0288 N79-31929

HUMAN CENTRIFUGES

Physiological effect of high, sustained +Gz forces on man p0229 A79-41711

External respiration and gas exchange reactions to exercise during rotation of man on a short-radius centrifuge p0193 N79-23639

Some human responses to repeated +G sub z pulses p0288 N79-31928

A theoretical investigation of power and control configurations for a high g-onset centrifuge drive system [AD-A070912] p0309 N79-32841

External respiration and gas exchange reactions of man during rotation on a short-arm centrifuge p0313 N79-33812

HUMAN ENGINEERING

U HUMAN FACTORS ENGINEERING

HUMAN FACTORS ENGINEERING

A biophysical model for evaluating auxiliary heating and cooling systems --- for protective clothing systems design [ASME PAPER 78-ENAS-33] p0008 A79-12581

Firefighters Integrated Response Equipment System [ASME PAPER 78-ENAS-39] p0009 A79-12586

Intensity judgements of non-sinusoidal vibrations - Support for the ISO weighting method p0010 A79-12868

Human Factors Society, Annual Meeting, 21st, San Francisco, Calif., October 17-20, 1977, Proceedings p0035 A79-13181

Development and transfer of timesharing skills --- for human multiple task performance p0035 A79-13184

Effects of vibration on humans - Performance decrements and limits p0035 A79-13185

A composite view of task performance in hot environments p0036 A79-13186

Human factors design criteria for transilluminated displays
p0036 A79-13187

Seating, console and workplace design - Seated operator reach profiles
p0036 A79-13188

Seating, console, and workplace design - Integration of literature and accommodation model
p0036 A79-13189

The application of computer aided evaluative techniques to system test and evaluation --- of fighter aircraft pilot performance
p0036 A79-13190

Imagery interpreter performance in the comparison of subjective estimates of photographic image quality
p0036 A79-13191

Discrimination of density and clustering on four versions of a stochastic display --- human performance of pattern recognition
p0036 A79-13192

Tracking in two dimensions as a function of dimension priorities and tracking difficulty
p0036 A79-13193

A prediction model of arm push strength in the transverse plane
p0037 A79-13195

Computer simulation of thermoregulatory responses to heat stress - A future work design and training tool
p0037 A79-13196

Four years of color research for visual displays --- human performance consideration for use in aircraft
p0039 A79-13210

Response surface methodology as a manipulator of complex task difficulty --- for computer generated aircraft area navigation control-display systems evaluation
p0039 A79-13211

Task functional demands as factors in dual-task performance
p0039 A79-13214

NASA flight management research
p0040 A79-13218

Arrangement of aircraft flight indicators with the help of optimal theoretical models for man as the controller
[DGLR PAPER 78-149] p0042 A79-14094

Anthropology in Spacelab - Control and display system in Spacelab
[DGLR PAPER 78-151] p0042 A79-14096

USAF life support equipment costs
p0043 A79-14402

Heat transfer principles in personal protection applications
p0043 A79-14405

Oxygen systems for Army helicopters
p0044 A79-14421

Human factors considerations in establishing aircraft collision avoidance system alert thresholds
p0045 A79-14438

Adaptive supervisory control of remote manipulation
p0046 A79-14987

Subjective data in human reliability estimates
p0046 A79-15398

Computer-graphic design for human performance
[AD-A055132] p0046 A79-15399

Man-machine reliability - A practical engineering tool
p0047 A79-15400

The man-computer division of tasks in the case of the control of complex technical systems --- applied to aircraft
p0061 A79-17683

Ergonomic problems regarding the interactive touch input via screens in onboard and ground-based flight control
p0061 A79-17695

Human Factors Society, Annual Meeting, 22nd, Detroit, Mich., October 16-19, 1978, Proceedings
p0062 A79-18201

Quantifying operator preference during human factors test and evaluation --- in helicopter design
p0062 A79-18202

AWAVS, a research facility for defining flight trainer visual system requirements
p0062 A79-18207

Factors that affect display size criteria in a cockpit display system
p0063 A79-18212

Human factors considerations in the design and evaluation of a helmet mounted display using a light emitting diode matrix
p0063 A79-18214

Estimating percentiles of nonnormal anthropometric populations - Final report
p0065 A79-18226

Human engineering study of information processing applicable to helmet-mounted displays
p0068 A79-18994

Collision avoidance response stereotypes in pilots and nonpilots
p0068 A79-18995

Peripheral acuity and photointerpretation performance
p0068 A79-18996

Line criteria in target acquisition with television --- visibility of target image on TV screen
p0068 A79-18997

Evoked potential correlates of display image quality
p0068 A79-18998

Speed and load stress as determinants of performance in a time sharing task
p0068 A79-18999

Visual target acquisition and ocular scanning performance
p0069 A79-19000

A visual simulator with transformation of the perspective in the raster of television pictures --- German book on pilot training systems
p0069 A79-19375

Vigilance and electroencephalogram --- human performance in compensatory target tracking
p0100 A79-22975

A controller's eye view of color
p0102 A79-23596

Relations between research and instruction in physiology and aerospace ergonomy in the military health services
p0104 A79-23960

Interdisciplinary and international contributions to research on biological effects of electromagnetic waves - Past performances and future challenges
p0129 A79-24878

Digital man-machine control systems - The effects of preview lag
p0131 A79-26149

A theoretical model to estimate some ergonomic parameters from age, height and weight
p0132 A79-26150

Hyper-resolution in human perception of movement in visual displays
p0132 A79-26240

The human operator in the control system: Linear models --- German book
p0132 A79-26356

A comparison of kinesthetic-tactual and visual displays via a critical tracking task --- for aircraft control
p0162 A79-29720

The biomedical implications of engineering in space
p0166 A79-31122

Better definition of eye to aortic valve distance in high acceleration cockpit /HAC/ seating geometries
p0183 A79-33632

The objective evaluation of aircrew protective breathing equipment. III - Improved types of mask/goggles combinations. IV - Fullface masks and hoods suitable for flight attendant use
p0184 A79-33638

Improved headgear for fixed wing Navy aircrewmen
p0184 A79-33641

Perception of continuity in stroboscopic motion - A temporal frequency analysis
p0186 A79-34375

Dynamics of the eye and head during movement between displays - A qualitative and quantitative guide for designers
p0209 A79-38362

Pilot workload in the aircraft of the future
p0226 A79-40646

Thermal bounds to the time of stay of human beings in enclosures

p0231 A79-41770

Guidelines for designing machines and devices for acoustic vibrations from the point of view of the physiological and psychological properties of the human organism
p0236 A79-43608

The relative effects of multiple factors on target acquisition --- by combat pilots
p0267 A79-47765

Synthetic training and evaluation - Some current issues
p0275 A79-50550

Man and machine design for space flight
p0300 A79-52696

Thoughts about man-machine interrelations in space flights applied to Spacelab missions
[IAF PAPER 79-95] p0302 A79-53295

Considerations associated with the introduction of female crewmembers in spacecraft and space stations
[IAF PAPER 79-A-22] p0303 A79-53424

Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
p0303 A79-53486

Human factors evaluation of the AN/UYQ-21 display console
[AD-A056383] p0020 N79-10743

Establishing habitability factors for the design of office environments
[AD-A056463] p0020 N79-10744

Anthropometric source book. Volume 1: Anthropometry for designers
[NASA-RP-1024] p0032 N79-11734

Anthropometric changes in weightlessness
p0032 N79-11735

The inertial properties of the body and its segments
p0033 N79-11738

Arm-leg reach and workspace layout
p0033 N79-11739

Effect of impermeable clothing and respirator on work performance. Part 1: Laboratory studies
[SAND-77-2132] p0034 N79-11748

A critally annotated bibliography of the literature on human factors in computer systems
[AD-A058081] p0052 N79-12707

The effect of active area on the legibility of dot matrix displays
[AD-A058014] p0052 N79-12708

Development of recommendations to improve controls operability
[PB-284433/0] p0053 N79-12714

Human factors aspects of low light level television and forward looking infrared sensor displays. 1: A feasibility study of scaled subjective complexity of still scenes applied to computer image generation
[AD-A058938] p0058 N79-13715

Psychological experiment on components of the meaning of work
p0071 N79-14709

Evaluation of the amount of exposure to vibrations transmitted to the whole body case of vibrations due to a loader mounted on catapillar tracks, a fork-lift truck and a hydraulic excavator
[RAE-LIB-TRANS-1930] p0080 N79-14773

Comparative experiments on performance and fatigue effects on pilots using tracking tests and physiological measurement parameters
[RAE-LIB-TRANS-1971] p0080 N79-14774

Reach capability of men and women: A three-dimensional analysis
[AD-A060312] p0081 N79-14779

Development of aerospace-aviation equipment described
p0081 N79-14795

Human performance in concurrent verbal and tracking tasks: A review of the literature
[AD-A060493] p0085 N79-15585

Human factors. Speech communication
[PS-5/78] p0113 N79-16555

Optimisation of pilot capability and avionic system design
[AGARD-AR-118] p0113 N79-16560

Optimisation of pilot capability and avionic system design, introduction
p0113 N79-16561

Human capabilities
p0114 N79-16562

The Helicopter
p0114 N79-16568

Some ergonomic aspects of adapting workrooms with visual display units to the human possibilities
[IZF-1978-1] p0125 N79-17562

Human factors evaluations of today's helicopters as an aid to future systems design
p0150 N79-19627

TADRAP: A computer-aided technique for reducing aircrew task analysis data --- helicopter design considering human factors
p0150 N79-19628

The use of biostereometry in helicopter cockpit design --- using a simulator and analytic geometry
p0150 N79-19629

Human factor engineering test and evaluation of the US Navy LAMPS helicopter system
p0151 N79-19632

A system of training in aviation physiology and human factors for Army and Navy helicopter aircrew
p0151 N79-19635

Visual requirements for the helicopter pilot
p0151 N79-19636

Providing an eye separator on a color cathode tube --- enhancing visual acuity
p0152 N79-19639

Simulated EVA operation of a remote connector assembly test report
[NASA-CR-161167] p0156 N79-19687

A methodology for conducting human factors evaluations of vehicles in operational field tests
[AD-A061808] p0157 N79-19691

Development of a solid propellant inflation technique for the subcompact car passenger restraint system, phase 1
[PB-290328/4] p0178 N79-21775

Human factors in Space vehicles and space stations
p0189 N79-22135

Human factors analysis of visual distress signaling devices --- used by boaters
[AD-A064174] p0190 N79-22765

A human engineering specification for legibility of alphanumeric symbology on video monitor displays
[AD-A064960] p0197 N79-23667

MS/1, a man - machine interface: A contribution towards a standard
[NPL-CSU-2/78] p0197 N79-23669

The effects of pilot age, lighting, and head-down time on visual accomodation
[AD-A064912] N79-25747

A photometric and legibility assessment of Aerospace Optics, Incorporated Vivisun 20/20 display
[AD-A067668] p0242 N79-26786

Apparatus and method of inserting a microelectrode in body tissue or the like using vibration means
[NASA-CASE-NPO-13910-1] p0246 N79-27836

Refinement and validation of a mathematical model of the human torso
p0247 N79-27841

Operator performance and localized muscle fatigue in a simulated space vehicle control task
[NASA-TM-58220] p0259 N79-28867

Development of information theory concepts and equations for human mental processing
[AD-A068606] p0260 N79-28877

Cold water survival suits for aircrew
[ARL/SYS-NOTE-56] p0261 N79-28882

Crew workload assessment. Development of a measure of operator workload
[AD-A068616] p0261 N79-28884

Isometric strength testing in selecting workers for strenuous jobs
p0262 N79-29790

Human processing of information and the computerized mode of presentation: Ergonomic parameters
[FOA-C-56018-H9] p0263 N79-29797

Multipurpose digital switching and flight control workload
[AD-A069606] p0281 N79-30934

A decision, monitoring and control model of the human operator applied to an RPV control problem
[AD-A069880] p0282 N79-30939

Development of human performance models for man-machine system simulation
[AD-A069879] p0282 N79-30940

Injury mechanisms analysis in aircraft accidents
p0286 N79-31913
A head injury model
p0286 N79-31918
Contributions of psychophysiological techniques to aircraft design and other operational problems
[AGARD-AG-244] p0290 N79-31941
Human Factors Aspects of Aircraft Accidents and Incidents
[AGARD-CP-254] p0290 N79-31942
Three decades of USAF efforts to reduce human error accidents, 1947-1977
p0290 N79-31943
Human factors in production and prevention of aircraft accidents due to disorientation in flight
p0291 N79-31952
Human performance in time-shared verbal and tracking tasks
[AD-A070275] p0308 N79-32831
The use of artificial signals during SONAR-watch
[IZF-1978-25] p0309 N79-32837
Application of a structured decision process for proper inclusion of human resources in the design of a power unit support stand
[AD-A069978] p0309 N79-32840
Acoustic attitude orientation
p0314 N79-33816
A nonlinear mapping approach to discrimination of sleep stages from the human electroencephalogram
p0314 N79-33817
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
[AD-A069375] p0314 N79-33819
Laboratory performance during acute intoxication and hangover
[AD-A069373] p0314 N79-33820
Development of electrophysiological indices of neurological toxicity for organophosphate pesticides and depressant drugs
[AD-A070299] p0314 N79-33821
Models of human operators in vision dependent tasks
[NASA-CP-2103] p0317 N79-33838
A survey of Applied Psychological Services' models of the human operator
p0317 N79-33839
Visual performance modeling in the human operator simulator
p0317 N79-33840
A brief overview of the theory and application of the optimal control model of the human operator
p0317 N79-33841
Development of an objective grading system along with procedures and aids for its effective implementation in flight
[AD-A071106] p0318 N79-33846
Workload and the certification of helicopters for IFR operation
[AD-A072758] p0318 N79-33850
A general model for the transfer of vapour through clothed skin from liquid on and in clothing
[AD-A071577] p0319 N79-33853

HUMAN FACTORS LABORATORIES
Ergonomics laboratory studies pilots' stability for command --- psychophysiological characteristics
p0121 N79-17529

HUMAN PATHOLOGY
The use of aviation pathology and aviation medicine as proof of liability and damage
p0100 A79-22704
Morbidity experience of air traffic control personnel - 1967-77
p0101 A79-23466
Pneumothorax and flight personnel --- incidence, etiology and treatment
p0103 A79-23956
Automatic control of physiological functions of the human organism in pathology --- Russian book
p0132 A79-26350
Paroxysmal disorders of consciousness due to flight factors
p0161 A79-29300
Diagnostics of initial deficiency in cerebral circulation
p0166 A79-31164
Characteristics of serious carbon monoxide poisoning
p0167 A79-32100
Predicting coronary artery disease with treadmill stress testing Changes in R-wave amplitude compared with ST segment depression
p0186 A79-34284
Pathophysiology of overloads: Bibliography of Soviet publications --- Russian book
p0200 A79-36385
Coronary calcification in the diagnosis of coronary artery disease
p0226 A79-40465
The role of the neurohormone system of the hypothalamus in physiology and pathology --- Russian book
p0251 A79-43835
Magnetocardiography - An overview
p0274 A79-50107
Assessment of human exposures to atmospheric benzene
[PB-284203/7] p0051 N79-12701
Study report on combining diagnostic and therapeutic considerations with subsystem and whole-body simulation
[NASA-CR-160231] p0213 N79-24684
Results of a 64Cu-loading test applied to patients with an inherited defect in their Cu-metabolism (Menkes' disease)
[IRI-133-77-04] p0240 N79-26774
The oral 64Cu-loading test: Applications and problems
[IRI-133-78-02] p0240 N79-26775
ESR studies on different pathological states
[ISS-L-22/9] p0248 N79-27854

HUMAN PERFORMANCE
NT ASTRONAUT PERFORMANCE
NT OPERATOR PERFORMANCE
NT PILOT PERFORMANCE
Mental work and emotions --- Russian book
p0002 A79-10847
Human Factors Society, Annual Meeting, 21st, San Francisco, Calif., October 17-20, 1977, Proceedings
p0035 A79-13181
Models for automated motor skills training --- computer controlled adaptive instruction
p0035 A79-13182
Perceptual delay - A consequence of metacontrast and apparent motion
p0035 A79-13183
Task taxonomy - Two ignored issues --- criteria for task evaluation with respect to empirical data
p0039 A79-13212
Coordinated crew performance in commercial aircraft operations
p0040 A79-13219
Vibration, performance, and personality --- vibration effects on human performance and psychological factors
p0040 A79-13224
Effects of target motion and image on AAA tracking --- Anti-Aircraft Artillery
p0046 A79-14969
Subjective data in human reliability estimates
p0046 A79-15398
System operability - Concept and measurement in test and evaluation --- man system compatibility indices in F-18 aircraft example
p0062 A79-18204
Application of performance model to assess aviator critical incidence
p0063 A79-18209
Secondary visual workload capability with primary visual and kinesthetic-tactual displays
p0064 A79-18220
Team performance - A model for research
p0065 A79-18227
Collision avoidance response stereotypes in pilots and nonpilots
p0068 A79-18995
Peripheral acuity and photointerpretation performance
p0068 A79-18996
Evoked potential correlates of display image quality
p0068 A79-18998
Structure of biorhythms as one of the criteria for physiological adaptability of the human organism
p0097 A79-20653
Vigilance and electroencephalogram --- human performance in compensatory target tracking
p0100 A79-22975
Correlation of choice reaction time performance with biorhythmic criticality and cycle phase
p0102 A79-23471

Carbon monoxide and human time discrimination -
Failure to replicate Beard-Wertheim experiments
p0102 A79-23472

A theoretical model to estimate some ergonomic
parameters from age, height and weight
p0132 A79-26150

Comparative evaluation of the effectiveness of
visual and aural tracking of a sinusoidal signal
p0159 A79-28736

Mechanics of the regulation of the respiratory
system in man
p0160 A79-29258

The effects of carbon monoxide on dual-task
performance
p0161 A79-29716

Discrimination, temperature, and time of day ---
human performance variances
p0161 A79-29718

An algorithm to ascertain critical regions of
human tracking ability
p0163 A79-30218

Deductive derivation of a mathematical model for
spectral sensitivity of the human organ of
sight. I, II
p0166 A79-31178

A bioengineering simulator of the human visual
apparatus
p0166 A79-31180

Visual contrast sensitivity functions obtained
with colored and achromatic gratings
p0181 A79-32628

Human error accidents - Some case studies --- for
aircraft
p0183 A79-33193

A rationale for human operator pulsive control
behavior
p0186 A79-34520

Effect of induced cyclic changes of deep body
temperature on task performances
p0202 A79-37708

Physiologic and performance measurements in
simulated airborne combined stress environments
p0202 A79-37710

Rhythms in human performance - 1-1/2-hour
oscillations in cognitive style
p0210 A79-39601

Spatial frequency masking in human vision -
Binocular interactions
p0232 A79-42284

Changes in the circadian rhythm of performance and
mood in healthy young men exposed to prolonged,
heavy physical work, sleep deprivation, and
caloric deficit
p0234 A79-43202

Test of the 10 bits/sec channel-capacity
hypothesis for human tracking
p0253 A79-45771

A study of the available evidence on duration
effects on comfort and task proficiency under
vibration
p0254 A79-46399

Mechanisms of the effects of vibration frequency,
level and duration on continuous manual control
performance
p0299 A79-52327

Development of a performance criterion for air
traffic personnel research through air traffic
control simulation
[AD-A058082] p0031 N79-11727
Life stress, organizational stress, and job
satisfaction
[AD-A055153] p0057 N79-13706
Information processing in humans, volume 3. A
bibliography with abstracts
[NTIS/PS-78/1154/0] p0058 N79-13710
Survey of human operator modeling techniques for
measurement applications
[AD-A058327] p0058 N79-13713
Proceedings of the 1977 Computerized Adaptive
Testing Conference
[AD-A060049] p0079 N79-14771
Human work measurement. A bibliography with
abstracts
[NTIS/PS-78/1197/9] p0081 N79-14781
Relating performance in basic electricity and
electronics and A schools
[AD-A060914] p0085 N79-15584
Human performance in concurrent verbal and
tracking tasks: A review of the literature
[AD-A060493] p0085 N79-15585
A comparison of motor submodels in the optimal
control model
p0087 N79-15597

Use of reward-penalty structures in human
experimentation
p0089 N79-15607

The influence of vehicle aerodynamic and control
response characteristics on driver-vehicle
performance
p0089 N79-15608

A model for dynamic allocation of human attention
among multiple tasks
p0092 N79-15627

The effects of alcohol on driver performance in a
decision making situation
p0092 N79-15629

Combined monitoring, decision and control model
for the human operator in a command and control
desk
p0092 N79-15631

A model of human event detection in multiple
process monitoring situations
p0092 N79-15632

Vision
p0095 N79-15694

Human capabilities
p0114 N79-16562

The effects of deviate internal representations in
the optimal model of the human operator
p0114 N79-17477

A quasi-linear control theory analysis of
timesharing skills
p0115 N79-17479

A dual-loop model of the human controller
p0115 N79-17480

Parameter estimation in a human operator
describing function model for a two-dimensional
tracking task
p0115 N79-17481

Reduced mental capacity and behavior of a rider of
a bicycle simulator under alcohol stress or
under dual task load
p0116 N79-17489

A relationship between eye movement patterns and
performance in a precognitive tracking task
p0116 N79-17490

A model of the human supervisor
p0117 N79-17495

The human as a detector of changes in variance and
bandwidth
p0117 N79-17496

Task complexity and 24-hr performance patterns in
morning and evening active subjects
[FOA-C-52001-H6] p0122 N79-17537
A method to evaluate performance reliability of
individual subjects in laboratory research
applied to work settings
[FAA-AM-78-37] p0123 N79-17547
The measurement and scaling of workload in complex
performance
[FAA-AM-78-34] p0125 N79-17558
Investigation on the effect of mechanical
properties of control elements on human control
performance under stochastic roll vibrations
[BMVG-FBWT-78-11] p0146 N79-18593
Simulated EVA operation of a remote connector
assembly test report
[NASA-CR-161167] p0156 N79-19687
Graphic display of human motion
[AD-A064344] p0190 N79-22763
Individual differences in knowledge acquisition
from maps
[AD-A065040] p0196 N79-23663
Evidence for increased intrathoracic fluid volume
in man at high altitude
[AD-A065333] p0220 N79-25743
Predicting individual listener confusions in the
classification of complex, steady-state sounds
[AD-A066704] p0222 N79-25755
Effects of noise frequency on performance and
annoyance
[NASA-TM-80107] p0241 N79-26781
The influence of hyperbaric environment in
combination with workload and confinement on
human information processing
[DLR-FB-78-12] p0280 N79-30926
Multipurpose digital switching and flight control
workload

[AD-A069606] p0281 N79-30934

Development of human performance models for man-machine system simulation
[AD-A069879] p0282 N79-30940

Ergonomic research into human tolerances for roll and pitch as well as their influence on individual perception and reactions to control parameters
[BMVG-FBWT-78-18] p0282 N79-30944

Progress in measuring and modeling the effects of low frequency vibration on performance
p0288 N79-31930

Making it in academic psychology: Demographic and personality correlates of eminence
[NASA-CR-162287] p0289 N79-31932

Hemispheric asymmetry as related to pilot and radar intercept officer performance
[AD-A068087] p0289 N79-31935

Human performance in time-shared verbal and tracking tasks
[AD-A070275] p0308 N79-32831

Acoustic attitude orientation
p0314 N79-33816

Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
[AD-A069375] p0314 N79-33819

Laboratory performance during acute intoxication and hangover
[AD-A069373] p0314 N79-33820

The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress
[AD-A069952] p0318 N79-33845

Development of an objective grading system along with procedures and aids for its effective implementation in flight
[AD-A071106] p0318 N79-33846

Human memory. A bibliography with abstracts
[NTIS/PS-79/0640/7] p0318 N79-33847

HUMAN REACTIONS

False hypothesis and the pilot --- aircraft accidents due to decision making errors
[SAE PAPER 780528] p0001 A79-10399

Human psychophysiology in extremal conditions --- Russian book on polar region adaptation
p0048 A79-15977

Effects of information processing requirements on reaction time of the eye
p0064 A79-18219

Startle reactions to simulated sonic booms - Influence of habituation, boom level and background noise
p0097 A79-20502

Responses of teachers to aircraft noise
p0103 A79-23881

A study of the available evidence on duration effects on comfort and task proficiency under vibration
p0254 A79-46399

Estimated body rotation as a predictor of motion sickness susceptibility
p0273 A79-49990

The effects of carbon monoxide and cyanide on the brain
p0024 N79-11682

The 14th Annual Conference on Manual Control --- digital simulation of human operator dynamics
[NASA-CP-2060] p0086 N79-15588

Directional errors of movements and their correction in a discrete tracking task --- pilot reaction time and sensorimotor performance
p0086 N79-15589

AAA gunnermodel based on observer theory --- predicting a gunner's tracking response
p0087 N79-15594

Closed loop models for analyzing the effects of simulator characteristics --- digital simulation of human operators
p0087 N79-15598

Discrete-time pilot model --- human dynamics and digital simulation
p0088 N79-15601

Effects of prolonged unidirectional shift of sleeping-waking cycle on physiological functions, mental productivity and sleep of man
p0109 N79-16526

An investigation to determine the effect of physical conditioning upon fibrinolytic reactivity in normal young men
p0110 N79-16536

Effect on mice of microwaves in the non-thermal intensity region. Respiration, rectal temperature and mental reaction
[FOA-C-54021-H2(E6)] p0120 N79-17523

Heart rate: Physiological characteristics and quantification methods for use in behavioral studies
[CSIR-SR-PERS-276] p0121 N79-17531

Human health damages from mobile source air pollution: A delphi method, volume 1
[PB-288319/7] p0145 N79-18585

A model for predicting human discomfort response to combined noise and vertical vibration
p0156 N79-19685

Effects of filtering electroencephalic signals on auditory evoked brain stem responses
p0176 N79-21758

Discomfort criteria for single-axis vibrations
[NASA-TP-1422] p0196 N79-23662

Stress and fatigue in the driving environment --- physiological and psychological effects of heat and noise experienced inside automobiles
p0211 N79-24629

Physiological effects of a high soybean protein diet in man
p0240 N79-26777

Effects of amphetamine on response selection and response execution processes in choice reaction tasks
[IZF-1978-8] p0309 N79-32839

HUMAN TOLERANCES

Relaxed +Gz tolerance in healthy men - Effect of age
p0067 A79-18956

SPH-4 helmet damage and head injury correlation
p0127 A79-24633

Aircraft noise and its effect on man: Methods and results of research, consequences for environmental protection --- German book
p0162 A79-29763

Physiological effect of high, sustained +Gz forces on man
p0229 A79-41711

Temporary threshold shift from transportation noise
p0258 A79-46286

Blood pressure variability of the individual in orthostatic testing
p0265 A79-47328

Evaluation of assisted positive-pressure breathing on +Gz tolerance
p0266 A79-47336

Reproducibility of +Gz tolerance testing
p0267 A79-47337

Aerospace highlights and potential medical applications --- in manned space flight
p0293 A79-51027

Bimodal relationship of human tremor and shivering on introduction to cold exposure
p0298 A79-52278

Quantitative review of human susceptibility to magnetic fields
[UCID-17773] p0026 N79-11691

Development opportunities in the space environment
p0095 N79-15897

Problems of human adaption to spaceflight
p0157 N79-19985

Multibody dynamics including translation between the bodies, with application to head-neck systems
[AD-A062114] p0174 N79-20747

A comparison of sweating responses in men and women before and after acclimation to humid heat
p0175 N79-21752

Human discomfort response to noise combined with vertical vibration
[NASA-TP-1374] p0190 N79-22761

Discomfort criteria for single-axis vibrations
[NASA-TP-1422] p0196 N79-23662

Effects of noise frequency on performance and annoyance
[NASA-TM-80107] p0241 N79-26781

Effect of helicopter noise on passenger annoyance
[NASA-TM-80106] p0241 N79-26782

Thermal conduction effects in human skin. 1: Experimental data acquisition
[AD-A068479] p0259 N79-28871

Thermal conduction effects in human skin. 3: Influence of epidermal thickness and exposure time [AD-A068481] p0259 N79-28872
A subhuman primate restraint system [AD-A069607] p0279 N79-30915
Compatibility test of oxygen exposures in the range of 2.2 to 2.8 bar absolute [DLR-FB-78-10] p0280 N79-30925
Ergonomic research into human tolerances for roll and pitch as well as their influence on individual perception and reactions to control parameters [BMVG-FBWT-78-18] p0282 N79-30944
The validation of biodynamic models p0286 N79-31914
The use of mathematical modeling in crashworthy helicopter seating systems p0287 N79-31923
The use of spinal analogue to compare human tolerance of repeated shocks with tolerance of vibration, part 1 p0288 N79-31926
Tentative evaluation of annoyance caused by noise from gunfire [IZF-1978-21] p0310 N79-32843
Minimum sea surface temperatures and associated survival times [AD-A070162] p0315 N79-33824

HUMAN WASTES
NT FECES
NT SWEAT
NT URINE
Decreased activity of palladium catalyst during processing of excreta p0016 N79-10716
Utilization of the wastes of vital activity [NASA-TM-75410] p0177 N79-21768

HUMIDITY
The dependence of the CO2 removal efficiency of LiOH on humidity and mesh size --- in spacecraft life support systems [ASME PAPER 78-ENAS-5] p0006 A79-12554
Human skin wettedness and evaporative efficiency of sweating p0162 A79-29726
Apparatus for supplying conditioned air at a substantially constant temperature and humidity [NASA-CASE-GSC-12191-1] p0156 N79-19688
Flight prototype CO2 and humidity control system [NASA-CR-160224] p0222 N79-25760

HYBRID CIRCUITS
The use of hybrid integrated circuit techniques in biotelemetry applications p0131 A79-26145
Hybridization of biomedical circuitry [NASA-CR-151874] p0111 N79-16543

HYBRID COMPUTERS
Hybrid computation of left ventricular performance using noninvasive techniques [AD-A063749] p0190 N79-22758

HYDRATION
Effects of hyperhydration on human endurance of orthostatic and LBNP tests p0072 N79-14721

HYDRAULIC VALVES
U VALVES

HYDRAZINES
Metabolism of hydrazine [AD-A062251] p0169 N79-20716
Effects of propellant hydrazines on red blood cells: Methemoglobin and Heinz body formation [AD-A064133] p0189 N79-22755

HYDROCARBON FUELS
NT DIESEL FUELS
NT JET ENGINE FUELS

HYDROCARBONS
NT ETHYLENE
NT KEROGEN
NT METHANE
Squalenes, phytanes and other isoprenoids as major neutral lipids of methanogenic and thermoacidophilic 'archaebacteria' p0232 A79-42274
Clozapine metabolism in humans [BLL-RTS-10902] p0142 N79-18567

HYDROCYANIC ACID
HCN did not condense to give heteropolypeptides on the primitive earth p0133 A79-26542

HYDRODYNAMIC STABILITY
U FLOW STABILITY

HYDROFOIL BOATS
U BOATS

HYDROGEN
NT HYDROGEN IONS
NT TRITIUM

HYDROGEN COMPOUNDS
NT HYDROCYANIC ACID
NT HYDROGEN SULFIDE

HYDROGEN CYANIDES
U HYDROCYANIC ACID

HYDROGEN IONS
Gating effects in Halobacterium halobium membrane transport p0268 A79-47849

HYDROGEN ISOTOPES
NT TRITIUM

HYDROGEN SULFIDE
Incorporation of sulphur in chemical evolution p0203 A79-37938
Decreased activity of palladium catalyst during processing of excreta p0016 N79-10716

HYDROGEN 3
U TRITIUM

HYDROMECHANICS
NT HYDROSTATICS

HYDROSTATIC PRESSURE
Better definition of eye to aortic valve distance in high acceleration cockpit /HAC/ seating geometries p0183 A79-33632

HYDROSTATICS
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia p0313 N79-33809

HYDROXIDES
NT LITHIUM HYDROXIDES

HYDROXYL COMPOUNDS
NT ALCOHOLS
NT ETHYL ALCOHOL

HYDROXYL RADICALS
Raman and infrared investigations of the nature of intracellular water [AD-A061254] p0120 N79-17522

HYGIENE
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/ p0303 A79-53486
Spacecraft utensil/hand cleansing fixture [NASA-CR-151845] p0032 N79-11731
Spacecraft utensil/hand cleansing fixture, addendum [NASA-CR-151846] p0032 N79-11732
Environment monitoring in the USSR and hygienic practice --- anthropogenic effects p0121 N79-17528

HYGRAL PROPERTIES
U MOISTURE CONTENT

HYOSCINE
Prevention and treatment of space sickness in Shuttle-Orbiter missions p0128 A79-24639

HYPERBARIC CHAMBERS
Capillary fragility during air exposure of man to 1-5 ATA and after decompression p0010 A79-12863
Effect of hyperbaric oxygen on peripheral blood neutrophil metabolism p0245 N79-27830
Immunobiological reactivity of the body under hyperbaric and hypobaric conditions p0310 N79-33790

HYPERCAPNIA
Exercise ventilation correlates positively with ventilatory chemoresponsiveness p0066 A79-18954
Responses of pial arterioles after prolonged hypercapnia and hypoxia in the awake rabbit p0101 A79-23075
Contribution of rib cage and abdomen-diaphragm to tidal volume during CO2 rebreathing p0185 A79-33805
Epiphysis of rats under the combined action of hypoxia, hypercapnia and cooling p0256 A79-46680
Responses of conscious rabbits to CO2 at ambient temperatures of 5, 20, and 35 C

p0277 A79-50904
Effect of combination of hypoxia and hypercapnia on survival of Japanese quail
p0194 N79-23641
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
p0311 N79-33798

HYPEROPIA
Visual acuity of the aging hyperopic eye in the intermediate range
p0037 A79-13198

HYPEROXIA
The comparative study of metabolism changes dynamics during hypoxia and hyperoxia in mice lungs
[IAF PAPER 78-51] p0002 A79-11221
Transient changes in arterial blood gases and heart rate during and after acutely induced hypoxia and hyperoxia to rabbits
p0134 A79-27120
Mechanisms of the effect of oxygen toxicity on the energy metabolism
p0160 A79-29275
Glucose metabolism in rat lung during exposure to hyperbaric O2
p0221 A79-36047
Circulatory response to arterial hyperoxia
p0221 A79-36048
The effect of hyperoxia on the oxygen tension of blood and cerebral tissue
p0208 A79-38146
Determination of cerebral and neck subcutaneous tissue PO2 with 3 and 4 +Gz in M. mulatta
p0234 A79-43205
Adaptation to chronic hyperoxia in the rat - A study of pulmonary surfactant, tissue levels of superoxide dismutases and histology
p0256 A79-46603
The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
p0296 A79-51113
Effect of oxygen poisoning on the spectrum of lactate dehydrogenase isozymes of rabbit blood plasma
p0017 N79-10721
Metabolic responses of ponies to treadmill exercise in hyperoxia
p0049 N79-12681
Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body
p0073 N79-14725
The combined effect of carbon monoxide and normobaric hyperoxia on animals
p0073 N79-14730
The effect of hyperoxia on cerebral blood flow in the unanesthetized pony
p0107 N79-16511
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] p0307 N79-32823
Hyperbaric oxygenation. A bibliography with abstracts
[NTIS/PS-79/0744/7] p0317 N79-33837

HYPERTENSIN
NT POLYPEPTIDES

HYPERTENSION
Distinguishing borderline hypertensives from normotensives: A clinical study of 300 aircrewmen
p0027 N79-11699
Noninvasive assessment of pulmonary hypertension using bubble ultrasonic ringing (BURP) method, part 2
[PB-283935/5] p0051 N79-12699
Noninvasive assessment of pulmonary hypertension
[PB-285121/0] p0057 N79-13701

HYPERTHERMIA
Fighter index of thermal stress /FITS/ - guidance for hot-weather aircraft operations
p0202 A79-37715
Separation of the effects of raised skin and core temperature on performance of a pursuit rotor task
p0234 A79-43204
Intestinal transport of hexoses in the rat following chronic heat exposure
p0236 A79-43701
Hyperthermia and exercise --- plasma fluid and electrolyte effects on human thermoregulation
p0252 A79-44775
Heat- and exercise-induced hyperthermia - Effects on high-energy phosphates
p0266 A79-47332
Hyperthermia as an Antineoplastic Treatment Modality
[NASA-CP-2051] p0017 N79-10728
Hyperthermia in the treatment of cancer: A review of the radiobiological basis
p0017 N79-10729
The effect of hyperthermia on the radiation response of crypt cells in mouse jejunum
p0018 N79-10731
A microangiographic study of the effect of hyperthermia on the rabbit bladder
p0018 N79-10732
Hypothermia. A bibliography with abstracts
[NTIS/PS-79/0533/4] p0308 N79-32830

HYPERTONIA
U OSMOSIS

HYPERTROPHY
U GROWTH

HYPERVENTILATION
Hyperventilation in aircrew - A review
p0235 A79-43212

HYPNOSIS
Stress management: A comparison of educational, aerobic and autosuggestive approaches
p0260 N79-28875

HYPOBARIC ATMOSPHERES
Changes in lung volume, lung density, and distribution of ventilation during hypobaric decompression
p0185 A79-33806
Medical barofunction testing of aviators with otorhinolaryngologic disease
p0298 A79-52285
Immunobiological reactivity of the body under hyperbaric and hypobaric conditions
p0310 N79-33790

HYPOCAPNIA
Hyperventilation in aircrew - A review
p0235 A79-43212

HYPODYNAMIA
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
[IAF PAPER 79-76] p0301 A79-53285

HYPOKINESIA
Determination of muscle mass changes in legs from K-40 measurements
p0274 A79-49997
Clinical and morphological studies of people in the course of long-term hypokinesia and subsequent readaptation
p0015 N79-10709
State of blood clotting during prolonged hypokinesia
p0073 N79-14729
Antiorthostatic hypokinesia as an approximate model of weightlessness
p0108 N79-16520
Bioelectrical activity of the brain during 49-day antiorthostatic hypokinesia in individuals with early signs of vegetovascular dysfunction
p0108 N79-16521
Changes in properties of rat femur as a result of crural exarticulation and hypokinesia
p0108 N79-16522
Blood clotting factors of the vascular wall and myocardium of hypokinetic rabbits
p0108 N79-16523
Effect of hypokinesia on animal resistance to chemical agents
p0109 N79-16524
Rehabilitation measures used to restore physical fitness of man after long-term restriction of movement
p0110 N79-16534
Effects of physical conditioning and electric stimulation on metabolic processes in the soleus muscle and structure thereof in hypokinetic man
p0192 N79-23634
Distinctions referable to excretion of end products of protein metabolism in urine of man submitted to 182-day antiorthostatic hypokinesia
p0193 N79-23635
Sterols bound with blood plasma proteins and erythrocyte membranes during hypokinesia
p0193 N79-23636

Tissular blood clotting factors of vascular walls and myocardium during hypokinesia p0194 N79-23644

Effect of brief head-down hypokinesia on pressure in various parts of the healthy man's cardiovascular system p0285 N79-27831

Effects on lipid metabolism in man of some factors that simulate space flight conditions p0311 N79-33794

Effect of restricted activity on vestibular function p0312 N79-33802

Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia p0313 N79-33809

Vertical orientation of man during 5-day antiorthostatic hypokinesia (-4, -8 and -12 deg head down position) p0313 N79-33810

Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia p0313 N79-33813

HYPOTHALAMUS

Interaction between hypothalamic and bulbar levels of regulating blood circulation p0098 A79-21242

Effect of the blockade of hypothalamic adrenergic structures on thermoregulatory reactions p0167 A79-31950

Dynamics of the impulse activity of the neurons in the posterior hypothalamus upon exposure to microwaves p0188 A79-35918

Characteristics of EEG changes in rabbits in response to local cooling or heating of the central thermosensory area p0221 A79-36097

The role of the neurohormone system of the hypothalamus in physiology and pathology --- Russian book p0251 A79-43835

Synaptosomal uptake of hypothalamic monoamines and recovery of pituitary-adrenal activity following medial forebrain bundle lesions in rats p0275 A79-50232

Effect of cerebrocranial trauma on reactive distinctions of hypothalamic and hippocampal vessels in the presence of hypoxia p0074 N79-14733

Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite p0244 N79-27822

HYPOTHERMIA

Systolic time intervals during combined hand cooling and head-up tilt p0135 A79-27554

Regional heat loss in resting man during immersion in 25.2 C water p0202 A79-37709

An improved method for inducing hypothermia and rewarming p0267 A79-47339

Temperature uniformity in hyperthermal tumor therapy p0018 N79-10730

The effect of moderate hypothermia on the circulatory and myocardial consequences of acute coronary ligation in dogs p0049 N79-12683

Coma recovery p0094 N79-15891

HYPOTHESES

False hypothesis and the pilot --- aircraft accidents due to decision making errors [SAE PAPER 780528] p0001 A79-10399

HYPOXEMIA

Developmental and hematological responses to low level exposure of carbon monoxide in mice p0048 A79-16099

Effects of chronic changes in hemoglobin-O2 affinity in rats p0185 A79-33808

The bloodflow in skeletal muscle capillaries in normoxia and arterial hypoxemia /Microcinematographic studies/ p0208 A79-38150

Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia p0296 A79-51114

HYPOXIA

The comparative study of metabolism changes dynamics during hypoxia and hyperoxia in mice lungs [IAF PAPER 78-51] p0002 A79-11221

Exercise ventilation correlates positively with ventilatory chemoresponsiveness p0066 A79-18954

3'5'-cyclic AMP content in rat tissues during hypoxic adaptation and gamma irradiation p0069 A79-19426

Norepinephrine uptake by the isolated heart of rats adapted and deadapted to hypoxia p0097 A79-20621

Cerebral gas exchange in rats adapted to hypoxia during inspiration of oxygen-poor mixtures p0097 A79-20623

Regional blood supply under hypoxic hypoxia p0097 A79-20652

Temperature effect of muscular work in the white rat during hypoxia p0097 A79-20654

Responses of pial arterioles after prolonged hypercapnia and hypoxia in the awake rabbit p0101 A79-23075

Thermal sweat rate response to an acute short exposure at a simulated altitude of 4,600 m p0102 A79-23474

Transient changes in arterial blood gases and heart rate during and after acutely induced hypoxia and hyperoxia to rabbits p0134 A79-27120

Individual differences in hypoxic responses at high altitudes p0159 A79-28738

Plasma electrolytes in relation to altitude tolerance in rats p0163 A79-30652

Mechanical vs. ischemic mechanisms for decompression sickness p0164 A79-30656

Effect of hypoxia on the development of Drosophila melanogaster /Meigen/ p0165 A79-30667

Paradoxical reaction of some intracellular antioxidative defense mechanisms during adaptation of the organism to hypoxia p0165 A79-30696

The response of the microvascular canal to a hypoxic helium-containing medium p0208 A79-38151

Abolition of a viscerosomatic reflex during oxygen deprivation p0227 A79-41187

Response of women mountaineers to maximal exercise during hypoxia p0234 A79-43201

Effect of physical training at moderate altitude /1850 m/ on hypoxic tolerance p0235 A79-43210

Effect of adaptation to high-altitude hypoxia on cardiac adrenoreactivity and the state of the adenylcyclase and phosphodiesterase systems in the myocardium p0255 A79-46500

Epiphysis of rats under the combined action of hypoxia, hypercapnia and cooling p0256 A79-46680

Absence of effects of hypoxia on small airway function in humans p0268 A79-47851

Cross-adaptive effects of cold, hypoxia, or physical training on decompression sickness in mice p0268 A79-47855

Comparative study of hypoxia and other non-invasive stress tests for evaluation of ischaemic heart disease p0272 A79-49731

New inventory for the assessment of symptom occurrence and severity at high altitude p0273 A79-49991

Lung inflation and longitudinal distribution of pulmonary vascular resistance during hypoxia p0277 A79-50905

Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle
p0296 A79-51111
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
p0296 A79-51114
The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia
p0296 A79-51116
The interaction of carbon monoxide and altitude on aviator performance: Pathophysiology of exposure to carbon monoxide
[AD-A055212] p0056 N79-13694
Dynamics of impairment of pilot performance in the presence of hypoxia
p0073 N79-14724
Blood lipid changes in hypoxic rats
p0074 N79-14731
Effect of intermittent hypoxia on functional activity of peripheral blood neutrophils
p0074 N79-14732
Effect of cerebrocranial trauma on reactive distinctions of hypothalamic and hippocampal vessels in the presence of hypoxia
p0074 N79-14733
Assessment of factors possibly contributing to the susceptibility of sickle trait erythrocytes to mild hypoxia. Volume 1: Design considerations and research protocol
[AD-A059412] p0084 N79-15577
A study of cerebral blood flow in the goat. A. Correlations between the ventilatory and cerebrovascular responses to carbon monoxide inhalation. B. The dynamics of the cerebral blood flow response to hypoxia by frequency response analysis
p0107 N79-16510
The effects of brain ischemia on the control of breathing in unanesthetized goats
p0190 N79-23624
Effect of combination of hypoxia and hypercapnia on survival of Japanese quail
p0194 N79-23641
The pulmonary circulation: Studies on alveolar hypoxia and vascular smooth muscle metabolism
p0195 N79-23650
Effect of acute hypoxia on some parameters of renal excretory function and renal hemodynamics
p0245 N79-27828
Altitude hypoxia, volume 1. A bibliography with abstracts
[NTIS/PS-79/0427/9] p0280 N79-30927
Altitude hypoxia, volume 2. A bibliography with abstracts
[NTIS/PS-79/0428/7] p0280 N79-30928
Effects of propranolol on Time of Useful Function (TUF) in rats --- tolerance to rapid decompression
[AD-A068535/4] p0283 N79-31896
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
p0307 N79-32825
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
p0311 N79-33798

I

IDENTIFYING
A review of individual performance in air-to-ground target detection and identification studies
[AD-A061580] p0124 N79-17551
Microbial load monitor
[NASA-CR-160274] p0243 N79-27815
IFR (RULES)
U INSTRUMENT FLIGHT RULES
ILLUMINATING
Operational consideration of AN/PVS-5 night vision goggles for helicopter night flight
p0152 N79-19649
ILLUSIONS
NT OCULOGRAVIC ILLUSIONS
NT OPTICAL ILLUSION
Changes in apparent body orientation and sensory localization induced by vibration of postural muscles - Vibratory myesthetic illusions
p0163 A79-30653
Sensory illusions of vestibular origin
p0255 A79-46596
The physiologist's view of sensory illusions
p0255 A79-46597
ILS (LANDING SYSTEMS)
U INSTRUMENT LANDING SYSTEMS
IMAGE CONTRAST
Perceptual delay - A consequence of metacontrast and apparent motion
p0035 A79-13183
Contrast enhancement using local area brightness and gain control --- of airborne CRT display
p0037 A79-13199
Visual acuity with regard to simultaneous colored contrast on a television screen - Results
p0103 A79-23952
Contrast effects on smooth-pursuit eye movement velocity
p0104 A79-24068
Visual contrast sensitivity functions obtained with colored and achromatic gratings
p0181 A79-32628
Effects of stimulus onset and image motion on contrast sensitivity
p0231 A79-42231
Contrast sensation - A linear function of stimulus contrast
p0271 A79-49483
IMAGE ENHANCEMENT
Digital enhancement of computerized axial tomograms
p0004 A79-11544
Contrast enhancement using local area brightness and gain control --- of airborne CRT display
p0037 A79-13199
Digital image anomalies - Static and dynamic --- rastering and aliasing effects and elimination
p0137 A79-28158
Autoradiographic enhancement of mammograms
p0227 A79-40773
IMAGE FILTERS
Compensation for transport delays produced by computer image generation systems
[AD-A056720] p0019 N79-10738
Investigation of nonlinear motion simulator washout schemes
p0091 N79-15624
IMAGE MOTION COMPENSATION
Subjective motion discrimination in the simulator for air-to-air combat
[AD-A059742] p0079 N79-14770
Influence of motion wash-out filters on pilot tracking performance
[NLR-MP-78005-U] p0124 N79-17554
IMAGE PROCESSING
The robot's eyes - Stereo vision system for automated scene analysis
p0004 A79-12006
Imagery interpreter performance in the comparison of subjective estimates of photographic image quality
p0036 A79-13191
Digital color image compression in a perceptual space
p0136 A79-28013
Robotic vision --- process control applications
p0187 A79-34984
Computer quantitation of coronary angiograms
p0293 A79-51030
Visual motion perception by intelligent systems
p0300 A79-52691
Psychological aspects of the human-operator's activity while tracking
[RAE-LIB-TRANS-1979] p0079 N79-14768
General methods to enable robots with vision to acquire, orient, and transport workpieces
[PB-287199/4] p0113 N79-16556
Image processing program completion report
[AD-A061597] p0123 N79-17549
Diagnosis of cutaneous thermal burn injuries by multispectral imaging analysis
[NASA-CR-162103] p0279 N79-30922
IMAGE RESOLUTION
High-speed computerized tomography
p0004 A79-12030
Hyper-resolution in human perception of movement in visual displays
p0132 A79-26240

Motion and vision. I - Stabilized images of stationary gratings p0278 A79-50986

The retinal resolving power measured by laser interference fringes p0304 A79-54091

IMAGE TRANSDUCERS

Thermal activation of the visual transduction mechanism in retinal rods p0230 A79-41746

IMAGERY

NT ANGIOGRAPHY
NT AUTORADIOGRAPHY
NT CINEMATOGRAPHY
NT HOLOGRAPHY
NT RADAR IMAGERY
NT RADIOGRAPHY
NT STEREOPHOTOGRAPHY
NT TOMOGRAPHY

IMAGES

NT RETINAL IMAGES

A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology [AD-A069983] p0308 N79-32833

IMAGING TECHNIQUES

NT IMAGE ENHANCEMENT
NT RADAR IMAGERY

High-speed computerized tomography p0004 A79-12030

Detection of bubbles in decompression sickness p0041 A79-13573

A visual simulator with transformation of the perspective in the raster of television pictures --- German book on pilot training systems p0069 A79-19375

A binocular stereoscopic display system for echocardiography p0130 A79-26072

Visual simulation and image realism; Proceedings of the Seminar, San Diego, Calif., August 30, 31, 1978 p0137 A79-28156

Component performance of a 360 deg non-programmed visual display --- laser image flight simulator p0137 A79-28163

A 25-inch precision color display for simulator visual systems p0137 A79-28164

Training effectiveness versus simulation realism p0138 A79-28166

Application of Fresnel lenses to virtual image display --- for training simulators p0139 A79-28173

Real-time reconnaissance systems simulator p0139 A79-28175

Dynamics of an image viewed through a rotating mirror p0221 A79-36365

The visual perception of motion in depth p0210 A79-39087

Temperature changes during exercise measured by thermography p0235 A79-43209

Visually estimating workpiece pose in a robot hand using the feature points method p0269 A79-48018

Current status of cardiovascular imaging by transmission computed tomography p0294 A79-51032

Iodine imaging using spectral analysis --- radiography for visualization of small blood vessels p0294 A79-51034

Real-time computerized fluoroscopic cardiac imaging p0294 A79-51035

New developments in ultrasonic imaging of the chest and other body organs [UCRL-80340-REV-1] p0018 N79-10735

Compensation for transport delays produced by computer image generation systems [AD-A056720] p0019 N79-10738

Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease [PB-286696/0] p0085 N79-15581

Pattern of heat loss from a subject wearing CP temperate-climate combat clothing [AD-A057746] p0093 N79-15636

Region extraction using convergent evidence [AD-A061591] p0124 N79-17552

X-ray backscatter imaging p0176 N79-21754

An investigation of the pulse-scatter imaging technique for medical ultrasonic imaging and tissue characterization p0211 N79-24628

IMMERSION

U SUBMERGING

IMMOBILIZATION

Recovery of skeletal muscle after 3 mo of hindlimb immobilization in rats p0268 A79-47856

IMMUNITY

Microflora analysis of a child with severe combined immune deficiency p0004 A79-11900

Effect of space flight on cell-mediated immunity --- COSMOS 782 satellite p0021 N79-11661

Effect of 49-day space flight on parameters of immunological reactivity and protein composition of blood in the crew of Salyut-5 p0107 N79-16515

Suppression of the immune response by ultrasound p0142 N79-18560

Studies of microbial flora and immunity of Salyut-3 crew p0192 N79-23629

Immunobiological reactivity of the body under hyperbaric and hypobaric conditions p0310 N79-33790

IMMUNOLOGY

Immunophysiological aspects of man's adaptation to highland p0188 A79-35123

Isolation of virus-augmented tumor antigens p0142 N79-18564

Immunological effects of microwave action p0172 N79-20736

Immunological reactivity of rats flown aboard Cosmos-605 and Cosmos-690 biosatellites p0244 N79-27824

Obtaining growth hormone from calf blood [NASA-TM-75326] p0283 N79-31895

IMPACT ACCELERATION

Some Bayesian inference procedures for use in developing an impact acceleration injury prediction model [AD-A067228] p0220 N79-25741

Tolerance of the neck to indirect impact [AD-A066971] N79-25749

Models and Analogues for the Evaluation of Human Biodynamic Response, Performance and Protection --- conferences, human tolerance of acceleration, vibration, and shock [AGARD-CP-253] p0284 N79-31901

Prediction of whole-body response to impact forces in flight environments p0284 N79-31902

Multiaxis dynamic response of the human head and neck to impact acceleration p0284 N79-31906

Transient intraventricular conduction defects observed during experimental impact in human subjects p0285 N79-31907

Potential relationship between human central nervous system injury and impact forces based on primate studies p0286 N79-31919

The effect of impact acceleration on the electrical activity of the brain p0287 N79-31921

The response of a realistic computer model for sitting humans to different types of shocks p0288 N79-31927

Significance of the vibration component to the deleterious effect of impact accelerations p0312 N79-33801

Effect of impact accelerations on chemical resistance of rat erythrocytes p0313 N79-33811

IMPACT DAMAGE

Various modeling approaches in biomechanics --- analog simulation of impact events p0005 A79-12407

best copy available

Aircrew helmet protection against potential cerebral concussion in low-magnitude impacts
p0201 A79-37705
A head injury model
p0286 N79-31918
Correlation of head injury with mechanical forces based on helmet damage duplication
p0287 N79-31920

IMPACT DECELERATION
U IMPACT ACCELERATION

IMPACT TESTS
Whole body response research program
[PB-286151/6] p0093 N79-15640
Whole body response research program. Appendix A: Methodology
[PB-286152/4] p0094 N79-15641
Whole body response research program. Appendix C: Processed data
[PB-286154/0] p0094 N79-15643
Photometric methods for the analysis of human kinematic responses to impact environments
[AD-A062006] p0157 N79-19690
Calibration of three year old child dummies
[PB-288961/6] p0157 N79-19692
Evaluation of research on surrogates for humans in motor vehicle crashes
[PB-291012/3] p0178 N79-21774
Impact tests on crash helmets for motor cyclists
[AD-A065966] p0197 N79-24655
Animal endurance to recurrent impact accelerations
p0246 N79-27833

IMPACT TOLERANCES
A failure criterion for human, vertebral, cancellous bone
p0285 N79-31912

IMPEDANCE
NT ELECTRICAL RESISTANCE
NT RESPIRATORY IMPEDANCE

IMPEDANCE MEASUREMENTS
Reliability of determining the cardiac output by the method of quadrupole chest impedance rheography
p0098 A79-21243

IMPLANTATION
Development of an electrical energy converter for circulatory device
[PB-286738/0] p0111 N79-16545

IMPLANTED ELECTRODES (BIOLOGY)
Telemetry of intracranial pressure
p0227 A79-41400
An inductively powered telemetry system for temperature, EKG, and activity monitoring
p0228 A79-41424
Electric field measurements within biological media
p0083 N79-15562
Improved subcutaneous electrode structure
[NASA-CASE-ARC-11117-1] p0084 N79-15576
Aircraft flight simulation of spacelab experiment using an implanted telemetry system to obtain cardiovascular data from the monkey
p0147 N79-19022
Metal bioelectrode polarization: A frequency and time domain analysis
p0176 N79-21755

IN-FLIGHT MONITORING
Instrumentation for controlling and monitoring environmental control and life support systems
[ASME PAPER 78-ENAS-40] p0009 A79-12587
Aerobiotelemetry from a fighter aircraft
p0200 A79-37131
The electrocardiogram recorded by telemetry during a parachute jump, compared to a trace during stress tests - A preliminary study of 29 cases
p0256 A79-46600
In-flight measures of stress reduction due to wearing expandable foam earplugs
p0273 A79-49986
Aircrew inflight physiological data acquisition system 2
[AD-A055638] p0055 N79-13690
Space biology and aerospace medicine, vol. 12, no. 6
[JPRS-72487] p0072 N79-14716
Dynamic medical monitoring of flight crews in the course of long-term flights
p0072 N79-14719
Investigation of composition of trace contaminants in the air environment of the Soyuz-22 spacecraft
p0072 N79-14720
Dynamics of impairment of pilot performance in the presence of hypoxia
p0073 N79-14724
Principal results of experiment with mammals onboard the Kosmos-782 biosatellite
p0073 N79-14726
In-flight toxicology of fixed and rotary wing aircraft crew stations
p0149 N79-19619
Evaluation of aircrew fatigue during operational helicopter flight mission
p0149 N79-19622

INACTIVATION
U DEACTIVATION

INDEPENDENT VARIABLES
Alterations in erythrocyte survival parameters in rats after 19.5 days aboard COSMOS 782
p0021 N79-11663
Quantitative analysis of selected bone parameters
p0022 N79-11668

INDIA
Analysis of climatic data and cockpit thermal conditions at a fighter base in North West India
p0201 A79-37135

INDICATING INSTRUMENTS
NT APPROACH INDICATORS
NT HOT-FILM ANEMOMETERS
Arrangement of aircraft flight indicators with the help of optimal theoretical models for man as the controller
[DGLR PAPER 78-149] p0042 A79-14094

INDOLES
NT TRYPTOPHAN
Indomethacin-antihistamine combination for gastric ulceration control
[NASA-CASE-ARC-11118-2] p0077 N79-14755

INDUCED FLUID FLOW
U FLUID FLOW

INDUSTRIAL MANAGEMENT
NT PERSONNEL MANAGEMENT

INDUSTRIAL SAFETY
A literature review-problem definition studies on selected toxic chemicals. Volume 2: Occupational health and safety aspects of phosphorus smoke compounds
[AD-A056019] p0025 N79-11685
A literature review-problem definition studies on selected toxic chemicals. Volume 1: Occupational health and safety aspects of diesel fuel and white smoke generated from it
[AD-A056018] p0025 N79-11686
Antiradiation suit and other special clothing at industrial safety exhibition
p0114 N79-16793
Radiation protection activities, 1977
[PB-290215/3] p0176 N79-21759
Problems related to the assessment of safe exposure levels for radio frequency and microwave radiation
[ISS-P-78/7] p0248 N79-27855
Biological effects of microwaves, volume 2. A bibliography with abstracts
[NTIS/PS-79/0433/7] p0280 N79-30930

INDUSTRIES
Study of pharmaceutical industrial problems
[NASA-CR-160267] p0248 N79-27852

INELASTIC BODIES
U RIGID STRUCTURES

INERT GASES
U RARE GASES

INERTIA MOMENTS
U MOMENTS OF INERTIA

INFARCTION
NT MYOCARDIAL INFARCTION

INFECTIONS
U INFECTIOUS DISEASES

INFECTIOUS DISEASES
NT CONTACT DERMATITIS
A new case of autochthonous malaria in the Paris region associated with frequentation of airports - Recommendations of prophylactic procedures
p0104 A79-23958
The effect of infection with herpes simplex viruses types 1 and 2 on cell DNA synthesis and thymidine kinase activities in cultured human cells
p0141 N79-18558

INFERENCE
Some Bayesian inference procedures for use in

developing an impact acceleration injury prediction model
[AD-A067228] p0220 N79-25741

INFLATABLE DEVICES
U INFLATABLE STRUCTURES

INFLATABLE STRUCTURES
NT AIR BAG RESTRAINT DEVICES
NT GAS BAGS
Design considerations for inflatable head/neck restraint systems
p0043 A79-14407
An inflatable restraint system --- for helicopter crash protection
p0044 A79-14408
An assessment of the RAE Type 'B' full pressure suit automatic head enclosure
p0044 A79-14432
Spine immobilization method and apparatus --- rigid bladder
[NASA-CASE-ARC-11167-1] p0279 N79-30921

INFLATING
Development of a solid propellant inflation technique for the subcompact car passenger restraint system, phase 1
[PB-290328/4] p0178 N79-21775

INFORMATION DISSEMINATION
Pilot preflight briefing utilizing an interactive computer generated Voice Response System
p0167 A79-31887

INFORMATION MANAGEMENT
Communications management by the remote system - An adaptive approach --- modeling of RPV autopilot/operator systems
p0041 A79-13226

INFORMATION RETRIEVAL
A preliminary investigation of aural input/output systems for in-flight information retrieval
[AD-A063174] p0178 N79-21770

INFORMATION SYSTEMS
Refinement of a computer simulation model for evaluating DAIS display concepts --- Digital Avionics Information System
p0038 A79-13209
The role of cognitive switching in head-up displays --- to determine pilot ability to accurately extract information from either of two sources
[NASA-CR-3137] p0318 N79-33851

INFORMATION THEORY
Petri nets as a modeling tool for discrete concurrent tasks of the human operator --- describing sequential and parallel demands on human operators
p0088 N79-15600
Development of information theory concepts and equations for human mental processing
[AD-A068606] p0260 N79-28877

INFORMATION TRANSMISSION
U DATA TRANSMISSION

INFRARED DETECTORS
NT FLIR DETECTORS

INFRARED INSTRUMENTS
NT FLIR DETECTORS
Temperature changes during exercise measured by thermography
p0235 A79-43209

INFRARED RADIATION
NT FAR INFRARED RADIATION
Experimental determination of maximum permissible exposure to laser radiation of 1.54-micron wavelength --- corneal damage
p0002 A79-10648
No harmful effects through infrared light emitting diodes
p0184 A79-33650
Nonlinear optical susceptibility of the human eye to IR radiation in the 800 to 1355 micron range
p0188 A79-35363
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
p0301 A79-53163
Nonionizing radiation protection special study: Infrared radiation hazard evaluation of the rotary forge, Watervliet Arsenal, Watervliet, New York, March - April 1978
[AD-A055643] p0055 N79-13691

INFRARED SPECTRA
Raman and infrared investigations of the nature of intracellular water
[AD-A061254] p0120 N79-17522

INGESTION (BIOLOGY)
NT DRINKING
Effect of sodium and calcium ingestion on thermoregulation during exercise in man
p0163 A79-30628

INHABITANTS
NT MOUNTAIN INHABITANTS

INHALATION
U RESPIRATION

INHIBITION (PSYCHOLOGY)
The inhibitory trace effect as a manifestation of the integrative activity of the human brain in performing voluntary motor acts
p0159 A79-28737
Mutual repulsion between moving visual targets
p0275 A79-50473

INHIBITORS
Comparative study of acetylcholinesterase inactivation in warm-blooded animals and insects with substituted vinyl phosphates
p0121 N79-17527

INITIAL VALUE PROBLEMS
U BOUNDARY VALUE PROBLEMS

INJURIES
NT BACK INJURIES
NT BAROTRAUMA
NT BRAIN DAMAGE
NT BURNS (INJURIES)
NT CRASH INJURIES
NT EJECTION INJURIES
NT LESIONS
NT NOISE INJURIES
NT PULMONARY LESIONS
NT RADIATION INJURIES
NT WHIPLASH INJURIES
Accident injuries and flying fitness
p0182 A79-33189
An illness-injury severity index
p0050 N79-12688
Knee flail design limits: Background, experimentation and design criteria
[AD-A062384] p0220 N79-25746
Injury mechanisms analysis in aircraft accidents
p0286 N79-31913
Potential relationship between human central nervous system injury and impact forces based on primate studies
p0286 N79-31919
Correlation of head injury with mechanical forces based on helmet damage duplication
p0287 N79-31920

INORGANIC COMPOUNDS
NT AMMONIA

INORGANIC SULFIDES
NT HYDROGEN SULFIDE

INOSITOLS
Interaction between inositol hexaphosphate and carbobenzoxy peptide - A model for nucleic acid - Nonhistone chromosomal protein interaction
p0100 A79-22082

INPUT/OUTPUT ROUTINES
A preliminary investigation of aural input/output systems for in-flight information retrieval
[AD-A063174] p0178 N79-21770

INSECTS
NT DROSOPHILA
Effects of weightlessness on the genetics and aging process of drosophila melanogaster
p0023 N79-11673
Radar, Insect Population Ecology, and Pest Management
[NASA-CP-2070] p0147 N79-19592
The role of insect dispersal and migration in population processes
p0147 N79-19593
Short-range movement of major agricultural pests
p0148 N79-19594
Dispersal of forest insects
p0148 N79-19596
Strategic and tactical use of movement information in pest management
p0148 N79-19597
Capabilities of radar as they might relate to entomological studies
p0148 N79-19598
Possible impact of radar on pest management operations
p0148 N79-19599

Radar observation of insects: Mosquitoes
p0148 N79-19600
INSENSITIVITY
U SENSITIVITY
INSERTION
Apparatus and method of inserting a microelectrode in body tissue or the like using vibration means
[NASA-CASE-NPO-13910-1] p0246 N79-27836
INSTRUCTIONS
U EDUCATION
INSTRUMENT APPROACH
The effects of prediction, quickening, frequency separation, and percent of pursuit in perspective displays for low-visibility landing
p0063 A79-18210
An investigation of pictorial and symbolic aircraft displays for landing
p0063 A79-18211
INSTRUMENT FLIGHT RULES
Transfer of a computer-assisted instrument procedures trainer to flight
p0039 A79-13216
An analysis of helicopter pilot control behavior and workload during instrument flying tasks
p0150 N79-19630
Visual performance/workload of helicopter pilots during instrument flight
p0152 N79-19640
Workload and the certification of helicopters for IFR operation
[AD-A072758] p0318 N79-33850
INSTRUMENT LANDING SYSTEMS
NT ALL-WEATHER LANDING SYSTEMS
Airline pilot scan patterns during simulated ILS approaches
[NASA-TP-1250] p0155 N79-19682
INSTRUMENTAL ANALYSIS
U AUTOMATION
INSULATION
NT THERMAL INSULATION
INSULIN
Insulin-like effect of bovine growth hormone in vivo as demonstrated by oxidation of C/14/-U-glucose in diabetic rats
p0252 A79-44797
INTEGRAL TRANSFORMATIONS
NT FAST FOURIER TRANSFORMATIONS
INTEGRATED CIRCUITS
NT LARGE SCALE INTEGRATION
The use of hybrid integrated circuit techniques in biotelemetry applications
p0131 A79-26145
Very-large-scale integration - What it means for technical systems and humans
p0181 A79-32640
INTEGRATED OPTICS
The development of integrated multidimensional displays
p0187 A79-34990
INTEGRATION (REAL VARIABLES)
U MEASURE AND INTEGRATION
INTELLIGENCE
NT ARTIFICIAL INTELLIGENCE
NT EXTRATERRESTRIAL INTELLIGENCE
Intelligence
p0095 N79-15896
INTELLIGIBILITY
NT SPEECH RECOGNITION
INTERACTIVE GRAPHICS
U COMPUTER GRAPHICS
INTERCEPTOR AIRCRAFT
U FIGHTER AIRCRAFT
INTERCOSMOS SATELLITES
Medicobiological research within the framework of the scientific program 'Intercosmos'
p0181 A79-32658
INTERFACES
Modeling and analysis of man-machine interface information
[AD-A063515] p0178 N79-21772
INTERFEROGRAMS
U INTERFEROMETRY
INTERFEROMETRY
The retinal resolving power measured by laser interference fringes
p0304 A79-54091
INTERMOLECULAR FORCES
An approach to the origin of self-replicating system. I - Intermolecular interactions
p0204 A79-37948
INTERNATIONAL COOPERATION
The joint US-USSR biological satellite program
p0182 A79-33050
Communication problems of international crews
[IAF PAPER 79-A-23] p0303 A79-53425
US experiments flown on the Soviet satellite COSMOS 936
[NASA-TM-78526] p0023 N79-11671
The Cosmos 936 mission
p0023 N79-11672
INTERNATIONAL RELATIONS
NT INTERNATIONAL COOPERATION
INTERPLANETARY SPACECRAFT
NT VIKING LANDER SPACECRAFT
NT VIKING SPACECRAFT
INTERSTELLAR CHEMISTRY
Lifecloud: The origin of life in the universe --- Book
p0061 A79-17123
INTERSTELLAR MATTER
Prebiotic molecular evolution
p0203 A79-37928
Exobiology and the origin of life --- organic compounds in planetary atmospheres and interstellar matter
[NASA-CR-157988] p0081 N79-14782
INTESTINES
Intestinal transport of hexoses in the rat following chronic heat exposure
p0236 A79-43701
The effect of hyperthermia on the radiation response of crypt cells in mouse jejunum
p0018 N79-10731
Intestinal autoflora as an indicator of severity of radiation lesion
p0121 N79-17530
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs
p0312 N79-33803
INTOXICATION
A literature review-problem definition studies on selected toxic chemicals. Volume 2: Occupational health and safety aspects of phosphorus smoke compounds
[AD-A056019] p0025 N79-11685
The effects of alcohol on driver performance in a decision making situation
p0092 N79-15629
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
[AD-A069375] p0314 N79-33819
Laboratory performance during acute intoxication and hangover
[AD-A069373] p0314 N79-33820
INTRACRANIAL PRESSURE
Telemetry of intracranial pressure
p0227 A79-41400
INTRAMOLECULAR STRUCTURES
Microwave frequencies and the structure of the double helix
p0082 N79-15559
INTRAOCULAR PRESSURE
The value of measuring ocular tonus as a test for detecting glaucoma in flight personnel
p0104 A79-23959
Intraocular pressure reduction and regulation system
[NASA-TM-79187] p0260 N79-28881
Mathematical modeling of arterial oxygen saturation and eye-level blood pressure during +G sub Z stress
p0286 N79-31916
INTRAVASCULAR SYSTEM
Transient intraventricular conduction defects observed during experimental impact in human subjects
p0285 N79-31907
INVERSIONS
NT CENTRIFUGING STRESS
INVERTEBRATES
NT ARTEMIA
NT ARTHROPODS
NT DROSOPHILA
NT INSECTS
NT PARAMECIA
NT SPORES
NT WORMS

Methods for measuring the acute toxicity of effluents to aquatic organisms [PB-289605/8] p0170 N79-20719

INVESTIGATION
NT AIRCRAFT ACCIDENT INVESTIGATION

INVISIBILITY
U VISIBILITY

IODINE
Iodine imaging using spectral analysis --- radiography for visualization of small blood vessels p0294 A79-51034

ION MOTION
Relationship between proton motive force and potassium ion transport in Halobacterium halobium envelope vesicles p0227 A79-40775

ION-GAS INTERACTIONS
U GAS-ION INTERACTIONS

IONIC DIFFUSION
Light-driven solute transport in Halobacterium halobium p0270 A79-49194

IONIZED GASES
NT CATIONS

IONIZING RADIATION
NT BETA PARTICLES
NT COSMIC RAYS
NT GAMMA RAYS
NT ULTRAVIOLET RADIATION
3'5'-cyclic AMP content in rat tissues during hypoxic adaptation and gamma irradiation p0069 A79-19426
Atlas of the dose characteristics of external ionizing radiation /Handbook/ p0098 A79-20669
Pulmonary functional tolerance to ionizing radiation - An experimental study p0256 A79-46601
Protein fractions and enzymatic activity thereof in the rat myocardium after the flight on Kosmos-690 biosatellite p0014 N79-10700
Recovery of hemopoiesis in rats exposed to radiation during space flight p0014 N79-10701
Effects of long-term and chronic radiation on hemopoiesis p0016 N79-10719
The Department of the Army's food irradiation program: Is it worth continuing [PB-286399/1] p0094 N79-15644
Chemical protection against ionizing radiation: A survey of possible mechanisms [MBL-1977-8] p0122 N79-17540
A technical review of the biological effects of non-ionizing radiation [PB-290166/8] p0171 N79-20728
Effects on populations of exposure to low levels of ionizing radiation: Implications for nuclear energy and medical radiation [LBL-9084] p0316 N79-33833
Health effects of low-level ionizing radiation [LBL-9018] p0316 N79-33834

IONOSPHERIC ABSORPTION
U ELECTROMAGNETIC ABSORPTION

IONS
NT CATIONS
NT HYDROGEN IONS
NT METAL IONS
NT MOLECULAR IONS
NT POSITIVE IONS
Mechanism of effects of microwaves on erythrocyte permeability for potassium and sodium ions p0075 N79-14743
Changes in calcium ion activity due to magnetization of solution as the possible mechanism of biological action of magnetic fields p0173 N79-20741

IP (IMPACT PREDICTION)
U COMPUTERIZED SIMULATION

IRON
Studies on the erythron and the ferrokinetic responses in beagles adapted to hypergravity p0010 A79-12869

IROQUOIS HELICOPTER
U UH-1 HELICOPTER

IRRADIATION
NT X RAY IRRADIATION
Investigation of the activity of some enzymatic systems in response to a super-high frequency electromagnetic field p0074 N79-14737
The effect of 17alpha-ethynylestradiol on the radiation sensitivity of mice p0141 N79-18557
Cell response to chronic irradiation-modeling and simulation studies p0142 N79-18562
Biological effects of laser irradiation on nerve cells p0247 N79-27840

IRRITATION
NT TOXICITY AND SAFETY HAZARD
Official method for determining ocular irritation [BLL-NTS-11221] p0142 N79-18571

ISCHEMIA
Regional coronary blood flow at rest and during high sustained +Gz in a miniature swine with subclinical, ischemic, coronary heart disease due to coronary stenosis p0010 A79-12865
The evolutionary pattern of exercise-induced ST segment depression p0251 A79-44166
Comparative study of hypoxia and other non-invasive stress tests for evaluation of ischaemic heart disease p0272 A79-49731
Temporal relation between onset of cell anoxia and ischemic contractile failure p0300 A79-52895
A prospective medicine approach to the problem of ischemic vascular disease in the USAF p0027 N79-11697
Molecular determinants for the prediction and survival of ischemic anoxic stress pathology p0027 N79-11700

ISING MODEL
U MATHEMATICAL MODELS

ISOLATION
Microflora analysis of a child with severe combined immune deficiency p0004 A79-11900
Isolation of virus-augmented tumor antigens p0142 N79-18564

ISOPROPYL COMPOUNDS
Effects of propranolol on Time of Useful Function (TUF) in rats --- tolerance to rapid decompression [AD-A068535/4] p0283 N79-31896

ISOTOPES
NT AMERICIUM 241
NT CARBON 14
NT CHROMIUM ISOTOPES
NT COPPER ISOTOPES
NT IRON ISOTOPES
NT POTASSIUM 40
NT SODIUM ISOTOPES
NT SODIUM 22
NT TRITIUM

ISOTOPIC LABELING
Kinetic measurements of bone mineral metabolism: The use of Na-22 as a tracer for long-term bone mineral turnover studies [NASA-CR-151868] p0111 N79-16544
Study report on a double isotope method of calcium absorption [NASA-CR-160194] p0216 N79-25712

J

JACKS (ELECTRICAL)
U ELECTRIC CONNECTORS

JAGUAR AIRCRAFT
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations p0266 A79-47334

JAMMING
U MECHANICAL SHOCK

JEEPS
U AUTOMOBILES

JET AIRCRAFT
NT A-7 AIRCRAFT
NT C-135 AIRCRAFT
NT C-141 AIRCRAFT
NT F-4 AIRCRAFT
NT F-15 AIRCRAFT
NT F-16 AIRCRAFT

NT F-18 AIRCRAFT
NT F-104 AIRCRAFT
NT F-111 AIRCRAFT
JET ENGINE FUELS
Toxicity of high density jet fuel components
[AD-A068596] p0259 N79-28870
JET FUELS
U JET ENGINE FUELS
JET PILOTS
U AIRCRAFT PILOTS
JITTER
U VIBRATION
JOBS
U TASKS
JOINTS (ANATOMY)
NT KNEE (ANATOMY)
NT WRIST
Passive resistive torques about long bone axes of major human joints
p0298 A79-52283
Range of joint motion
p0033 N79-11740
A quasi-linear control theory analysis of timesharing skills
p0120 N79-17520
The relationship between adult articular cartilage thickness and dynamic loads of a uniaxial joint
p0154 N79-19671
Spacesuit mobility knee joints
[NASA-CASE-ARC-11058-2] p0214 N79-24651
JUPITER ATMOSPHERE
Abundance of organic compounds photochemically produced in the atmospheres of the Outer Planets
p0210 A79-39075

K

KAOLINITE
Prebiotic nucleotide oligomerization in a fluctuating environment - Effects of kaolinite and cyanamide
p0162 A79-29938
KC-135 AIRCRAFT
U C-135 AIRCRAFT
KEROGEN
Organic geochemical studies on kerogen precursors in recently deposited algal mats and oozes
p0001 A79-10419
KETONES
Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body
p0073 N79-14725
KIDNEYS
Compensatory reactions of the kidneys to orthostatic factors
p0015 N79-10708
KINEMATICS
NT BODY KINEMATICS
The development and evaluation of objective frequency domain based pilot performance measures in ASUPT
[AD-A059477] p0080 N79-14776
Reach capability of men and women: A three-dimensional analysis
[AD-A060312] p0081 N79-14779
KINESTHESIA
Secondary visual workload capability with primary visual and kinesthetic-tactual displays
p0064 A79-18220
KINESTHESIS
U PROPRIOCEPTION
KINETIC THEORY
NT TRANSPORT THEORY
KINETICS
NT REACTION KINETICS
Biological effects of a magnetic field
p0172 N79-20734
The growth kinetics of freshwater algae
p0174 N79-21740
KNEE (ANATOMY)
Computer design synthesis of a below knee-Syme prosthesis
p0251 A79-44300
Knee flail design limits: Background, experimentation and design criteria
[AD-A062394] p0220 N79-25746
KU BAND
U SUPERHIGH FREQUENCIES
KUIPER AIRBORNE OBSERVATORY
U C-141 AIRCRAFT

L

L BAND
U ULTRAHIGH FREQUENCIES
LABELING (MARKING)
U MARKING
LABOR
Isometric strength testing in selecting workers for strenuous jobs
p0262 N79-29790
LABORATORIES
NT HUMAN FACTORS LABORATORIES
NT MANNED ORBITAL LABORATORIES
NT SPACE LABORATORIES
Some ergonomic aspects of adapting workrooms with visual display units to the human possibilities
[IZF-1978-1] p0125 N79-17562
LABORATORY EQUIPMENT
Biological specimen holding facilities for Spacelab experiments
[IAF PAPER 78-56] p0003 A79-11224
Two primate biological facility module in Spacelab
[IAF PAPER 78-70] p0003 A79-11229
Support system considerations for STS biological investigations
[ASME PAPER 78-ENAS-37] p0008 A79-12584
Some ergonomic aspects of adapting workrooms with visual display units to the human possibilities
[IZF-1978-1] p0125 N79-17562
LABYRINTH
NT COCHLEA
NT VESTIBULES
Cases of probable Aero Otitis interna
p0183 A79-33194
Effect of restricted activity on vestibular function
p0312 N79-33802
LABYRINTHECTOMY
Changes in optokinetic, postoptokinetic, and reverse postoptokinetic nystagmus after bilateral labyrinthectomy
p0255 A79-46499
LACTATES
Effects of glycogen depletion and work load on postexercise O2 consumption and blood lactate
p0277 A79-50903
LAG (DELAY)
U TIME LAG
LAKE CHAMPLAIN BASIN (NY-VT)
Determination of the secondary production and population dynamics of the zooplankton of the Lake Champlain ecosystem
[PB-286094/8] p0084 N79-15572
LAKES
Distribution of phytoplankton in North Carolina lakes
[PB-286387/6] p0084 N79-15573
Distribution of phytoplankton in Arkansas lakes
[PB-292742/4] p0240 N79-26768
LAMPS PROGRAM
U LIGHT AIRBORNE MULTIPURPOSE SYSTEM
LAND
NT MARSHLANDS
LANDFORMS
NT LAKE CHAMPLAIN BASIN (NY-VT)
LANDING
NT AIRCRAFT LANDING
NT CRASH LANDING
NT GLIDE LANDINGS
LANDING AIDS
NT ALL-WEATHER LANDING SYSTEMS
NT APPROACH INDICATORS
NT INSTRUMENT LANDING SYSTEMS
NT LANDING INSTRUMENTS
NT MICROWAVE LANDING SYSTEMS
LANDING INSTRUMENTS
NT APPROACH INDICATORS
The effects of prediction, quickening, frequency separation, and percent of pursuit in perspective displays for low-visibility landing
p0063 A79-18210
An investigation of pictorial and symbolic aircraft displays for landing
p0063 A79-18211
LANDING SIMULATION
Flight management research utilizing an oculometer --- pilot scanning behavior during simulated

approach and landing p0001 A79-10389
Manual landings in Category 3 conditions p0297 A79-52055
Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators p0297 A79-52276
A7 training effectiveness through performance analysis --- carrier landing instruction [AD-A056230] p0031 N79-11728

LANDSCAPE
U TERRAIN

LANGUAGES
NT MACHINE ORIENTED LANGUAGES
NT NATURAL LANGUAGE (COMPUTERS)
NT PROGRAMMING LANGUAGES
NT WORDS (LANGUAGE)

LARGE SCALE INTEGRATION
Very-large-scale integration - What it means for technical systems and humans p0181 A79-32640

LARGE SPACE STRUCTURES
Developing closed life support systems for large space habitats [AAS PAPER 78-145] p0099 A79-21260

LARYNX
Laryngeal problems in space travel p0011 A79-12870

LASER APPLICATIONS
Laser eye protection for flight personnel p0135 A79-27555
Component performance of a 360 deg non-programmed visual display --- laser image flight simulator p0137 A79-28163
Moving phase transitions in laser-irradiated biological tissue p0228 A79-41478
The retinal resolving power measured by laser interference fringes p0304 A79-54091

LASER DAMAGE
Experimental determination of maximum permissible exposure to laser radiation of 1.54-micron wavelength --- corneal damage p0002 A79-10648
Laser safety bioeffects research - Histopathology of retinal effects p0138 A79-28169
Extrapolation of pulsed light data in scanned displays --- laser radiation eye exposure limits p0138 A79-28170
Low level laser light effects --- on vision p0138 A79-28171
The development of laser exposure limits p0181 A79-32320
Thermal effects during the exposure of ocular fundus tissues to laser radiation p0234 A79-43057
Suprathreshold retinal damage due to single 6 picosecond 1060 nm laser light pulses p0266 A79-47330
Laser eye protection for flight personnel, volume 1 [AD-A057417] p0034 N79-11747
Mechanisms of retinal damage from chronic laser radiation: Thresholds and mechanisms [AD-A058449] p0056 N79-13698
Effects of laser radiation on morphology of peripheral blood and bone marrow under experimental and clinical conditions p0071 N79-14710
Electrophysiological determination of retinal sensitivity to color after intense monochromatic light adaptation [AD-A063852] p0189 N79-22756

LASER DOPPLER VELOCIMETERS
Disorder in pulsatile flow - Biomedical measurements with hot film, laser and ultrasound anemometers p0210 A79-39509
Laser Doppler technique for measurement of eye movement p0233 A79-42450
Quantitative flow estimation with transcutaneous Doppler ultrasound p0295 A79-51042
A directional pulsed-Doppler ultrasonic blood flowmeter p0050 N79-12693

LASER OUTPUTS
Protection against laser beams p0236 A79-43609

LASERS
NT PULSED LASERS
Biological effects of laser irradiation on nerve cells p0247 N79-27840
Some considerations of hazards in the use of lasers for artistic displays [PB-294513/7] p0281 N79-30931
Measurements in the laser irradiated eye [AD-A069842] p0315 N79-33825

LASV
U F-111 AIRCRAFT

LATENESS
On the latency of human visually evoked response to sinusoidal gratings p0232 A79-42236

LATERAL CONTROL
Application of control theory to the investigation of roll motion effects on pilot control behavior [AD-A054921] p0046 A79-14972
An investigation of pictorial and symbolic aircraft displays for landing p0063 A79-18211
Driver steering dynamics measured in car simulator under a range of visibility and roadmaking conditions p0117 N79-17493

LATERALIZATION
U LATERAL CONTROL

LAW (JURISPRUDENCE)
NT LEGAL LIABILITY

LAWS
NT SCALING LAWS

LAYOUTS
Arm-leg reach and workspace layout p0033 N79-11739

LDEF
U LONG DURATION EXPOSURE FACILITY

LEAD (METAL)
The distribution of cadmium and other metals in human tissues [PB-285200/2] p0057 N79-13703
Effects of lead on subcellular components in bacteria p0142 N79-18565

LEADERSHIP
Analysis of the intervention of the human factor as a principal cause or influence in accidents of Mirage aircraft in the Belgian Air Force p0290 N79-31945

LEARNING
NT ASTRONAUT TRAINING
NT CONDITIONING (LEARNING)
NT TRANSFER OF TRAINING
A model for sensorimotor control and learning p0005 A79-12122
Geotropism of hornet comb construction under persistent acceleration p0006 A79-12514
Relating performance in basic electricity and electronics and A schools [AD-A060914] p0085 N79-15584
Vehicle Steering control: A model of learning p0089 N79-15606
Individual differences in knowledge acquisition from maps [AD-A065040] p0196 N79-23663
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology [AD-A069983] p0308 N79-32833
Human memory. A bibliography with abstracts [NTIS/PS-79/0640/7] p0318 N79-33847

LEARNING CURVES
The impact of a Learn-Forget-Learn (LFL) curve and learning curves on a system effectiveness model [AD-A061622] p0124 N79-17550
Application of learning curves of aircraft produced at more than one location to the F-16 lightweight fighter [AD-A065881] p0196 N79-23664

LEARNING MACHINES
Multi-PIERRE - A learning robot system p0066 A79-18425

LEARNING THEORY
Locus of the effect of specific practice in

continuous visual search
p0129 A79-25099

LECTURES
Physiological fluid dynamics
[VKI-LECTURE-SERIES-32] p0247 N79-27843

LED (DIODES)
U LIGHT EMITTING DIODES

LEG (ANATOMY)
NT KNEE (ANATOMY)
Arm-leg reach and workspace layout
p0033 N79-11739

LEGAL LIABILITY
The use of aviation pathology and aviation medicine as proof of liability and damage
p0100 A79-22704

LEGENDRE CODE
U COMPUTER PROGRAMMING

LEGIBILITY
A photometric and legibility assessment of Aerospace Optics, Incorporated Vivisun 20/20 display
[AD-A067668] p0242 N79-26786

LENGTH
The tilt illusion - Length and luminance changes of induction line and third /disinhibiting/ line
p0228 A79-41422

LENSES
NT CONTACT LENSES
NT FRESNEL LENSES
A study of the effects of six light conditions on caloric induced nystagmus
p0195 N79-23652

LEPTONS
NT ELECTRONS

LESIONS
NT PULMONARY LESIONS
Ruptured arteriovenous anomaly in a former woman astronaut candidate
p0128 A79-24640
Effects of space flight on course of radiation lesions in rat lymphoid organs
p0107 N79-16516
Intestinal autoflora as an indicator of severity of radiation lesion
p0121 N79-17530

LETHALITY
Comparative analysis of causes of animal deaths during chronic exposure to gamma radiation and the aftereffect period
p0016 N79-10718
Reactions of methamidophos with mammalian cholinesterases
[AD-A058683/4] p0051 N79-12698

LEUCINE
Epimerization of L-isoleucine on Na-montmorillonite and its implication to Precambrian chemical fossils
p0206 A79-37979
Isolation of a shock-induced circulating cardiodepressant substance
p0257 A79-46967

LEUKOCYTES
NT LYMPHOCYTES

LEVEL (QUANTITY)
NT INTERMOLECULAR FORCES

LIABILITIES
NT LEGAL LIABILITY

LIFE (BIOLOGY)
U LIFE SCIENCES

LIFE (DURABILITY)
NT STORAGE STABILITY

LIFE CYCLE COSTS
Man-machine reliability - A practical engineering tool
p0047 A79-15400
Life cycle costing of simulated vs actual equipment for intermediate maintenance training --- for F-16 avionics
p0064 A79-18217

LIFE DETECTORS
The Viking biological investigations - Review and status
p0100 A79-22083

LIFE SCIENCES
NT EXTRATERRESTRIAL LIFE
NT MOLECULAR BIOLOGY
Spacelab environmental control/life support system /ECLS/ for life science experiments
[IAF PAPER 78-59] p0003 A79-11225
The European life sciences experiments onboard the first Spacelab mission
[ASME PAPER 78-ENAS-24] p0007 A79-12573
Life sciences experiments in the first Spacelab mission
[ASME PAPER 78-ENAS-26] p0008 A79-12575
Life sciences in the Shuttle era
[ASME PAPER 78-ENAS-34] p0008 A79-12582
Life sciences experiments mission development test program
[ASME PAPER 78-ENAS-36] p0008 A79-12583
The European life sciences experiments onboard the first Spacelab mission
p0100 A79-22254
Low tryptophan diet decreases brain serotonin and alters response to apomorphine
p0226 A79-40672
Life sciences and space research XVII; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 10, 1978, and Symposium on Gravitational Physiology, Innsbruck, Austria, June 2, 3, 1978
p0228 A79-41701
The Canadian Forces Life Quality Improvement Programme
p0026 N79-11693
Exobiology and the origin of life --- organic compounds in planetary atmospheres and interstellar matter
[NASA-CR-157988] p0081 N79-14782
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 60
[JPRS-73135] p0175 N79-21745
BIOSPEX: Biological space experiments, a compendium of life sciences experiments carried on US spacecraft
[NASA-TM-58217] p0261 N79-29784

LIFE SPAN
Chirality of compounds essential for the existence of life, and the possibility of its evolution in the universe
p0186 A79-34464
Analysis of population mortality kinetics with application to the longevity followup of the Navy's '1,000 aviators'
p0234 A79-43207
Similarity in the number of lifespan heartbeats among non-hibernating homeothermic animals
p0298 A79-52281
Evaluation of cardiac risk and subject response to ameliorative efforts
p0031 N79-11723

LIFE SUPPORT SYSTEMS
NT CLOSED ECOLOGICAL SYSTEMS
NT EMERGENCY LIFE SUSTAINING SYSTEMS
NT PORTABLE LIFE SUPPORT SYSTEMS
Biological specimen holding facilities for Spacelab experiments
[IAF PAPER 78-56] p0003 A79-11224
Spacelab environmental control/life support system /ECLS/ for life science experiments
[IAF PAPER 78-59] p0003 A79-11225
Microflora analysis of a child with severe combined immune deficiency
p0004 A79-11900
The dependence of the CO2 removal efficiency of LiOH on humidity and mesh size --- in spacecraft life support systems
[ASME PAPER 78-ENAS-5] p0006 A79-12554
Animal life support transporters for Shuttle/Spacelab
[ASME PAPER 78-ENAS-10] p0006 A79-12559
The Spacelab flight unit environmental control/life support system
[ASME PAPER 78-ENAS-14] p0007 A79-12563
ECLSS definition for a low cost space construction base --- Environmental Control Life Support Systems
[ASME PAPER 78-ENAS-15] p0007 A79-12564
A thermoelectric integrated membrane evaporation system
[ASME PAPER 78-ENAS-19] p0007 A79-12568
Challenges to life support system's future
[ASME PAPER 78-ENAS-28] p0008 A79-12577
Extended duration orbiter life support system options
[ASME PAPER 78-ENAS-31] p0008 A79-12580
Support system considerations for STS biological investigations

[ASME PAPER 78-ENAS-37] p0008 A79-12584
Life support systems for biological specimens in the Shuttle/Spacelab
[ASME PAPER 78-ENAS-38] p0009 A79-12585
Instrumentation for controlling and monitoring environmental control and life support systems
[ASME PAPER 78-ENAS-40] p0009 A79-12587
Extended duration Orbiter life support definition
[ASME PAPER 78-ENAS-42] p0009 A79-12588
Test evaluation of space station ECLSS maintenance concepts --- Environmental Control and Life Support System
[ASME PAPER 78-ENAS-43] p0009 A79-12589
Medical characteristics of the Spacelab life support system
[DGLR PAPER 78-130] p0041 A79-14082
USAF life support equipment costs
p0043 A79-14402
Development of integrated tubing fabric for liquid conditioning undergarments
p0044 A79-14415
A Canadian approach to high altitude protection --- fighter pilot garmentry and high pressure masks
p0045 A79-14435
Developing closed life support systems for large space habitats
[AAS PAPER 78-145] p0099 A79-21260
USAF life support system 412A - 1978 corporate report
p0183 A79-33602
Test and evaluation process for life support systems
p0184 A79-33643
Systems integration in the development of controlled ecological life support systems
[AIAA PAPER 79-1406] p0187 A79-34842
Waste treatment options for use in closed systems --- in space colonies
[AIAA PAPER 79-1409] p0187 A79-34843
Generalized environmental control and life support system computer program (G1894), phase 3
[NASA-CR-151836] p0019 N79-10741
Water system microbial check valve development
[NASA-CR-151843] p0032 N79-11733
Prospects of using Japanese quail in biological life support systems
p0109 N79-16531
Advanced life support equipment for nitrogen tetroxide environments
p0169 N79-20432
Utilization of the wastes of vital activity
[NASA-TM-75410] p0177 N79-21768
Microflora of water reclaimed in sealed compartments
p0193 N79-23638
Concept definition for an extended duration orbiter ECLSS
[NASA-CR-160164] p0197 N79-23666
Characteristics of proteins of some unicellular organisms as potential components of ecological life support systems
p0246 N79-27834
Electrochemically regenerable carbon dioxide absorber
[NASA-CR-152099] p0262 N79-29794

LIGAMENTS
Knee flail design limits: Background, experimentation and design criteria
[AD-A062384] p0220 N79-25746

LIGHT (VISIBLE RADIATION)
NT LIGHT BEAMS
NT SUNLIGHT
Origin of neuron responses of the superior colliculus to light flashes
p0233 A79-42294
Thermally induced retina injury due to high doses of optical radiation
p0278 A79-50974
The physiological significance of light for human beings
[RAE-LIB-TRANS-1976] p0077 N79-14757
A study of the effects of six light conditions on caloric induced nystagmus
p0195 N79-23652

LIGHT ABSORPTION
U ELECTROMAGNETIC ABSORPTION

LIGHT ADAPTATION
Primate cone sensitivity to flicker during light and dark adaptation as indicated by the foveal local electroretinogram
p0104 A79-24065
The influence of rapid prism adaptation upon fixation disparity
p0231 A79-42230
Light adaptation in a normal and a rod monochromat - Psychophysical and VEP increment threshold comparisons
p0232 A79-42234
Effect of adaptation level on certain visual functions in man
p0296 A79-51328
Restoration of color perception after deadapting flashes
p0193 N79-23640
Influence of light adaptation on dark adaptation time for pattern recognition tasks
[FB-31] p0316 N79-33835

LIGHT AIRBORNE MULTIPURPOSE SYSTEM
Human factor engineering test and evaluation of the US Navy LAMPS helicopter system
p0151 N79-19632

LIGHT BEAMS
Moving phase transitions in laser-irradiated biological tissue
p0228 A79-41478
Mechanisms of retinal damage from chronic laser radiation: Thresholds and mechanisms
[AD-A058449] p0056 N79-13698

LIGHT DURATION
U PULSE DURATION

LIGHT EMISSION
NT CHEMILUMINESCENCE
NT FLUORESCENCE

LIGHT EMITTING DIODES
Human factors considerations in the design and evaluation of a helmet mounted display using a light emitting diode matrix
p0063 A79-18214
No harmful effects through infrared light emitting diodes
p0184 A79-33650

LIGHT INTENSITY
U LUMINOUS INTENSITY

LIGHT MODULATION
Contributions of the retina and of the eye optical system to the modulation lowering of the aerial image
p0100 A79-22771

LIGHT PROBES
U LIGHT BEAMS

LIGHT SCATTERING
Accuracy of RGD approximation for computing light scattering properties of diffusing and motile bacteria --- Rayleigh-Gans-Debye
p0233 A79-42448

LIGHT TRANSMISSION
NT LIGHT SCATTERING
Measurements in the laser irradiated eye
[AD-A069842] p0315 N79-33825

LIGHTING
U ILLUMINATING

LIGHTING EQUIPMENT
Light and color on a manned spacecraft
p0059 N79-13996
A decision model applied to alcohol effects on driver signal light behavior
p0092 N79-15630

LIMBS (ANATOMY)
NT ARM (ANATOMY)
NT FOREARM
NT HAND (ANATOMY)
NT KNEE (ANATOMY)
NT LEG (ANATOMY)
Limb blood flow - Rest and heavy exercise in sitting and supine positions in man
p0235 A79-43208
Recovery of skeletal muscle after 3 mo of hindlimb immobilization in rats
p0268 A79-47856
Studies of limb-dislodging forces acting on an ejection seat occupant
[AD-A064882] p0196 N79-23658
Prosthesis coupling
[NASA-CASE-KSC-11069-1] p0240 N79-26772
Correlation of mechanism of extremity injury and aerodynamic factors in ejections from F-4 aircraft
p0284 N79-31904

LIMITATIONS
U CONSTRAINTS

LINE SHAPE
The relationship between the apparent vertical and the vertical horopter --- visual perception of luminous line
p0225 A79-40186
The tilt illusion - Length and luminance changes of induction line and third /disinhibiting/ line
p0228 A79-41422
LINEAR EQUATIONS
The human operator in the control system: Linear models --- German book
p0132 A79-26356
LINEAR PREDICTION
Linear modelling of attentional resource allocation
p0091 N79-15626
Modelling the human operator of slowly responding systems using linear models
p0117 N79-17492
LINEAR SYSTEMS
Detection of coloured stimuli by independent linear systems
p0231 A79-42229
LINEARITY
Estimation of nerve-bundle conduction
p0154 N79-19672
LINEARIZATION
Linearization and sensitivity analysis of model for human eye movements
p0102 A79-23783
LING-TEMCO-VOUGHT AIRCRAFT
NT A-7 AIRCRAFT
LINGUISTICS
NT WORDS (LANGUAGE)
LIPID METABOLISM
Effects of exercise, vitamin E, and ozone on pulmonary function and lipid peroxidation
p0067 A79-18965
Energetic aspects of adaptation --- Russian book on metabolic responses to stress
p0167 A79-31906
Membranous evolution in the primitive cell
p0206 A79-37977
COSMOS 936, experiment K204: The effects of space flight on some liver enzymes concerned with carbohydrate and lipid metabolism in the rat
p0023 N79-11675
Changes in amount and composition of phospholipids in rat skeletal muscle microsomal fraction under the influence of a flight aboard the Kosmos-690 biosatellite
p0108 N79-16519
Sterols bound with blood plasma proteins and erythrocyte membranes during hypokinesia
p0193 N79-23636
Effects on lipid metabolism in man of some factors that simulate space flight conditions
p0311 N79-33794
LIPIDS
NT LIPOPROTEINS
Temperature-dependent morphological changes in membranes of Bacillus stearothermophilus
p0005 A79-12475
A biogeochemical study of the Abu Dhabi algal mats - A simplified ecosystem
p0132 A79-26373
Squalenes, phytanes and other isoprenoids as major neutral lipids of methanogenic and thermoacidophilic 'archaebacteria'
p0232 A79-42274
The effects of ozone on human erythrocytes and phospholipid vesicles
p0049 N79-12687
Blood lipid changes in hypoxic rats
p0074 N79-14731
Study of model membrane fusion using photon correlation spectroscopy --- lipid bilayer phase transition in cell membranes
p0147 N79-19591
LIPOPROTEINS
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
p0311 N79-33797
LIQUID COOLING
Development of integrated tubing fabric for liquid conditioning undergarments
p0044 A79-18815
LIQUID CRYSTALS
Liquid crystal developments for medicine
p0175 N79-21746
LIQUID DROPS
U DROPS (LIQUIDS)
LIQUID MERCURY
U MERCURY (METAL)
LIQUID METALS
NT MERCURY (METAL)
LIQUID WASTES
NT URINE
NT WASTE WATER
LIQUID-GAS MIXTURES
NT AEROSOLS
NT FOG
LIQUIDS
NT MERCURY (METAL)
LISTS
Publications of the planetary biology program for 1977: A special bibliography
[NASA-TM-80338] p0179 N79-21777
LITERATURE
NT BIOGRAPHY
NT DOCUMENTATION
LITHIUM COMPOUNDS
NT LITHIUM HYDROXIDES
LITHIUM HYDROXIDES
The dependence of the CO2 removal efficiency of LiOH on humidity and mesh size --- in spacecraft life support systems
[ASME PAPER 78-ENAS-5] p0006 A79-12554
LIVER
The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
p0296 A79-51113
Radiation lesion to liver DNA of rats exposed to radiation during flight aboard the Kosmos-690 biosatellite
p0014 N79-10702
Histological and histochemical studies of the liver of rats flown aboard Kosmos-690 biosatellite
p0014 N79-10703
COSMOS 936, experiment K204: The effects of space flight on some liver enzymes concerned with carbohydrate and lipid metabolism in the rat
p0023 N79-11675
Diffraction-based characterization of biological tissue with ultrasound --- acoustic scattering from liver tissue
p0054 N79-13683
State of process of oxidation phosphorylation of liver mitochondria on exposure to an electric field
p0075 N79-14742
Effect of different doses of centimeter-band electromagnetic oscillations of biochemiluminescence of central nervous system and liver tissues
p0172 N79-20738
Cu-content of the liver of young mice in relation to a defect in the Cu-metabolism
[IRI-133-77-02] p0239 N79-26764
LOAD DISTRIBUTION (FORCES)
Influences of joystick spring resistance on the execution of simple and complex positioning movements
p0119 N79-17517
LOAD FACTORS
U LOADS (FORCES)
LOADING FORCES
U LOADS (FORCES)
LOADING OPERATIONS
Microbial load monitor
[NASA-CR-160274] p0243 N79-27815
LOADING WAVES
U LOADS (FORCES)
LOADS (FORCES)
NT AXIAL COMPRESSION LOADS
NT DYNAMIC LOADS
A study of the effect of forcing function characteristics on human operator dynamics in manual control
p0086 N79-15590
LOBES
Distribution of regional volumes and ventilation in excised canine lobes
p0236 A79-43703
LOCKHEED AIRCRAFT
NT C-141 AIRCRAFT
NT F-104 AIRCRAFT

LOCOMOTION
NT ASTRONAUT LOCOMOTION
NT WALKING
Adaptive locomotion of a multilegged robot over rough terrain
p0163 A79-30217
Process of search control of coordinated movement in man
p0166 A79-30701
Selecting the program of motions for a biped walking machine
p0166 A79-31490

LOGIC DESIGN
Control logic design criteria for multifunction switching devices --- in aircraft
p0064 A79-18223

LONG DURATION EXPOSURE FACILITY
The Biostack experiment in the U.S. long exposure duration test program
p0227 A79-41230

LONG TERM EFFECTS
Medical control in prolonged space flights
[IAF PAPER 78-63] p0003 A79-11226
Challenges to life support system's future
[ASME PAPER 78-ENAS-28] p0008 A79-12577
Serendipitous solution to the problem of culturing Arabidopsis plants in sealed containers for spaceflights of long duration
p0229 A79-41704
Changes in blood sugar content of dogs exposed to chronic gamma radiation for six years
p0014 N79-10706
Effects of long-term and chronic radiation on hemopoiesis
p0016 N79-10719
Dynamic medical monitoring of flight crews in the course of long-term flights
p0072 N79-14719
State of blood clotting during prolonged hypokinesia
p0073 N79-14729
Space biology and aerospace medicine, volume 13, no. 1, 1979
[JPRS-72826] p0107 N79-16514
Morphological study of adrenals of rats irradiated during flight aboard Kosmos-690 satellite
p0108 N79-16517
The facilitating effects of uncertainty in long-term manual control
p0115 N79-17485
Problems of human adaption to spaceflight
p0157 N79-19985
Distinctions referable to excretion of end products of protein metabolism in urine of man submitted to 182-day antiorthostatic hypokinesia
p0193 N79-23635
Effect of combination of hypoxia and hypercapnia on survival of Japanese quail
p0194 N79-23641
Effects of different values of urine pH during long-term storage on microflora composition
p0194 N79-23643
Morphological distinctions of the rat thyroid and parathyroid following long-term space flights
p0246 N79-27835

LOOP ANTENNAS
Electromagnetic power absorption in cylindrical tissue models excited by a loop antenna
p0136 A79-27959

LOUDNESS
Overall loudness of steady sounds according to theory and experiment
[NASA-RP-1001] N79-25753
The loudness of tinnitus
p0246 N79-27837

LOW ALTITUDE
The effects of ambient illumination, aircraft velocity and feedback on absolute distance judgments during simulated night nap-of-the-earth flight
p0038 A79-13204
Responses of high altitude natives to a standard cold test at sea level
p0164 A79-30658
The effect of Nap-of-the-Earth (NOE) helicopter flying on pilot blood and urine biochemicals
[AD-A055204] p0055 N79-13693

LOW FREQUENCIES
The influence of low frequency vibration on pilot performance /as measured in a fixed base simulator/
p0299 A79-52326
Frequency response of cardiovascular regulation in canines to sinusoidal acceleration at frequencies below 1 Hz (basis for biodynamic modeling)
p0286 N79-31915

LOW GRAVITY
U REDUCED GRAVITY

LOW PRESSURE
Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body
p0073 N79-14725

LOW TEMPERATURE
Effects of low temperature on in vivo and in vitro protein synthesis in Escherichia coli and Pseudomonas fluorescens
p0131 A79-26141

LOW TEMPERATURE ENVIRONMENTS
The effects of temperature, salinity, and other factors on the growth and formation of UV-absorbing substances by the fungus Aspergillus
p0005 A79-12512
Skin temperature changes in paradoxical sleep in man in the cold
p0201 A79-37706

LOW VISIBILITY
The effects of prediction, quickening, frequency separation, and percent of pursuit in perspective displays for low-visibility landing
p0063 A79-18210

LOWER ATMOSPHERE
NT BIOSPHERE

LOWER BODY NEGATIVE PRESSURE (LBNP)
U ACCELERATION STRESSES (PHYSIOLOGY)

LSI
U LARGE SCALE INTEGRATION

LUMBAR REGION
The effect of thermal stimulation of the skin on activity of lateral crescent interneurons of lumbar segments
p0208 A79-38147

LUMBERING AREAS
U FORESTS

LUMINANCE
The tilt illusion - Length and luminance changes of induction line and third /disinhibiting/ line
p0228 A79-41422
On the latency of human visually evoked response to sinusoidal gratings
p0232 A79-42236
Enchancement of luminance flicker by color-opponent mechanisms
p0252 A79-44582
Spatial summation in human vision - Simple reaction time measurements
p0265 A79-47115
Upper-velocity threshold for detection of movement
p0299 A79-52541
Contrast sensitivity of the human visual system at one luminance level while adapted to a stimulus at another luminance level
[AD-A064370] p0190 N79-22759

LUMINESCENCE
NT CHEMILUMINESCENCE
NT FLUORESCENCE

LUMINESCENT INTENSITY
U LUMINOUS INTENSITY

LUMINOUS FLUX DENSITY
U LUMINOUS INTENSITY

LUMINOUS INTENSITY
NT LUMINANCE
Human factors design criteria for transilluminated displays
p0036 A79-13187

LUNAR SCATTERING
U DIFFUSE RADIATION

LUNAR SOIL
The origin of life on earth - Recent studies
p0134 A79-27335

LUNG MORPHOLOGY
Growth of pulmonary circulation in normal pig - Structural analysis and cardiopulmonary function
p0067 A79-18961
Changes in lung volume, lung density, and distribution of ventilation during hypobaric decompression
p0185 A79-33806

Radiographic comparison of human lung shape during normal gravity and weightlessness
p0305 A79-54269

LUNGS
The comparative study of metabolism changes dynamics during hypoxia and hyperoxia in mice lungs
[IAF PAPER 78-51] p0002 A79-11221
Monitoring the state of the human airways by analysis of respiratory sound
[IAF PAPER 78-66] p0003 A79-11227
Improved measurements of shear modulus and pleural membrane tension of the lung
p0236 A79-43702
Distribution of regional volumes and ventilation in excised canine lobes
p0236 A79-43703
A revised model of gas transport in human lungs
p0253 A79-45768
Pulmonary functional tolerance to ionizing radiation - An experimental study
p0256 A79-46601
Adaptation to chronic hyperoxia in the rat - A study of pulmonary surfactant, tissue levels of superoxide dismutases and histology
p0256 A79-46603
Absence of effects of hypoxia on small airway function in humans
p0268 A79-47851
Cardiopulmonary readjustments in passive tilt
p0277 A79-50901
Lung inflation and longitudinal distribution of pulmonary vascular resistance during hypoxia
p0277 A79-50905
The lung as a filter for microbubbles
p0277 A79-50906
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
p0296 A79-51114
The physiological role of surface-active substances in the lung
p0296 A79-51117
The role of lesser circulation hemodynamic changes in pulmonary gas exchange
p0300 A79-53066
Evidence for increased intrathoracic fluid volume in man at high altitude
p0305 A79-54266
Lung mechanics: Dynamic response, acoustic generation, and flow limitation
p0017 N79-10727
Long term pulmonary function patterns in the aviator: The thousand Aviator study
p0028 N79-11708
Mechanics of mammalian lung
p0247 N79-27844
Respiration
p0247 N79-27845

LYMPH
NT LYMPHOCYTES
The lymph nodes and lymph vessels of the white rat
[BLL-RTS-11309] p0141 N79-18554
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation
p0312 N79-33804

LYMPHOCYTES
Experiment K-002: Results of histological examination of inguinal lymph nodes, supplementary report --- COSMOS 782 satellite
p0021 N79-11662
A theoretical study of membrane diffusion and lymphocyte patching
p0142 N79-18563

LYOPHILS
U COLLOIDS

M

MACHINE LEARNING
U LEARNING MACHINES

MACHINE ORIENTED LANGUAGES
Attempt to describe a class of man-machine dialogue systems based on a natural language
p0251 A79-44057

MACHINE RECOGNITION
U ARTIFICIAL INTELLIGENCE

MACROPHAGES
Preparation of guinea pig macrophage for electrophoretic experiments in space
[NASA-CR-158777] p0243 N79-27814

MACULAR VISION
U VISION

MAGNESIUM
Effects of magnesium, calcium, and serum on reversion of stable L-forms --- of soil bacterium
p0131 A79-26140

MAGNESIUM COMPOUNDS
NT CHLOROPHYLLS

MAGNETIC ABSORPTION
U ELECTROMAGNETIC ABSORPTION

MAGNETIC COILS
The use of synchronous demodulation for the measurement of eye movements by means of an ocular magnetic search coil
p0210 A79-39974

MAGNETIC EFFECTS
Biomagnetism and artificial magnetic stimulation of living structures
[IAF PAPER 78-52] p0002 A79-11222

MAGNETIC FIELDS
NT BIOMAGNETISM
The theory of the magnetocardiogram
p0304 A79-53533
Quantitative review of human susceptibility to magnetic fields
[UCID-17773] p0026 N79-11691
Effects of intermittent magnetic field on activity of carbohydrate metabolism enzymes and oxygen uptake in testicular tissue
p0075 N79-14738
Biological effects of a magnetic field
p0172 N79-20734
Magnetic field effect on radial processes in biological membranes
p0172 N79-20737
Effect of infra-low-frequency magnetic fields on cell division
p0173 N79-20739
Changes in calcium ion activity due to magnetization of solution as the possible mechanism of biological action of magnetic fields
p0173 N79-20741

MAGNETIC INDUCTION
Effects of electromagnetic field induction on development of the green algae, scenedesmus quadricauda (Turbpin) Breb. and composition of free amino acids in its biomass and medium
p0075 N79-14740

MAGNETIC PROPERTIES
NT BIOMAGNETISM
NT MAGNETIC EFFECTS
NT MAGNETIC INDUCTION

MAGNETIC RESONANCE
NT ELECTRON PARAMAGNETIC RESONANCE

MAGNETOCARDIOGRAPHY
Magnetocardiography - An overview
p0274 A79-50107
Biomagnetic instrumentation and measurement
p0295 A79-51043
Clinical magnetocardiography
p0295 A79-51044
Non-invasive information on the P-R segment of the cardiac cycle - An assessment of the clinical potential of the electric and magnetic methods
p0295 A79-51045
Theoretical foundations of cardiovascular processes --- Book
p0304 A79-53531
The theory of the magnetocardiogram
p0304 A79-53533

MAGNETOMETERS
Biomagnetic instrumentation and measurement
p0295 A79-51043

MAGNIFICATION
The holographic Pancake Window --- magnifier for flight simulation display
p0138 A79-28172

MAGNIFIERS
U MAGNIFICATION

MAGNITUDE
Magnitude estimation as a hearing aid selection procedure
p0246 N79-27838

MAIN SEQUENCE STARS
Habitable zones about main sequence stars
p0136 A79-27930

MAINTAINABILITY
Test evaluation of space station ECLSS maintenance concepts --- Environmental Control and Life Support System [ASME PAPER 78-ENAS-43] p0009 A79-12589
MAINTENANCE
NT AIRCRAFT MAINTENANCE
NT SPACE MAINTENANCE
MALES
Prophylactic effects of intermittent acceleration against physiological deconditioning in simulated weightlessness p0229 A79-41712
A comparison of the physiological responses in young men and women to heat and cold stress [AD-A061024] p0155 N79-19679
Masculinity, femininity, androgyny. What really works at work [AD-A061177] p0156 N79-19683
MAMMALS
NT CHIMPANZEES
NT DOGS
NT GOATS
NT HUMAN BEINGS
NT MICE
NT MONKEYS
NT PRIMATES
NT RABBITS
NT RATS
NT WHALES
Effect of ultrasonic irradiation on mammalian cells and chromosomes in vitro p0134 A79-27239
The visual cortex of normal and deprived monkeys p0296 A79-51174
Reactions of methamidophos with mammalian cholinesterases [AD-A058683/4] p0051 N79-12698
Principal results of experiment with mammals onboard the Kosmos-782 biosatellite p0073 N79-14726
Mechanics of mammalian lung p0247 N79-27844
MAMMARY GLANDS
Autoradiographic enhancement of mammograms p0227 A79-40773
MAN
U HUMAN BEINGS
MAN ENVIRONMENT INTERACTIONS
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 57 [JPRS-72808] p0121 N79-17526
Environment monitoring in the USSR and hygienic practice --- anthropogenic effects p0121 N79-17528
Shalit Perceptual Organization and Reduction Questionnaire (SPORQ). Report 2: Characteristics and reliability [FOA-C-55031-H6] p0309 N79-32836
MAN MACHINE SYSTEMS
Evolution of the man-machine interface in surveillance radar systems p0001 A79-10322
False hypothesis and the pilot --- aircraft accidents due to decision making errors [SAE PAPER 780528] p0001 A79-10399
Piloted aircraft simulation - Advantages, disadvantages, and practical problems [SAE PAPER 780548] p0001 A79-10407
Modeling and analysis using SAINT - A combined discrete/continuous network simulation language --- Systems Analysis of Integrated Network of Tasks for RPV p0004 A79-11480
Human factors design criteria for transilluminated displays p0036 A79-13187
Seating, console and workplace design - Seated operator reach profiles p0036 A79-13188
Seating, console, and workplace design - Integration of literature and accommodation model p0036 A79-13189
Contrast enhancement using local area brightness and gain control --- of airborne CRT display p0037 A79-13199
Synthetic aperture radar operator tactical target acquisition research p0037 A79-13202
Target acquisition in realistic terrain p0037 A79-13203
Investigation of arrangement of multipurpose displays and use of tailored control logic in a fighter aircraft cockpit p0038 A79-13205
The event related cortical potential as an index of task workload p0038 A79-13208
Task taxonomy - Two ignored issues --- criteria for task evaluation with respect to empirical data p0039 A79-13212
Multifunction keyboard configurations for single-seat, air-to-ground fighter cockpits p0039 A79-13213
Task functional demands as factors in dual-task performance p0039 A79-13214
NASA flight management research p0040 A79-13218
Coordinated crew performance in commercial aircraft operations p0040 A79-13219
The assessment of rotary wing aviator precision performance during extended helicopter flights p0040 A79-13221
Development of automated performance measures for introductory air combat maneuvers p0040 A79-13223
Experimental designs for investigating complex human operator/machine systems p0040 A79-13225
Communications management by the remote system - An adaptive approach --- modeling of RPV autopilot/operator systems p0041 A79-13226
Experimental and psychological investigations in aviation and astronautics --- Russian book p0041 A79-13998
Anthropology in Spacelab - Control and display system in Spacelab [DGLR PAPER 78-151] p0042 A79-14096
Increasing pilot's performance capacity during flight through use of a control element serving as information carrier [DGLR PAPER 78-152] p0042 A79-14097
Human factors considerations in establishing aircraft collision avoidance system alert thresholds p0045 A79-14438
Adaptive supervisory control of remote manipulation p0046 A79-14987
Light weight solid state helmet symbol display and position system p0046 A79-15177
Computer-graphic design for human performance [AD-A055132] p0046 A79-15399
Man-machine reliability - A practical engineering tool p0047 A79-15400
The man-computer division of tasks in the case of the control of complex technical systems --- applied to aircraft p0061 A79-17683
Human Factors Society, Annual Meeting, 22nd, Detroit, Mich., October 16-19, 1978, Proceedings p0062 A79-18201
System operability - Concept and measurement in test and evaluation --- man system compatibility indices in F-18 aircraft example p0062 A79-18204
Perception of graphic displays of space p0062 A79-18205
Pilot performance during flight simulation with peripherally presented visual signals p0063 A79-18213
Man/terminal interaction evaluation of computer operating system command and control service concepts --- in Spacelab p0064 A79-18224
On the relationship between pilot rating and pilot dynamics. I - An experimental approach p0066 A79-18474
On the relationship between pilot rating and pilot dynamics. II - An analytical approach p0066 A79-18475
Human engineering study of information processing applicable to helmet-mounted displays p0068 A79-18998

Collision avoidance response stereotypes in pilots and nonpilots
p0068 A79-18995

Line criteria in target acquisition with television --- visibility of target image on TV screen
p0068 A79-18997

Speed and load stress as determinants of performance in a time sharing task
p0068 A79-18999

Visual target acquisition and ocular scanning performance
p0069 A79-19000

The effects of participatory mode and task workload on the detection of dynamic system failures
p0098 A79-21156

Engineering-psychological study of information imaging systems --- manual control of spaceship docking
p0099 A79-21404

The next decade - Development, training, supervision
p0102 A79-23584

Digital man-machine control systems - The effects of preview lag
p0131 A79-26149

The human operator in the control system: Linear models --- German book
p0132 A79-26356

Nonparametric model for the detection of signals observed by a human operator on a CRT screen on a noise background --- cathode-ray tube
p0159 A79-28565

An algorithm to ascertain critical regions of human tracking ability
p0163 A79-30218

A model of human decisionmaking in fault diagnosis tasks that include feedback and redundancy
p0163 A79-30222

A comparison of control modes for time-delayed remote manipulation
p0163 A79-30223

Evaluation of models describing human operator control of slowly responding complex systems --- Thesis
p0167 A79-31494

Pilot preflight briefing utilizing an interactive computer generated Voice Response System
p0167 A79-31887

Application of computer animation for dynamic display in complex energy systems --- for human operator performance improvement
p0186 A79-34172

Advanced teleoperators --- remote manipulation system
p0187 A79-34982

Robotic vision --- process control applications
p0187 A79-34984

Construction in space - Toward a fresh definition of the man/machine relation
p0187 A79-34985

Computerized clinical electroencephalography in perspective
p0226 A79-40648

The effect of increased monitoring load on vigilance performance using a simulated radar display
p0236 A79-43674

Attempt to describe a class of man-machine dialogue systems based on a natural language
p0251 A79-44057

A structural model of the adaptive human pilot
[AIAA 79-1784] p0252 A79-45411

Ejection problems and injuries - Their causes, effects and treatments, and suggestions for preventive measures
p0267 A79-47338

Computer augmented manual control of remote manipulators
p0269 A79-48019

An operator-aiding manipulator control system
p0269 A79-48020

Helicopter commands at the touch of a hand
[AHS 79-13] p0270 A79-49066

Computer aided control of a mechanical arm
p0275 A79-50334

Man and automation --- for human-automatic pilot interfaces
p0275 A79-50372

Man and machine design for space flight
p0300 A79-52696

Thoughts about man-machine interrelations in space flights applied to Spacelab missions
[IAF PAPER 79-95] p0302 A79-53295

Development of techniques to enhance man/machine communication
[NASA-CR-157886] p0032 N79-11730

Anthropometric source book. Volume 1: Anthropometry for designers
[NASA-RP-1024] p0032 N79-11734

Statistical considerations in man-machine designs
p0033 N79-11743

A critally annotated bibliography of the literature on human factors in computer systems
[AD-A058081] p0052 N79-12707

The 14th Annual Conference on Manual Control --- digital simulation of human operator dynamics
[NASA-CP-2060] p0086 N79-15588

Modeling the human as a controller in a multitask environment
p0087 N79-15595

Closed loop models for analyzing the effects of simulator characteristics --- digital simulation of human operators
p0087 N79-15598

Prospects of a mathematical theory of human behavior in complex man-machine systems tasks --- time sharing computer analogy of automobile driving
p0088 N79-15599

Human operator identification model and related computer programs
[NASA-CR-152237] p0112 N79-16551

Earth orbital teleoperator systems evaluation
[NASA-CR-150912] p0112 N79-16552

Optimisation of pilot capability and avionic system design
[AGARD-AR-118] p0113 N79-16560

Optimisation of pilot capability and avionic system design, introduction
p0113 N79-16561

Systems design
p0114 N79-16563

The Helicopter
p0114 N79-16568

Proceedings, 13th Annual Conference on Manual Control
[NASA-CR-158107] p0114 N79-17475

The effects of deviate internal representations in the optimal model of the human operator
p0114 N79-17477

A dual-loop model of the human controller
p0115 N79-17480

An approach to the multi-axis problem in manual control --- optimal pilot model
p0115 N79-17482

The application of integral performance criteria to the analysis of discrete maneuvers in a driving simulator
[FS-GMR-2394] p0115 N79-17484

A control theoretic model of driver steering behavior
p0116 N79-17491

Modelling the human operator of slowly responding systems using linear models
p0117 N79-17492

A model of the human supervisor
p0117 N79-17495

Prosthetic EMG control enhancement through the application of man-machine principles
p0117 N79-17505

Prediction of pilot-aircraft stability boundaries and performance contours
p0118 N79-17507

Speech as a pilot input medium
p0119 N79-17519

The impact of a Learn-Forget-Learn (LFL) curve and learning curves on a system effectiveness model
[AD-A061622] p0124 N79-17550

Man-machine analysis of translation and work tasks of Skylab films
[NASA-CR-151879] p0146 N79-18592

Human factor engineering test and evaluation of the US Navy LAMPS helicopter system
p0151 N79-19632

Modeling and analysis of man-machine interface information
[AD-A063515] p0178 N79-21772

MM/1, a man - machine interface: A contribution towards a standard
[NPL-CSU-2/78] p0197 N79-23669
A two level model of human steering behavior in a motor vehicle
[[illegible]B-27] p0197 N79-24657
Improvements in the man-machine interface for data acquisition, display and control
p0224 N79-25983
Analytical methods for biotechnological design of man machine systems: Work on system ergonomy
[FB-28] p0242 N79-26787
The systemic principles of building a man-machine control staff --- functional analysis
p0249 N79-27861
Combined discrete network-continuous control modeling of man-machine systems
p0260 N79-28879
Human processing of information and the computerized mode of presentation: Ergonomic parameters
[FOA-C-56018-H9] p0263 N79-29797
Multipurpose digital switching and flight control workload
[AD-A069606] p0281 N79-30934
A decision, monitoring and control model of the human operator applied to an RPV control problem
[AD-A069880] p0282 N79-30939
Development of human performance models for man-machine system simulation
[AD-A069879] p0282 N79-30940
Adaptive estimation of information values in continuous decision making and control of advanced aircraft
[AD-A069741] p0282 N79-30941
Development and utilization of internal models in dynamic systems: A comparison of monitors and operators as failure detectors
[AD-A069730] p0282 N79-30942
Medical and operational factors of accidents in advanced fighter aircraft
p0290 N79-31944
Analysis of the intervention of the human factor as a principal cause or influence in accidents of Mirage aircraft in the Belgian Air Force
p0290 N79-31945
The information in aircraft accidents investigation
p0291 N79-31947
Human performance in time-shared verbal and tracking tasks
[AD-A070275] p0308 N79-32831
Combined discrete network: Continuous control modeling of man-machine systems
[AD-A071574] p0310 N79-32842
Models of human operators in vision dependent tasks
[NASA-CP-2103] p0317 N79-33838
A survey of Applied Psychological Services' models of the human operator
p0317 N79-33839
Visual performance modeling in the human operator simulator
p0317 N79-33840
A brief overview of the theory and application of the optimal control model of the human operator
p0317 N79-33841
SAINT: A combined simulation language for modeling man-machine systems
p0317 N79-33842
Analysis of visual estimation of system state from arbitrary displays
p0317 N79-33843
The role of cognitive switching in head-up displays --- to determine pilot ability to accurately extract information from either of two sources
[NASA-CP-3137] p0318 N79-33851

MANAGEMENT
NT INFORMATION MANAGEMENT
NT PERSONNEL MANAGEMENT
NT PROJECT MANAGEMENT
NT RESEARCH MANAGEMENT
NT SAFETY MANAGEMENT
NT SYSTEMS MANAGEMENT

MANAGEMENT METHODS
NT DELPHI METHOD (FORECASTING)

MANAGEMENT PLANNING
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 52 --- with emphasis on research management
[JPRS-72604] p0078 N79-14760
A complex system for planning scientific medical research
p0078 N79-14761
Problem-oriented program approach to planning and management of medicine
p0078 N79-14762
The conception of the systems analytic approach to planning and organization of medical scientific research
p0078 N79-14764
Current status and prospects of continued refinement of planning and coordination of scientific medical research
p0078 N79-14765
Use of the systems analytic approach for organization and coordination of complex biomedical research
p0079 N79-14767

MANEUVERABILITY
The application of integral performance criteria to the analysis of discrete maneuvers in a driving simulator
[RS-C[illegible]R-2394] p0115 N79-174[illegible]

MANEUVERS
NT AIRCRAFT MANEUVERS
Car driving as a cybernetic task
[IZF-1979-6] p0309 N79-32838

MANIPULATION
U MANIPULATORS

MANIPULATORS
Adaptive control of a robotic manipulator
p0046 A79-15001
Control of robot manipulators from the modeling of their dynamics --- French thesis
p0101 A79-23427
Object-handling system for manual industry
p0101 A79-23464
Control systems for robots and manipulators --- Russian book
p0134 A79-27303
A comparison of control modes for time-delayed remote manipulation
p0163 A79-30223
Advanced teleoperators --- remote manipulation system
p0187 A79-34982
The mechanical properties of manipulation systems
p0231 A79-42017
Computer augmented manual control of remote manipulators
p0269 A79-48019
An operator-aiding manipulator control system
p0269 A79-48020
Computer aided control of a mechanical arm
p0275 A79-50334
Goal-directed mechanics of controlled manipulators --- Russian book
p0275 A79-50447
Event-driven displays for manipulator control
p0089 N79-15610
Manned simulations of the SRMS in SIMFAC
p0089 N79-15611
The proto-type wrist joint assembly TACPAW (Triple Axis Common Pivot Arm Wrist), phase 2
[NASA-CR-150885] p0093 N79-15635
Simple models for the shuttle remote manipulator system
[NASA-CR-151881] p0113 N79-16554
Advanced industrial robot control systems
[PB-287273/7] p0113 N79-16558
Multi-axis hand controller for the shuttle remote manipulator system
p0117 N79-17503
The development of a six degree-of-constraint robot performance evaluation test
p0117 N79-17504
Two measures of performance in a peg-in-hole manipulation task with force feedback
p0118 N79-17506
Terminal guidance sensor system
[NASA-CASE-NPO-14521-1] p0174 N79-20746
Compact artificial hand
[NASA-CASE-NPO-13906-1] p0214 N79-24652
Proximity-vision system for protoflight manipulator arm
[NASA-CR-158652] p0197 N79-24658
Study of modeling and evaluation of remote manipulation tasks with force feedback
[NASA-CR-158721] p0242 N79-26785

MANNED ORBITAL LABORATORIES
The Meduza experiment: An orbital complex ten weeks in flight
[NASA-TM-75394] p0169 N79-20714
MANNED ORBITAL SPACE STATIONS
U ORBITAL SPACE STATIONS
MANNED SPACE FLIGHT
Medical control in prolonged space flights
[IAF PAPER 78-63] p0003 A79-11226
Space medicine - A prognosis for future research
[IAF PAPER 78-ST-17] p0003 A79-11364
Space biology and medicine
p0132 A79-26344
Space biology and aerospace medicine
p0226 A79-40734
Closed regenerative life support systems for space travel - Their development poses fundamental questions for ecological science
p0228 A79-41702
Closed ecology in space from a bioengineering perspective
p0228 A79-41703
Aerospace highlights and potential medical applications --- in manned space flight
p0293 A79-51027
Man and machine design for space flight
p0300 A79-52696
Thoughts about man-machine interrelations in space flights applied to Spacelab missions
[IAF PAPER 79-95] p0302 A79-53295
Prospects of using Japanese quail in biological life support systems
p0109 N79-16531
Specialized physiological studies in support of manned space flight
[NASA-CR-151876] p0111 N79-16542
Problems of human adaption to spaceflight
p0157 N79-19985
Space biology and aerospace medicine, no. 2, 1979
[JPRS-73377] p0190 N79-23627
Use of a mathematical model of erythropoiesis for evaluation of effects of space flight factors
p0192 N79-23630
MANNED SPACECRAFT
NT MANNED ORBITAL LABORATORIES
NT ORBITAL SPACE STATIONS
NT ORBITAL WORKSHOPS
NT SALYUT SPACE STATION
NT SKYLAB 3
NT SOYUZ SPACECRAFT
NT SPACE SHUTTLES
NT SPACE STATIONS
Life sciences experiments in the first Spacelab mission
[ASME PAPER 78-ENAS-26] p0008 A79-12575
Engineering-psychological study of information imaging systems --- manual control of spaceship docking
p0099 A79-21404
Light and color on a manned spacecraft
p0059 N79-13996
MANOMETERS
Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements
p0294 A79-51037
MANPOWER
NT SCIENTISTS
Isometric strength testing in selecting workers for strenuous jobs
p0262 N79-29790
MANUAL CONTROL
Depth perception and manual control
p0038 A79-13207
Multifunction keyboard configurations for single-seat, air-to-ground fighter cockpits
p0039 A79-13213
Task functional demands as factors in dual-task performance
p0039 A79-13214
Arrangement of aircraft flight indicators with the help of optimal theoretical models for man as the controller
[DGLR PAPER 78-149] p0042 A79-14094
Application of control theory to the investigation of roll motion effects on pilot control behavior
[AD-A054921] p0046 A79-14972
Digital man-machine control systems - The effects of preview lag
p0131 A79-26149
The human operator in the control system: Linear models --- German book
p0132 A79-26356
Adaptive estimation schemes for minimizing uncertainty in manual control tasks
p0269 A79-48013
Human operators in adversary tracking encounters
p0269 A79-48015
Computer augmented manual control of remote manipulators
p0269 A79-48019
An operator-aiding manipulator control system
p0269 A79-48020
Helicopter commands at the touch of a hand
[AHS 79-13] p0270 A79-49066
Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance
p0299 A79-52327
Development of recommendations to improve controls operability
[PB-284433/0] p0053 N79-12714
A formal model of the adaptive and discrete control behaviors of human operators
[AD-A059039] p0059 N79-13717
The 14th Annual Conference on Manual Control --- digital simulation of human operator dynamics
[NASA-CP-2060] p0086 N79-15588
A study of the effect of forcing function characteristics on human operator dynamics in manual control
p0086 N79-15590
An extension of the quickened display for manual control
p0086 N79-15591
Effects of uncertainty on manual tracking performance --- visual tasks
p0086 N79-15592
Modeling the human as a controller in a multitask environment
p0087 N79-15595
A comparison of motor submodels in the optimal control model
p0087 N79-15597
Flight experience with manually controlled unconventional aircraft motions
p0088 N79-15602
The determination of the operating range of a twin-grip control yoke through biomechanical means
p0089 N79-15609
Evaluation of display and control concepts for a terminal configured vehicle in final approach in a windshear environment
p0090 N79-15616
Proceedings, 13th Annual Conference on Manual Control
[NASA-CR-158107] p0114 N79-17475
A dual-loop model of the human controller
p0115 N79-17480
An approach to the multi-axis problem in manual control --- optimal pilot model
p0115 N79-17482
Error rate information in attention allocation pilot models
p0115 N79-17483
The facilitating effects of uncertainty in long-term manual control
p0115 N79-17485
Multi-attribute subjective evaluations of manual tracking tasks vs. objective performance of the human operator
p0116 N79-17486
The effects of participatory mode and task workload on the detection of dynamic system failures
p0116 N79-17487
A control theoretic model of driver steering behavior
p0116 N79-17491
Modelling the human operator of slowly responding systems using linear models
p0117 N79-17492
Driver steering dynamics measured in car simulator under a range of visibility and roadmaking conditions
p0117 N79-17493

A model of the human supervisor
p0117 N79-17495
Manual control of yaw motion with combined visual and vestibular cues
p0119 N79-17513
Motion cue effects on human pilot dynamics in manual control
p0119 N79-17514
Study of the use of a nonlinear, rate limited, filter on pilot control signals
p0119 N79-17515
Influences of joystick spring resistance on the execution of simple and complex positioning movements
p0119 N79-17517
Investigation on the effect of mechanical properties of control elements on human control performance under stochastic roll vibrations
[BMVG-FBWT-78-11] p0146 N79-18593
Steering behaviour and manual control actions. Part 1: An evaluation of the literature and a research plan
[IZF-1978-3] p0146 N79-18594
The application of control theory to the investigation of roll motion effects on human operator performance
p0288 N79-31931
A theoretical and experimental analysis of the outside world perception process
[NLR-MP-78020-U] p0309 N79-32835

MANUALS
NT USER MANUALS (COMPUTER PROGRAMS)

MANUFACTURING
NT SPACE MANUFACTURING

MAPPING
NT THERMAL MAPPING

MAPS
The application of remote sensors to a model for fish mapping
[INPE-1379-PE/176] p0071 N79-14712
Individual differences in knowledge acquisition from maps
[AD-A065040] p0196 N79-23663

MARIJUANA
Effect of alcohol and marijuana on eye movements
p0101 A79-23469

MARINE BIOLOGY
Experimental approach to the chemical evolution in the primeval sea. II - Formation of protocell-like structures 'marigranules' in a modified sea medium
p0204 A79-37964
Determination of bound water in biological materials from dielectric measurements
p0082 N79-15557
Nitrogen fixation with photosynthetic marine microorganisms
[PB-286000/5] p0083 N79-15570
Nitrogen fixation with photosynthetic marine microorganisms
[PB-287590/4] p0120 N79-17525
Citric acid enhancement of copper sulfate toxicity to blue-green algae and other nuisance organisms
[PB-289490/5] p0170 N79-20718
Effects of heavy metals especially selenium, vanadium and zirconium on movement, growth and survival of certain animal aquatic life
[PB-292563/4] p0197 N79-25706
Results of benthic studies at Calvert Cliffs
[PB-294261/3] p0261 N79-29788

MARINE CHEMISTRY
Organic geochemical studies on kerogen precursors in recently deposited algal mats and oozes
p0001 A79-10419

MARINE ENVIRONMENTS
Proceedings of the first and second USA-USSR Symposia on the Effects of Pollutants upon aquatic ecosystems. Volume 1: USA Symposium. Volume 2: USSR Symposium
[PB-287219/0] p0112 N79-16546

MARKET RESEARCH
Eye-ball control
p0270 A79-49225

MARKING
NT ISOTOPIC LABELING
Design of polymeric immunomicrospheres for cell labelling and cell separation
p0275 A79-50234

MARS (PLANET)
Biological implications of the Viking mission to Mars
p0045 A79-14595
Solar-driven chemical energy source for a Martian biota
p0254 A79-46464
Some comments on interpretations of Viking biological experiments
p0255 A79-46465

MARS ENVIRONMENT
The response of selected terrestrial organisms to the Martian environment - A modeling study
p0136 A79-27928

MARS PROBES
NT VIKING LANDER SPACECRAFT
NT VIKING MARS PROGRAM
NT VIKING SPACECRAFT

MARS SURFACE
Chemical fingerprints of life in terrestrial soils and their possible use for the detection of life on Mars and other planets
p0136 A79-27929

MARS SURFACE SAMPLES
Public health considerations associated with a Mars surface sample return mission
p0005 A79-12510

MARSHES
U MARSHLANDS

MARSHLANDS
Distribution of bluegreen algae in a Mississippi Gulf Coast salt marsh
[PB-288982/2] p0153 N79-19667

MASKING
Perceptual delay - A consequence of metacontrast and apparent motion
p0035 A79-13183

MASKS
NT OXYGEN MASKS
Development of a specialized head/face protective device for test parachuting operations
p0045 A79-14437
Visual and optical assessment of gas protective face masks
p0152 N79-19642
An interface evaluation of the XM-29 protective mask and the AH-1S telescopic sight unit
[AD-A064203] p0190 N79-22764
Field evaluation of experimental crash-crew firefighter's facepiece
[AD-A066544] p0223 N79-25765

MASS
NT STELLAR MASS

MASS DISTRIBUTION
The inertial properties of the body and its segments
p0033 N79-11738

MASS SPECTROMETRY
U MASS SPECTROSCOPY

MASS SPECTROSCOPY
Tissue gas and blood analyses of human subjects breathing 80% argon and 20% oxygen
p0164 A79-30655
Concentration of trace contaminants during gas chromatography and chromato-mass spectrometry in biomedical research
p0109 N79-16528

MASS TRANSFER
Mass transport in arteries
p0247 N79-27848

MATERIAL BALANCE
NT WATER BALANCE

MATERIALS
Man and materiel in the cold regions, part 1
[AD-A063752] p0178 N79-21771

MATERIALS HANDLING
NT REMOTE HANDLING

MATERIALS RECOVERY
NT WATER RECLAMATION
Utilization of the wastes of vital activity
[NASA-TM-75410] p0177 N79-21768

MATERIALS TESTS
Statistical studies of animal response data from USP toxicity screening test method
p0066 A79-18305

MATHEMATICAL LOGIC
NT ALGORITHMS
NT AXIOMS
NT EQUIVALENCE

Overall loudness of steady sounds according to theory and experiment
[NASA-RP-1001] N79-25753
Some of the problems involved in planning biological experiments
p0312 N79-33805

MATHEMATICAL MODELS
NT ANALOG SIMULATION
NT DIGITAL SIMULATION
Various modeling approaches in biomechanics --- analog simulation of impact events
p0005 A79-12407
Models for automated motor skills training --- computer controlled adaptive instruction
p0035 A79-13182
A prediction model of arm push strength in the transverse plane
p0037 A79-13195
Simulation and control of a human temperature regulation system
p0041 A79-13613
The multiloop concept of the pilot work load as a basis of future experiments and studies
[ONERA, TP NO. 1978-10] p0045 A79-14795
Biped stability considerations with vestibular models
p0066 A79-18287
Modeling the effect of axial bronchial tension on expiratory flow
p0067 A79-18957
Regulation and efficiency of sweating in man /Mathematical modeling/
p0097 A79-20622
Modeling heat transfer through human skin subjected to high external temperatures
p0102 A79-23782
Linearization and sensitivity analysis of model for human eye movements
p0102 A79-23783
A theoretical model to estimate some ergonomic parameters from age, height and weight
p0132 A79-26150
Mechanics of the regulation of the respiratory system in man
p0160 A79-29258
Deductive derivation of a mathematical model for spectral sensitivity of the human organ of sight. I, II
p0166 A79-31178
Evaluation of models describing human operator control of slowly responding complex systems --- Thesis
p0167 A79-31494
A simple analogical model for the selection of optical activity and of the most efficient catalysts in the course of molecular evolution
p0204 A79-37957
The eccentric spheres model as the basis for a study of the role of geometry and inhomogeneities in electrocardiography
p0226 A79-40649
Analysis of population mortality kinetics with application to the longevity followup of the Navy's '1,000 aviators'
p0234 A79-43207
A structural model of the adaptive human pilot
[AIAA 79-1784] p0252 A79-45411
Mathematical model of the respiration rhythm generation process
p0254 A79-46268
Modeling human tracking performance in a high G-stress environment
p0269 A79-48012
Fundamentals of electrical processes in the electrophysiology of the heart
p0304 A79-53532
Basic biomechanics equations for cardiovascular flow
p0304 A79-53534
A behavioral model of target acquisition in realistic terrain
[AD-A056760] p0019 N79-10742
Density dependence of maximum expiratory flow
p0050 N79-12691
Aerodynamic forces exerted on an articulated human body subjected to windblast
[AD-A059023] p0055 N79-13688
Some recent results on the deposition of electromagnetic energy in animals and models of man
p0083 N79-15563
Modeling the effects of high-G stress on pilots in a tracking task
p0087 N79-15593
AAA gunnermodel based on observer theory --- predicting a gunner's tracking response
p0087 N79-15594
Modeling the human as a controller in a multitask environment
p0087 N79-15595
A comparison of motor submodels in the optimal control model
p0087 N79-15597
Prospects of a mathematical theory of human behavior in complex man-machine systems tasks --- time sharing computer analogy of automobile driving
p0088 N79-15599
Petri nets as a modeling tool for discrete concurrent tasks of the human operator --- describing sequential and parallel demands on human operators
p0038 N79-15600
Discrete-time pilot model --- human dynamics and digital simulation
p0088 N79-15601
A model for dynamic allocation of human attention among multiple tasks
p0092 N79-15627
A model of human event detection in multiple process monitoring situations
p0092 N79-15632
Mathematical simulation of the human circulatory system
p0110 N79-16535
Modelling the human operator of slowly responding systems using linear models
p0117 N79-17492
A model for the pilot's use of motion cues in roll-axis tracking tasks
p0118 N79-17512
Image processing program completion report
[AD-A061597] p0123 N79-17549
Cell response to chronic irradiation-modeling and simulation studies
p0142 N79-18562
A model for predicting human discomfort response to combined noise and vertical vibration
p0156 N79-19685
The role of computer technology mathematical models in treatment of patients following heart surgery
p0170 N79-20721
Modeling and analysis of man-machine interface information
[AD-A063515] p0178 N79-21772
Some problems involved in using mathematical methods for evaluation of pathophysiological changes in the body
p0192 N79-23628
Use of a mathematical model of erythropoiesis for evaluation of effects of space flight factors
p0192 N79-23630
A two level model of human steering behavior in a motor vehicle
[PB-27] p0197 N79-24657
User's instructions for the erythropoiesis regulatory model
[NASA-CR-160193] p0216 N79-25711
Development of an hypothesis for simulating anti-orthostatic bed rest
[NASA-CR-160200] p0217 N79-25717
Dynamic regulation of erythropoiesis: A computer model of general applicability
[NASA-CR-160203] p0217 N79-25720
A simple model of fluid flow and electrolyte balance in the body
[NASA-CR-160205] p0217 N79-25722
Improvements and validation of the erythropoiesis control model for bed rest simulation
[NASA-CR-160187] p0218 N79-25728
The development of a whole-body algorithm
[NASA-CR-160214] p0218 N79-25730
User's instructions for the GE cardiovascular model to simulate LBNP and tilt experiments, with graphic capabilities
[NASA-CR-160216] p0219 N79-25732
Study report on guidelines and test procedures for investigating stability of nonlinear

cardiovascular control system models
[NASA-CR-160229] p0219 N79-25734
User's instructions for the whole-body algorithms
[NASA-CR-160233] p0219 N79-25735
The application of systems analysis and mathematical models to the study of erythropoiesis during space flight
[NASA-CR-160218] p0219 N79-25739
Tolerance of the neck to indirect impact
[AD-A066971] N79-25749
A comparison of three models for determining test fairness
[AD-A066586] N79-25751
The application of MINIQUASI to thermal program boundary and initial value problems
[NASA-CR-160227] p0222 N79-25759
Mathematical models of skin burns induced by simulated postcrash fires as aids in thermal protective clothing design and selection
[AD-A066946] p0223 N79-25766
Refinement and validation of a mathematical model of the human torso
p0247 N79-27841
A stochastic model of muscle fatigue in frequent strenuous work cycles
p0261 N79-29789
Simulation of head and neck response to -G sub x and +G sub z impacts
p0285 N79-31908
A three dimensional discrete element dynamic model of the spine, head and torso
p0285 N79-31910
Mathematical modeling of arterial oxygen saturation and eye-level blood pressure during +G sub z stress
p0286 N79-31916
A head injury model
p0286 N79-31918
The use of mathematical modeling in crashworthy helicopter seating systems
p0287 N79-31923
Estimation of rate constants in the Michaelis-Menten model
[AD-A070360] p0307 N79-32824
A theoretical and experimental analysis of the outside world perception process
[NLR-MP-78020-U] p0309 N79-32835
Analytical modelling of load-deflection behavior of intervertebral discs subjected to axial compression
[AD-A071019] p0316 N79-33830
A general model for the transfer of vapour through clothed skin from liquid on and in clothing
[AD-A071577] p0319 N79-33853

MATHEMATICAL PROGRAMMING
NT DYNAMIC PROGRAMMING
Evaluation of exercise-respiratory system modifications and integration schemes for physiological systems
[NASA-CR-160223] p0219 N79-25733

MATRICES (MATHEMATICS)
Observability of electrical heart activity studied with singular value decomposition
[TR-78-E-81] p0144 N79-18584

MATRIX ANALYSIS
U MATRICES (MATHEMATICS)

MATURING
U GROWTH

MAXIMUM LIKELIHOOD ESTIMATES
Estimation of the operating characteristics of item response categories, 3: The normal approach method and the Pearson system
[AD-A056747] p0145 N79-18587

MCDONNELL AIRCRAFT
NT F-4 AIRCRAFT

MCDONNELL DOUGLAS AIRCRAFT
NT F-4 AIRCRAFT
NT F-18 AIRCRAFT

MEASURE AND INTEGRATION
NT WEIGHTING FUNCTIONS
Nonparametric measures of sensory efficiency for sustained monitoring tasks
p0161 A79-29719
Physiological system integrations with emphasis on the respiratory-cardiovascular system
[NASA-CR-160230] p0213 N79-24643

MEASURE THEORY
U MEASURE AND INTEGRATION

MEASURING INSTRUMENTS
NT APPROACH INDICATORS
NT COUNTERS
NT DOSIMETERS
NT ERGOMETERS
NT FLIR DETECTORS
NT FLOWMETERS
NT HOT-FILM ANEMOMETERS
NT INDICATING INSTRUMENTS
NT INFRARED INSTRUMENTS
NT LASER DOPPLER VELOCIMETERS
NT MAGNETOMETERS
NT MANOMETERS
NT MICROWAVE PROBES
NT OCULOMETERS
NT OPTICAL MEASURING INSTRUMENTS
NT PHOTOMETERS
NT RHEOMETERS
NT SATELLITE-BORNE INSTRUMENTS
NT STRAIN GAGES
NT TEMPERATURE MEASURING INSTRUMENTS
Devices for synchronizing a digital measuring apparatus with biological signals
p0160 A79-29271
Review of chest deflection measurement techniques and transducers
[PB-283654/2] p0051 N79-12702
Lightweight helmet-mounted eye movement measurement system
p0090 N79-15619
Techniques of measurement
p0247 N79-27850

MECHANICAL DEVICES
Development of an electrical energy converter for driving left heart assist blood pumps
[PB-293510/4] p0241 N79-26780

MECHANICAL DRIVES
Visually estimating workpiece pose in a robot hand using the feature points method
p0269 A79-48018

MECHANICAL MEASUREMENT
NT FLOW MEASUREMENT
NT PRESSURE MEASUREMENTS
NT VELOCITY MEASUREMENT
NT VIBRATION MEASUREMENT
A quasi-linear control theory analysis of timesharing skills
p0120 N79-17520

MECHANICAL PROPERTIES
NT ELASTIC PROPERTIES
NT MODULUS OF ELASTICITY
NT SHEAR STRENGTH
NT THERMAL RESISTANCE
The mechanical properties of manipulation systems
p0231 A79-42017
Investigation on the effect of mechanical properties of control elements on human control performance under stochastic roll vibrations
[BMVG-FBWT-78-11] p0146 N79-18593
Mechanics of blood flow through normal and stenotic coronary arteries
p0154 N79-19676

MECHANICAL SHOCK
Correlation of head injury with mechanical forces based on helmet damage duplication
p0287 N79-31920
The use of spinal analogue to compare human tolerance of repeated shocks with tolerance of vibration, part 1
p0288 N79-31926
The response of a realistic computer model for sitting humans to different types of shocks
p0288 N79-31927

MEDICAL ELECTRONICS
The use of synchronous demodulation for the measurement of eye movements by means of an ocular magnetic search coil
p0210 A79-39974
Microwave apexcardiography
p0231 A79-41848
Skin-resistance measuring device with higher resolution
p0252 A79-45476
The development of a digital video subtraction system for intravenous angiography
p0294 A79-51033
Hybridization of biomedical circuitry
[NASA-CR-151874] p0111 N79-16543

MEDICAL EQUIPMENT
NT ARTIFICIAL HEART VALVES
NT BLOOD PUMPS
NT ENDOSCOPES
NT PROSTHETIC DEVICES
NT RESPIRATORS
Medical technology transfer
p0048 A79-16138
Noninvasive cardiovascular measurements --- Book
p0293 A79-51026
Biocompatible materials, volume 2. A bibliography with abstracts
[NTIS/PS-78/0675/5] p0019 N79-10736
Assessing the efficacy and safety of medical technologies
[PB-286929/5] p0085 N79-15580
Development of an electrical energy converter for circulatory device
[PB-286738/0] p0111 N79-16545
Microprocessor: Based prosthetic control
[PB-286652/3] p0113 N79-16559
Apparatus for endoscopic examination
[NASA-CASE-NPO-14092-1] p0155 N79-19678
General activities related to medical research
[TNO-MPI-PR-6] p0262 N79-29793
Spine immobilization method and apparatus --- rigid bladder
[NASA-CASE-ARC-11167-1] p0279 N79-30921
MEDICAL PERSONNEL
NT FLIGHT SURGEONS
MEDICAL SCIENCE
NT EPIDEMIOLOGY
NT HISTOLOGY
NT HUMAN PATHOLOGY
NT IMMUNOLOGY
NT NEUROLOGY
NT OTOLARYNGOLOGY
NT OTOLOGY
NT PATHOLOGY
NT PSYCHIATRY
NT RADIATION MEDICINE
NT RADIOBIOLOGY
NT RADIOLOGY
NT RADIOPATHOLOGY
NT SYMPTOMOLOGY
NT UROLOGY
Signal processing in ultrasound --- for diagnostic medicine
p0294 A79-51039
Translations on USSR science and technology. Biomedical and behavioral science, no. 50
[JPRS-72650] p0077 N79-14753
A complex system for planning scientific medical research
p0078 N79-14761
Problem-oriented program approach to planning and management of medicine
p0078 N79-14762
The conception of the systems analytic approach to planning and organization of medical scientific research
p0078 N79-14764
Current status and prospects of continued refinement of planning and coordination of scientific medical research
p0078 N79-14765
The systems analytic approach to the problem of classification of scientific medical research
p0078 N79-14766
Crawford and Lavoisier on the method of development and place of formation of body heat
[BLL-RTS-11228] p0142 N79-18568
Regional program for acquisition of medical experiments
[NASA-CR-160121] p0155 N79-19677
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 50
[JPRS-72462] p0170 N79-20720
Technical evaluation report on the Aerospace Medical Panel London Specialists' Meeting, Fall 1977 --- disease prevention, flight fitness, and findings in cardiology and pulmonary function
[AGARD-AR-131] p0171 N79-20729
Prospective medicine opportunities in aerospace medicine
p0171 N79-20730
Specific findings in cardiology and pulmonary function with special emphasis on assessment criteria for flying
p0171 N79-20731
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 60
[JPRS-73135] p0175 N79-21745
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 81
[JPRS-73729] p0249 N79-27860
Skylab medical data evaluation program (SMEDEP)
[NASA-CR-160279] p0259 N79-28869
General activities related to medical research
[TNO-MPI-PR-6] p0262 N79-29793
MEDICAL SERVICES
Medical technology transfer
p0048 A79-16138
Evaluation of the helicopter in aeromedical transfers
p0128 A79-24638
Ensuring medical fitness on entry and during service in aircrew in IAF
p0182 A79-33187
Distinguishing borderline hypertensives from normotensives: A clinical study of 300 aircrewmen
p0027 N79-11699
An illness-injury severity index
p0050 N79-12688
Assessing the efficacy and safety of medical technologies
[PB-286929/5] p0085 N79-15580
An evaluation of the effects of a stability augmentation system upon aviator performance/workload during a MEDEVAC high hover operation
p0148 N79-19612
Telehealth handbook: A guide to telecommunications technology for rural health care
[PB-292557/6] p0241 N79-26778
MEETINGS
U CONFERENCES
MELANIN
Solar radiation, light protection and tanning of human skin
[BLL-RTS-11580] p0142 N79-18574
MEMBRANE ANALOGY
U MEMBRANE STRUCTURES
MEMBRANE STRUCTURES
Membranous evolution in the primitive cell
p0206 A79-37977
MEMBRANES
NT MEMBRANE STRUCTURES
NT PLEURAE
Coupling of aspartate and serine transport to the transmembrane electrochemical gradient for sodium ions in Halobacterium halobium - Translocation stoichiometries and apparent cooperativity
p0002 A79-10425
Temperature-dependent morphological changes in membranes of Bacillus stearothermophilus
p0005 A79-12475
A thermoelectric integrated membrane evaporation system
[ASME PAPER 78-ENAS-19] p0007 A79-12568
Improved measurements of shear modulus and pleural membrane tension of the lung
p0236 A79-43702
Gating effects in Halobacterium halobium membrane transport
p0268 A79-47849
Energy transduction in Halobacterium halobium
p0300 A79-53000
Evaluation of fluoropolymer membranes in oxygenators
[PB-286698/6] p0112 N79-16547
Raman spectroscopy of biological membranes and other biological systems
p0141 N79-18559
A theoretical study of membrane diffusion and lymphocyte patching
p0142 N79-18563
Study of model membrane fusion using photon correlation spectroscopy --- lipid bilayer phase transition in cell membranes
p0147 N79-19591
Magnetic field effect on radial processes in biological membranes
p0172 N79-20737
The effects of high nitrogen tensions of the properties of neuronal membranes and synaptic transmission

[AD-A063856] p0213 N79-24647

MEMORY

Relationship between the reproduction tactics and the major indices of speech retention-reproduction processes p0254 A79-46276

A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology [AD-A069983] p0308 N79-32833

Human memory. A bibliography with abstracts [NTIS/PS-79/0640/7] p0318 N79-33847

MENTAL HEALTH

Evaluation of biofeed therapy [PB-287777/7] p0123 N79-17543

MENTAL PERFORMANCE

Mental work and emotions --- Russian book p0002 A79-10847

The inhibitory trace effect as a manifestation of the integrative activity of the human brain in performing voluntary motor acts p0159 A79-28737

Conjoint effect of physical stress and noise stress on information processing performance and cardiac response p0161 A79-29715

Effects of partial sleep deprivation on psychological performance and behaviour p0200 A79-37130

Analysis of electroencephalogram during psychomotor performance p0209 A79-38820

Effect of physical training at moderate altitude /1850 m/ on hypoxic tolerance p0235 A79-43210

Relationship between the reproduction tactics and the major indices of speech retention-reproduction processes p0254 A79-46276

Time-sharing is not a unitary ability [AD-A056632] p0019 N79-10739

Retention and transfer of training on a procedural task interaction of training strategy and cognitive style [AD-A058966] p0052 N79-12704

Information processing in humans, volume 2. A bibliography with abstracts [NTIS/PS-78/1153/2] p0058 N79-13709

Reduced mental capacity and behavior of a rider of a bicycle simulator under alcohol stress or under dual task load p0116 N79-17489

Development of information theory concepts and equations for human mental processing [AD-A068606] p0260 N79-28877

Human performance in time-shared verbal and tracking tasks [AD-A070275] p0308 N79-32831

MENTAL STRESS

U STRESS (PSYCHOLOGY)

MERCURY (METAL)

The distribution of cadmium and other metals in human tissues [PB-285200/2] p0057 N79-13703

METABOLIC WASTES

NT FECES
NT HUMAN WASTES
NT URINE

Concentration of trace contaminants during gas chromatography and chromato-mass spectrometry in biomedical research p0109 N79-16528

METABOLISM

NT ADRENAL METABOLISM
NT CALCIUM METABOLISM
NT CARBOHYDRATE METABOLISM
NT CATABOLISM
NT ELECTROLYTE METABOLISM
NT ENZYME ACTIVITY
NT FERMENTATION
NT HORMONE METABOLISMS
NT LIPID METABOLISM
NT MINERAL METABOLISM
NT NITROGEN METABOLISM
NT OXYGEN METABOLISM
NT PROTEIN METABOLISM

Central and cerebral hemodynamics and metabolism of the healthy man during head-down tilting p0127 A79-24634

Effect of hypoxia on the development of Drosophila melanogaster /Meigen/ p0165 A79-30667

Nitrate fermentation in Clostridium perfringens and significance in metabolic evolution p0205 A79-37968

Continuous metabolic and cardiovascular measurements on a monkey subject during a simulated 6-day Spacelab mission p0229 A79-41713

Studies of amino acid metabolism in the muscles of rats flown aboard the biosatellite Cosmos 782 p0230 A79-41714

Effects of space flight on plasma and glandular concentrations of pituitary hormones --- COSMOS 782 satellite p0021 N79-11664

Cardiovascular, metabolic, and respiratory responses of sedentary females to equal metabolic workloads on the bicycle ergometer and treadmill p0024 N79-11681

Effects of microwaves on catecholamine metabolism in the brain p0075 N79-14739

State of process of oxidation phosphorylation of liver mitochondria on exposure to an electric field p0075 N79-14742

Clozapine metabolism in humans [BLL-RTS-10902] p0142 N79-18567

Metabolism of hydrazine [AD-A062251] p0169 N79-20716

Metabolic rate meter and method [NASA-CASE-MSC-12239-1] p0175 N79-21750

Effects of physical conditioning and electric stimulation on metabolic processes in the soleus muscle and structure thereof in hypokinetic man p0192 N79-23634

Investigations about the quantitative changes of carbon dioxide production in humans. Report 2: Carbon dioxide production during fever and its relationship with heat production [NASA-TM-75452] p0211 N79-24632

Strontium metabolism in the rebuilding of skeletal tissue [NASA-CR-160195] p0216 N79-25713

Cu-content of the liver of young mice in relation to a defect in the Cu-metabolism [IRI-133-77-02] p0239 N79-26764

Results of a 64Cu-loading test applied to patients with an inherited defect in their Cu-metabolism (Menkes' disease) [IRI-133-77-04] p0240 N79-26774

The oral 64Cu-loading test: Applications and problems [IRI-133-78-02] p0240 N79-26775

Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite p0244 N79-27822

Tissular metabolism in mixed type fibers of rat skeletal muscles after flight aboard Cosmos-690 biosatellite p0244 N79-27823

Effect of hyperbaric oxygen on peripheral blood neutrophil metabolism p0245 N79-27830

Studies of metabolism, function and mechanism of destruction of red cells [AD-A070240] p0315 N79-33828

METAGALAXY

U UNIVERSE

METAL FORGING

U FORGING

METAL HALIDES

NT SODIUM CHLORIDES
NT ZINC CHLORIDES

METAL IONS

Prebiotic condensation of oligonucleotide p0204 A79-37945

Experimental approach to the chemical evolution in the primeval sea. II - Formation of protocell-like structures 'marigranules' in a modified sea medium p0204 A79-37964

Studying the state of cellular metal ions by the extended X-ray absorption fine structure [AD-A069799] p0279 N79-30914

METAL OXIDES
NT KAOLINITE
METAL WORKING
NT FORGING
METALLORGANIC COMPOUNDS
U ORGANOMETALLIC COMPOUNDS
METALS
NT ALUMINUM
NT AMERICIUM 241
NT CADMIUM
NT CALCIUM
NT CHROMIUM ISOTOPES
NT COPPER ISOTOPES
NT IRON
NT LEAD (METAL)
NT MAGNESIUM
NT MERCURY (METAL)
NT PALLADIUM
NT PLATINUM
NT POTASSIUM
NT POTASSIUM 40
NT SODIUM
NT SODIUM ISOTOPES
NT SODIUM 22
NT STRONTIUM
NT TRANSITION METALS
NT VANADIUM
NT ZINC
NT ZIRCONIUM
METAZOA
U ANIMALS
METEORITE COMPRESSION TESTS
U MECHANICAL PROPERTIES
METEOROLOGICAL PARAMETERS
Meteorological limits on the growth and development of screwworm populations [NASA-CR-151873] p0107 N79-16512
METEOROLOGICAL SERVICES
Pilot preflight briefing utilizing an interactive computer generated Voice Response System p0167 A79-31887
METEOROLOGY
Fighter index of thermal stress: Relation to weather conditions at ATC and TAC bases [AD-A062713] p0174 N79-20748
METERS
U MEASURING INSTRUMENTS
METHACRYLATE RESINS
U ACRYLIC RESINS
METHANE
Ion-molecule condensation reactions - A mechanism for organic synthesis in ionized reducing atmospheres p0099 A79-22079
Synthesis of amino acids under primitive earth conditions in the presence of clay p0203 A79-37930
METHODOLOGY
Official method for determining ocular irritation [BLL-RTS-11221] p0142 N79-18571
METHODS
U METHODOLOGY
METROPOLITAN AREAS
U CITIES
MICE
Cu-content of the liver of young mice in relation to a defect in the Cu-metabolism [IRI-133-77-02] p0239 N79-26764
MICHAELIS THEORY
Estimation of rate constants in the Michaelis-Menten model [AD-A070360] p0307 N79-32824
MICROBE
U MICROORGANISMS
MICROBIOLOGY
NT BACTERIOLOGY
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 57 [JPRS-72808] p0121 N79-17526
Immunobiological reactivity of the body under hyperbaric and hypobaric conditions p0310 N79-33790
MICROCLIMATOLOGY
Analysis of climatic data and cockpit thermal conditions at a fighter base in North West India p0201 A79-37135
MICROELECTRONICS
NT LARGE SCALE INTEGRATION
MICROMANOMETERS
U MANOMETERS
MICROMINIATURIZATION
NT LARGE SCALE INTEGRATION
MICROORGANISMS
NT AEROBES
NT ANAEROBES
NT BACTERIA
NT BACTERIOPHAGES
NT CLOSTRIDIUM BOTULINUM
NT ESCHERICHIA
NT NITROBACTER
NT PARAMECIA
NT PSYCHROPHILES
NT SALMONELLA
NT SPORES
NT VIRUSES
Microflora analysis of a child with severe combined immune deficiency p0004 A79-11900
Microbial Check Valve for Shuttle [ASME PAPER 78-ENAS-27] p0008 A79-12576
The Viking biological investigations - Review and status p0100 A79-22083
The response of selected terrestrial organisms to the Martian environment - A modeling study p0136 A79-27928
Effect of electromagnetic fields in long-, medium-, and short-wave ranges on biological objects p0185 A79-33713
Minute tubular forms in soil p0297 A79-51698
Water system microbial check valve development [NASA-CR-151843] p0032 N79-11733
Nitrogen fixation with photosynthetic marine microorganisms [PB-286000/5] p0083 N79-15570
Gel-electrophoresis studies for the taxonomic characterization of soil microorganisms [NBC/CNR-TT-1924] p0120 N79-17521
Nitrogen fixation with photosynthetic marine microorganisms [PB-287590/4] p0120 N79-17525
Intestinal autoflora as an indicator of severity of radiation lesion p0121 N79-17530
Aphotometer for determining the biomass of microorgan from the ATP content [BLL-RTS-11456] p0141 N79-18555
The effect of 1 to 5 keV electrons on the reproductive integrity of microorganisms p0147 N79-19025
Microflora of water reclaimed in sealed compartments p0193 N79-23638
Microbial transformation of nucleosides [NASA-CR-158696] p0197 N79-25704
Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components [NASA-CR-158627] p0197 N79-25705
Microbial load monitor [NASA-CR-160274] p0243 N79-27815
Characteristics of proteins of some unicellular organisms as potential components of ecological life support systems p0246 N79-27834
MICROPHOTOMETERS
U PHOTOMETERS
MICROPROCESSORS
Non-invasive information on the P-R segment of the cardiac cycle - An assessment of the clinical potential of the electric and magnetic methods p0295 A79-51045
Microprocessor: Based prosthetic control [PB-286652/3] p0113 N79-16559
A preliminary investigation of aural input/output systems for in-flight information retrieval [AD-A063174] p0178 N79-21770
MICROSCOPY
NT ELECTRON MICROSCOPY
MICROWAVE EMISSION
The time parameter in exposures to microwave radiation --- rodent experiments on damage and recovery p0105 A79-24419
Protection standards for microwave and radiofrequency radiations p0300 A79-52878

MICROWAVE EQUIPMENT
NT MICROWAVE PROBES
Microwave apexcardiography
p0231 A79-41848

MICROWAVE FREQUENCIES
NT SUPERHIGH FREQUENCIES
The Physical Basis of Electromagnetic Interactions with Biological Systems
[HEW-PUB-FDA-78-8055] p0081 N79-15551
Classical theory of microwave interactions with biological systems
p0082 N79-15556
Determination of bound water in biological materials from dielectric measurements
p0082 N79-15557
Microwave frequencies and the structure of the double helix
p0082 N79-15559
Microwave and RF dosimetry
p0083 N79-15561

MICROWAVE LANDING SYSTEMS
Perpetual factors involved in performance of air traffic controllers using a microwave landing system
p0092 N79-15628

MICROWAVE PROBES
Microwave thermography: Physical principles and diagnostic applications
p0083 N79-15567

MICROWAVE RADIATION
U MICROWAVES

MICROWAVE RESONANCE
An empirical formula for broad-band SAR calculations of prolate spheroidal models of humans and animals --- Specific Absorption Rate
p0278 A79-51015

MICROWAVES
NT MICROWAVE EMISSION
NT MILLIMETER WAVES
Study of specific effects of hyperfrequencies on the central nervous system. II - Exploratory research on rat /Wistar/ behaviour
p0047 A79-15493
A hazard assessment method for the U.S. Army Microwave Radiation Protection Program
p0129 A79-25304
Changes in the bioelectrical activity of some cerebral structures in rabbits exposed to microwaves
p0188 A79-35917
Dynamics of the impulse activity of the neurons in the posterior hypothalamus upon exposure to microwaves
p0188 A79-35918
Effect of microwave radiation on the resistance of rats to transverse acceleration loading
p0275 A79-50496
Time parameter in microwave irradiation --- rodent experiments on damage and recovery
p0277 A79-50694
Translations on USSR science and technology: Biomedical and behavioral sciences, No. 53. Effects of nonionizing electromagnetic radiation
[JPRS-72606] p0074 N79-14736
Effects of microwaves on catecholamine metabolism in the brain
p0075 N79-14739
Dependence of the functional activity of liver mitochondria on microwave radiation --- oxidative phosphorylation
p0075 N79-14741
Mechanism of effects of microwaves on erythrocyte permeability for potassium and sodium ions
p0075 N79-14743
Electromagnetic fields in biological media. Part 1: Dosimetry - a primer on bioelectromagnetics
[PB-285793/6] p0078 N79-14759
Survey of microwave and radiofrequency biological effects and mechanisms
p0082 N79-15552
Effect on mice of microwaves in the non-thermal intensity region. Respiration, rectal temperature and mental reaction
[FOA-C-54021-H2(H6)] p0120 N79-17523
Immunological effects of microwave action
p0172 N79-20736
Studies on the microwave-induced auditory effect
[PB-290598/2] p0213 N79-24648
Problems related to the assessment of safe exposure levels for radio frequency and microwave radiation
[ISS-P-78/7] p0248 N79-27855
Biological effects of microwaves, volume 1. A bibliography with abstracts
[NTIS/PS-79/0432/9] p0280 N79-30929
Biological effects of microwaves, volume 2. A bibliography with abstracts
[NTIS/PS-79/0433/7] p0280 N79-30930
Metabolic and physical scaling in microwave/radiofrequency bioeffects studies
[UR-3490-1561] p0316 N79-33831

MICTURITION
U URINATION

MIDAIR COLLISIONS
NT BIRD-AIRCRAFT COLLISIONS
Analyses of midair collisions in German airspace: Methodology and results
p0291 N79-31949

MIDDLE EAR
Cases of probable Aero Otitis interna
p0183 A79-33194
Analysis of inert gas exchange in the middle ear
p0017 N79-10723

MIDLATITUDES
U TEMPERATE REGIONS

MIE SCATTERING
NT RAYLEIGH SCATTERING

MIGRATION
Application of similarity transformation to unsteady state heat migration problems in human skin and subcutaneous tissues
p0233 A79-42932
The role of insect dispersal and migration in population processes
p0147 N79-19593

MILITARY AIR FACILITIES
Analysis of climatic data and cockpit thermal conditions at a fighter base in North West India
p0201 A79-37135

MILITARY AIRCRAFT
Current trends in UK military aircrew survival equipment
p0183 A79-33633
Vertebral fractures in Gnat ejections
p0201 A79-37134

MILITARY AVIATION
Relations between research and instruction in physiology and aerospace ergonomy in the military health services
p0104 A79-23960
Naval aviation training - Perspective and prospects
[SAE PAPER 781004] p0130 A79-25886
Army Aviation Training - Research now and then
[SAE PAPER 781008] p0130 A79-25890
Ensuring medical fitness on entry and during service in aircrew in IAF
p0182 A79-33187
USAF life support system 412A - 1978 corporate report
p0183 A79-33602
Incidence of spinal disability amongst IAF pilots - Follow up of 38 cases
p0201 A79-37133
Aeromedical aspects of flying training with special reference to instructor pupil relationship
p0201 A79-37139

MILITARY HELICOPTERS
NT UH-1 HELICOPTER
Oxygen systems for Army helicopters
p0044 A79-14421
Internal cockpit reflections of external point light sources for the model YAH-64 advanced attack helicopter
[AD-A056489] p0033 N79-11744
Visual effects of helicopter maneuvre on weapon aiming performance
p0150 N79-19626
A system of training in aviation physiology and human factors for Army and Navy helicopter aircrew
p0151 N79-19635
Disorientation in Royal Naval helicopter pilots
p0152 N79-19648
Training requirements for helicopter operation with night vision goggles
p0153 N79-19650
A study of pilot/observed interaction in aligning a helicopter with a target

[DLR-FB-79-04] p0283 N79-30945
The use of mathematical modeling in crashworthy helicopter seating systems
p0287 N79-31923

MILITARY OPERATIONS
NT COMBAT
Medical qualification procedures for hazardous-duty aeromedical research
p0026 N79-11695
A prospective medicine approach to the problem of ischemic vascular disease in the USAF
p0027 N79-11697
Man and materiel in the cold regions, part 1
[AD-A063752] p0178 N79-21771
Physiological effects of a military training program on males and females
[AD-A062936] p0220 N79-25744

MILITARY PSYCHIATRY
U MILITARY PSYCHOLOGY

MILITARY PSYCHOLOGY
Psychosis in air force flight personnel during the last 25 years
p0103 A79-23957
Investigation of psychological compatibility of crew members of multiseat aircraft
p0166 A79-31165

MILITARY TECHNOLOGY
U.S. Navy development of an on-board oxygen generation /OBOG/ system
p0183 A79-33634
Test and evaluation in the acquisition process - A look at the PLZT goggle
p0184 A79-33642
Test and evaluation process for life support systems
p0184 A79-33643

MILLIMETER WAVES
Millimeter wave and far infrared absorption in biological systems
p0082 N79-15554
Effect of radio waves of a millimeter frequency range on the body of man and animals
p0172 N79-20735

MINERAL METABOLISM
Studies on the erythron and the ferrokinetic responses in beagles adapted to hypergravity
p0010 A79-12869
Effect of sodium and calcium ingestion on thermoregulation during exercise in man
p0163 A79-30624

MINERALS
NT BARITE
NT KAOLINITE
NT MONTMORILLONITE

MINIATURE ELECTRONIC EQUIPMENT
The use of hybrid integrated circuit techniques in biotelemetry applications
p0131 A79-26145

MINIMIZATION
U OPTIMIZATION

MIRRORS
NT ROTATING MIRRORS

MISSILE DETECTION
NT RADAR DETECTION

MISSILE RANGES
Minuteman missile crew fatigue and 24-hour alerts
[AD-A056561] p0056 N79-13696

MISSILE STABILIZATION
U STABILIZATION

MISSILES
NT AIR TO AIR MISSILES

MISSION PLANNING
Life sciences experiments in the first Spacelab mission
[ASME PAPER 78-ENAS-26] p0008 A79-12575
Life sciences experiments mission development test program
[ASME PAPER 78-ENAS-36] p0008 A79-12583
Study of crew task loading on the C-141A aircraft
[AD-A057346] p0034 N79-11746

MISSOURI
Effect of phosphorus supply on algal biomass in a turbid Missouri Reservoir
[PB-293183/0] p0243 N79-27816

MITOCHONDRIA
A study of axonal degeneration in the optic nerves of aging mice
p0005 A79-12123
Effect of physical conditioning on cardiac mitochondrial function
p0068 A79-18966
The effect of plasmoidal slime on the metabolism of haploid cells of Physarum flavicomum and the respiration of isolated mitochondria
p0105 A79-24513
Tissular respiration of the brain after exposure of rats to hypertoxic helium and oxygen mixtures at atmospheric and elevated pressure
p0015 N79-10712
Molecular determinants for the prediction and survival of ischemic anoxic stress pathology
p0027 N79-11700
Dependence of the functional activity of liver mitochondria on microwave radiation --- oxidative phosphorylation
p0075 N79-14741
State of process of oxidation phosphorylation of liver mitochondria on exposure to an electric field
p0075 N79-14742

MITOSIS
Senescent changes in the ribosomes of animal cells in vivo and in vitro
p0134 A79-27226

MIXTURES
NT AEROSOLS
NT AQUEOUS SOLUTIONS
NT COLLOIDS
NT DISPERSIONS
NT EXPIRED AIR
NT FOG
NT GAS MIXTURES
NT SMOKE

MODAL RESPONSE
Unsteady-state response of the vascular system to transient and sustained aerospace acceleration profiles
p0286 N79-31917

MODE SHAPES
U MODAL RESPONSE

MODELS
NT ANALOG SIMULATION
NT ATMOSPHERIC MODELS
NT DIGITAL SIMULATION
NT DYNAMIC MODELS
NT ENVIRONMENT MODELS
NT MATHEMATICAL MODELS
Survey of human operator modeling techniques for measurement applications
[AD-A058327] p0058 N79-13713
Analysis and validation of human biodynamic models
[AD-A059013] p0058 N79-13714
Performance evaluation of test dummies with flesh parts produced with substitute foaming compounds
[PB-289951/6] p0179 N79-21776
A long term model of circulation --- human body
[NASA-CR-147674] p0212 N79-24636
Combined discrete network-continuous control modeling of man-machine systems
p0260 N79-28879

MODERATION (ENERGY ABSORPTION)
NT THERMALIZATION (ENERGY ABSORPTION)

MODIFICATION
U REVISIONS

MODULATION
NT AMPLITUDE MODULATION
NT LIGHT MODULATION

MODULES
NT SERVICE MODULES
NT SPACECRAFT MODULES

MODULUS OF ELASTICITY
A quasi-linear control theory analysis of timesharing skills
p0120 N79-17520

MOISTURE
NT SOIL MOISTURE

MOISTURE CONTENT
Human skin wettedness and evaporative efficiency of sweating
p0162 A79-29726
Determination of bound water in biological materials from dielectric measurements
p0082 N79-15557
Interfacial and intracellular water: Expected anomalies in dielectric properties
p0082 N79-15558

MOL (ORBITAL LABORATORIES)
U MANNED ORBITAL LABORATORIES

MOLD
Effects of gravity on contractile proteins [NASA-CR-160303] p0279 N79-30913
MOLECULAR ABSORPTION
Interfacial and intracellular water: Expected anomalies in dielectric properties p0082 N79-15558
MOLECULAR BIOLOGY
The augmentation algorithm and molecular phylogenetic trees p0070 A79-20267
Chirality of compounds essential for the existence of life, and the possibility of its evolution in the universe p0186 A79-34464
An approach to the origin of self-replicating system. I - Intermolecular interactions p0204 A79-37948
Quantitative aspects of the effect of weak interaction during chemical evolution p0204 A79-37959
The crisis in the problem of the origin of life p0207 A79-37982
Evolution of the biosphere /2nd enlarged edition/ --- Russian book p0270 A79-48310
MOLECULAR BONDS
U CHEMICAL BONDS
MOLECULAR CHAINS
Study of model membrane fusion using photon correlation spectroscopy --- lipid bilayer phase transition in cell membranes p0147 N79-19591
MOLECULAR DIFFUSION
Convective control of long-range coherence in plant growth regulation p0006 A79-12515
MOLECULAR DISSOCIATION
U DISSOCIATION
MOLECULAR ELECTRONICS
NT LARGE SCALE INTEGRATION
MOLECULAR ENERGY LEVELS
NT INTERMOLECULAR FORCES
MOLECULAR INTERACTIONS
NT INTERSTELLAR CHEMISTRY
Interaction between inositol hexaphosphate and carbobenzoxy peptide - A model for nucleic acid - Nonhistone chromosomal protein interaction p0100 A79-22082
An approach to the origin of self-replicating system. I - Intermolecular interactions p0204 A79-37948
MOLECULAR IONS
Ion-molecule condensation reactions - A mechanism for organic synthesis in ionized reducing atmospheres p0099 A79-22079
MOLECULAR SIEVES
U ABSORBENTS
MOLECULAR SPECTRA
NT VIBRATIONAL SPECTRA
MOLECULAR SPECTROSCOPY
NT RAMAN SPECTROSCOPY
MOLECULAR STRUCTURE
A molecular description of oxygen binding to hemoglobin p0194 N79-23646
MOLECULAR THEORY
A simple analogical model for the selection of optical activity and of the most efficient catalysts in the course of molecular evolution p0204 A79-37957
MOMENTS
NT MOMENTS OF INERTIA
NT TORQUE
MOMENTS OF INERTIA
The inertial properties of the body and its segments p0033 N79-11738
Range of joint motion p0033 N79-11740
MONAURAL SIGNALS
Bilateral and interhemispheric asymmetry of acoustic evoked potentials during monoaural acoustic stimulation p0159 A79-28735
MONITORS
The internal model: A study of the relative contribution of proprioception and visual information to failure detection in dynamic systems --- sensitivity of operators versus monitors to failures p0087 N79-15596
Microbial load monitor [NASA-CR-160274] p0243 N79-27815
Automated biowaste sampling system feces monitoring system [NASA-CR-160301] p0281 N79-30937
Development and utilization of internal models in dynamic systems: A comparison of monitors and operators as failure detectors [AD-A069730] p0282 N79-30942
MONKEYS
Thermoregulation in Macaca mulatta - A thermal balance study p0133 A79-27101
Continuous metabolic and cardiovascular measurements on a monkey subject during a simulated 6-day Spacelab mission p0229 A79-41713
MONOCHROMATIC RADIATION
Light adaptation in a normal and a rod monochromat - Psychophysical and VEP increment threshold comparisons p0232 A79-42234
MONOCRYSTALS
U SINGLE CRYSTALS
MONOCULAR VISION
Objective determination of human visual acuity from the visual evoked potential p0228 A79-41423
MONOLITHIC CIRCUITS
U INTEGRATED CIRCUITS
MONOPLANES
NT A-7 AIRCRAFT
NT C-135 AIRCRAFT
NT C-141 AIRCRAFT
NT F-104 AIRCRAFT
MONTE CARLO METHOD
The selection of air traffic control specialists: Two studies demonstrating methods to insure an accurate validity coefficient for selection devices [AD-A068581] p0281 N79-30932
MONTMORILLONITE
Synthesis of amino acids under primitive earth conditions in the presence of clay p0203 A79-37930
MOODS
Changes in the circadian rhythm of performance and mood in healthy young men exposed to prolonged, heavy physical work, sleep deprivation, and caloric deficit p0234 A79-43202
MORPHOLOGY
NT LUNG MORPHOLOGY
Temperature-dependent morphological changes in membranes of Bacillus stearothermophilus p0005 A79-12475
The physical appearance of intelligent aliens p0105 A79-24519
Morphological and biochemical effects of oxygen toxicity [AD-A056778] p0018 N79-10734
The morphogenetic responses of cultured totipotent cells of carrot (Daucus carota L.) at zero gravity --- cosmos 782 p0021 N79-11657
The effects of the pollutant, sodium cyanide, on the morphology and physiology of oedogonium cardiacum p0147 N79-19028
A study of the mechanism of thigmomorphogenesis in plants, with special reference to the role of ethylene and its significance to research with plants in space [NASA-CR-158506] p0190 N79-23625
MORTALITY
Analysis of population mortality kinetics with application to the longevity followup of the Navy's '1,000 aviators' p0234 A79-43207
MOSS (SPACE STATIONS)
U ORBITAL SPACE STATIONS
MOTILITY
U LOCOMOTION
MOTION
Short-range movement of major agricultural pests p0148 N79-19594

Graphic display of human motion
[AD-A064344] p0190 N79-22763
Helmet weight simulator
[NASA-CASE-LAR-12320-1] p0223 N79-25761

MOTION AFTEREFFECTS
Space Sled - A multipurpose apparatus for vestibular research aboard Spacelab
[DGLR PAPER 78-132] p0042 A79-14083
Effects of target motion and image on AAA tracking --- Anti-Aircraft Artillery
p0046 A79-14969

MOTION EQUATIONS
U EQUATIONS OF MOTION

MOTION PERCEPTION
Factors controlling the competing sensations produced by a bistable stroboscopic motion display
p0108 A79-24067
Hyper-resolution in human perception of movement in visual displays
p0132 A79-26240
Optokinetic motion sickness - Attenuation of visually-induced apparent self-rotation by passive head movements
p0135 A79-27558
Omnidirectional increase in threshold for image shifts during saccadic eye movements
p0139 A79-28198
Smooth pursuit eye movements - Is perceived motion necessary
p0139 A79-28375
Changes in apparent body orientation and sensory localization induced by vibration of postural muscles - Vibratory myesthetic illusions
p0163 A79-30653
Perception of continuity in stroboscopic motion - A temporal frequency analysis
p0186 A79-34375
The interpretation of visual motion --- Book
p0186 A79-34424
The visual perception of motion in depth
p0210 A79-39087
The role of perceived motion in smooth pursuit eye movements
p0225 A79-40184
The effect of expectations on slow oculomotor control. I - Periodic target steps. II - Single target displacements
p0225 A79-40185
Form information is necessary for the perception of motion
p0232 A79-42235
Direction-selective adaptation with very slow motion
p0265 A79-47118
Mutual repulsion between moving visual targets
p0275 A79-50473
Motion and vision. I - Stabilized images of stationary gratings
p0278 A79-50986
Visual motion perception by intelligent systems
p0300 A79-52691
A theoretical and experimental analysis of the outside world perception process
p0091 N79-15625
Perpetual factors involved in performance of air traffic controllers using a microwave landing system
p0092 N79-15628
Use of the optimal control model in the design of motion cue experiments
p0118 N79-17510
A model for the pilot's use of motion cues in roll-axis tracking tasks
p0118 N79-17512
Motion cue effects on human pilot dynamics in manual control
p0119 N79-17514
Motion cue models for pilot-vehicle analysis
[AD-A061477] p0125 N79-17561

MOTION SICKNESS
Vestibular Function Research aboard Spacelab
[ASME PAPER 78-ENAS-25] p0007 A79-12574
Voluntary movement control and adaptation to cross-coupled stimulation --- motion sickness avoidance
p0009 A79-12860
Motion sickness susceptibility - A retrospective comparison of laboratory tests
p0010 A79-12861
Optokinetic motion sickness - Attenuation of visually-induced apparent self-rotation by passive head movements
p0135 A79-27558
Rotation at 30 RPM about the Z axis after 6 hours in the 10-deg head-down position - Effect on susceptibility to motion sickness
p0165 A79-30662
Motion sickness in cats - A symptom rating scale used in laboratory and flight tests
p0202 A79-37711
+Gz tolerance correlation with clinical parameters
p0235 A79-43213
Estimated body rotation as a predictor of motion sickness susceptibility
p0273 A79-49990
Third Symposium on Motion Sickness
p0313 N79-33814

MOTION SICKNESS DRUGS
Prevention and treatment of space sickness in Shuttle-Orbiter missions
p0128 A79-24639
Motion sickness in cats - A symptom rating scale used in laboratory and flight tests
p0202 A79-37711

MOTION SIMULATORS
Application of control theory to the investigation of roll motion effects on pilot control behavior
[AD-A054921] p0046 A79-14972
The relationship between flight simulator motion and training requirements
p0267 A79-47766
A method motion simulator design based on modeling characteristics of the human operator
p0091 N79-15623
Investigation of nonlinear motion simulator washout schemes
p0091 N79-15624
The effect of a visual/motion display mismatch in a single axis compensatory tracking task
p0118 N79-17511
The driving simulator developed by the Institute for Perception TNO. A validation study in straight road driving
[IZF-1978-16-PR-1] p0145 N79-18588

MOTION STABILITY
NT AERODYNAMIC STABILITY
NT AIRCRAFT STABILITY
NT FLOW STABILITY
NT HOVERING STABILITY
Selecting the program of motions for a biped walking machine
p0166 A79-31490
Stabilization of a biped walking machine with incomplete information on its phase coordinates
p0273 A79-49879
Roll tracking effects of G-vector tilt and various types of motion washout
p0091 N79-15622

MOTOR SYSTEMS (BIOLOGY)
U EFFERENT NERVOUS SYSTEMS

MOTOR VEHICLES
NT AUTOMOBILES
NT TRACTORS
NT TRUCKS
The driving simulator developed by the Institute for Perception TNO. A validation study in straight road driving
[IZF-1978-16-PR-1] p0145 N79-18588
Impact tests on crash helmets for motor cyclists
[AD-A065966] p0197 N79-24655

MOUNTAIN INHABITANTS
Investigation of the content of hemoglobin and its fractions in permanent inhabitants of the Tien Shan and Pamir
p0188 A79-35124
Oxygen affinity of blood in altitude Sherpas
p0268 A79-47854

MOVEMENT
U MOTION

MOVING TARGET INDICATORS
Line criteria in target acquisition with television --- visibility of target image on TV screen
p0068 A79-18997
Visual cues in manual tracking of simulated targets
p0103 A79-23792
Estimation of aircraft target motion using pattern recognition orientation measurements
p0177 N79-21764

MTI RADAR

U MOVING TARGET INDICATORS

MULTISPECTRAL PHOTOGRAPHY

Diagnosis of cutaneous thermal burn injuries by multispectral imaging analysis [NASA-CR-162103] p0279 N79-30922

MULTIVARIATE STATISTICAL ANALYSIS

NT DISCRETE FUNCTIONS

NT REGRESSION ANALYSIS

The prediction of the existence or nonexistence of coronary artery disease using routine clinical laboratory measurement p0028 N79-11703

Multi-attribute subjective evaluations of manual tracking tasks vs. objective performance of the human operator p0116 N79-17486

The selection of air traffic control specialists: Two studies demonstrating methods to insure an accurate validity coefficient for selection devices [AD-A068581] p0281 N79-30932

MUSCLES

NT MYOCARDIUM

Phosphorylase a in human skeletal muscle during exercise and electrical stimulation p0067 A79-18962

The bloodflow in skeletal muscle capillaries in normoxia and arterial hypoxemia /Microcinematographic studies/ p0208 A79-38150

Ultrasonic investigations of the soleus muscle after space flight on the Biosputnik 936 p0274 A79-49992

Determination of muscle mass changes in legs from K-40 measurements p0274 A79-49997

Tremometry as a method of evaluating the functional state of the nervous system of a pilot p0300 A79-53065

COSMOS 936, experiment K-208: Spaceflight effects on muscle fibers p0024 N79-11679

Calcium regulation in smooth muscle: Isolation and characterization of the myosin light chain kinase p0024 N79-11680

Changes in metabolism of soleus muscle tissue in rats following the flight aboard the Kosmos-690 biosatellite p0108 N79-16518

Effects of space flight factors on electrolyte composition of rat skeletal muscles p0109 N79-16530

Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite p0311 N79-33795

MUSCULAR FATIGUE

A simple technique for evaluation of vitality loss in aging mice, by testing their muscular coordination and vigor p0274 A79-50205

Frequency and amplitude analysis of the EMG during exercise on the bicycle ergometer p0297 A79-52022

Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time p0297 A79-52025

Operator performance and localized muscle fatigue in a simulated space vehicle control p0214 N79-24653

A stochastic model of muscle fatigue in frequent strenuous work cycles p0261 N79-29789

MUSCULAR FUNCTION

Models for automated motor skills training --- computer controlled adaptive instruction p0035 A79-13182

A composite view of task performance in hot environments p0036 A79-13186

Special tests for astronaut selection - Muscular exercise test p0047 A79-15492

Temperature effect of muscular work in the white rat during hypoxia p0097 A79-20654

Mechanical efficiency of fast- and slow-twitch muscle fibers in man during cycling p0268 A79-47852

Recovery of skeletal muscle after 3 mo of hindlimb immobilization in rats p0268 A79-47856

Mechanism for the regulation of human posture during movements of the foot p0276 A79-50651

Characteristics of somatic and autonomic regulation during work of small muscle groups as a function of loading regime p0276 A79-50653

Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle p0296 A79-51111

The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia p0296 A79-51116

Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life [IAF PAPER 79-76] p0301 A79-53285

Carbohydrate metabolism of the stimulated diaphragm muscle p0050 N79-12689

Nonshivering thermogenesis in normal and dystrophic muscle p0054 N79-13680

Changes in properties of rat femur as a result of crural exarticulation and hypokinesia p0108 N79-16522

The pulmonary circulation: Studies on alveolar hypoxia and vascular smooth muscle metabolism p0195 N79-23650

Recruitment and discharge properties of motor units in human brachial biceps and adductor pollicis during isometric contractions p0216 N79-25708

Multifunctional transducer [NASA-CASE-NPO-14329-1] p0219 N79-25737

MUSCULAR STRENGTH

A prediction model of arm push strength in the transverse plane p0037 A79-13195

Biomechanical properties of muscles and the efficiency of movement p0276 A79-50652

Human muscular strength p0033 N79-11741

Instrumentation and techniques for the measurement of muscular strength and endurance in the human body [AD-A061023] p0155 N79-19681

Isometric strength testing in selecting workers for strenuous jobs p0262 N79-29790

MUSCULAR TONUS

Isokinetic exercise: A review of the literature [NASA-CR-151841] p0051 N79-12695

MUSCULOSKELETAL SYSTEM

NT BONES

NT CARTILAGE

NT CEREBRUM

NT COLLAGENS

NT CONNECTIVE TISSUE

NT FEMUR

NT JOINTS (ANATOMY)

NT KNEE (ANATOMY)

NT TIBIA

NT VERTEBRAE

NT VERTEBRAL COLUMN

NT WRIST

Effects of vestibular stimuli on the electrical activity of muscles p0187 A79-35121

The bloodflow in skeletal muscle capillaries in normoxia and arterial hypoxemia /Microcinematographic studies/ p0208 A79-38150

Studies of amino acid metabolism in the muscles of rats flown aboard the biosatellite Cosmos 782 p0230 A79-41714

Recovery of skeletal muscle after 3 mo of hindlimb immobilization in rats p0268 A79-47856

The inertial properties of the body and its segments p0033 N79-11738

Changes in amount and composition of phospholipids in rat skeletal muscle microsomal fraction under the influence of a flight aboard the Kosmos-690 biosatellite
p0108 N79-16519
Effects of hypodynamic simulations on the skeletal system of monkeys
p0146 N79-19021
The influence of exercise on bone atrophy
[NASA-CR-160196] p0216 N79-25714
The combined effect of space flight factors and radiation on rat skeletal muscles
p0244 N79-27821
Tissular metabolism in mixed type fibers of rat skeletal muscles after flight aboard Cosmos-690 biosatellite
p0244 N79-27823
The validation of biodynamic models
p0286 N79-31914

MUTATIONS
Possible contribution of transferable exogenous DNA in prokaryotic evolution
p0205 A79-37971
The point mutation process in proteins
p0205 A79-37972
Genetic effects of cosmic radiation on bacteriophage T4Br/+/ /On materials of biological experiment Soyuz-Apollo/
p0229 A79-41708
On investigating the statistical properties of the populous path algorithm by computer simulation - Counterconclusions to those of Tateno and Nei --- for mutational change in protein evolution
p0253 A79-45640
Effect of accelerations combined with radiation on occurrence of gene mutations in the drosophila
p0016 N79-10720
Mutagenic components of alternate energy sources
[CONF-780636-8] p0280 N79-30923

MYOCARDIAL INFARCTION
ST isopotential precordial surface maps in patients with acute myocardial infarction
p0098 A79-21245
Electrocardiographic abnormalities in Air Force personnel
p0182 A79-33191
Myocardial infarction in young men
p0188 A79-35137
A catheter flow probe for measurement of left ventricular source parameters
p0274 A79-50108
Computerized positron emission tomography /PET/ for the assessment of myocardial integrity
p0293 A79-51031
The effect of moderate hypothermia on the circulatory and myocardial consequences of acute coronary ligation in dogs
p0049 N79-12683

MYOCARDIUM
Single frequency RF powered ECG telemetry system
p0131 A79-26074
Effect of adaptation to high-altitude hypoxia on cardiac adrenoreactivity and the state of the adenylcyclase and phosphodiesterase systems in the myocardium
p0255 A79-46500
Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle
p0296 A79-51111
Temporal relation between onset of cell anoxia and ischemic contractile failure
p0300 A79-52895
Protein fractions and enzymatic activity thereof in the rat myocardium after the flight on Kosmos-690 biosatellite
p0014 N79-10700
Blood clotting factors of the vascular wall and myocardium of hypokinetic rabbits
p0108 N79-16523
A correlation of the effects of cationic uncouplers on intact cardiac muscle and on calcium bound to isolated cardiac muscle plasma membranes
p0111 N79-16540
A study of some of the factors influencing the left ventricular diastolic pressure-volume relationship and myocardial metabolism
p0154 N79-19674
Tissular blood clotting factors of vascular walls and myocardium during hypokinesia
p0194 N79-23644
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
p0307 N79-32825

MYOELECTRIC POTENTIALS
Isokinetic exercise: A review of the literature
[NASA-CR-151841] p0051 N79-12695

MYOELECTRICITY
NT MYOELECTRIC POTENTIALS

N

NASA PROGRAMS
NT ASSESS PROGRAM
NT SEASAT PROGRAM
NT SKYLAB PROGRAM
NT TERMINAL CONFIGURED VEHICLE PROGRAM
NT VIKING MARS PROGRAM
Firefighters Integrated Response Equipment System
[ASME PAPER 78-ENAS-39] p0009 A79-12586
NASA flight management research
p0040 A79-13218
The joint US-USSR biological satellite program
p0182 A79-33050
The role of physical examinations and education in prospective medicine
p0026 N79-11694
Publications of the planetary biology program for 1977: A special bibliography
[NASA-TM-80338] p0179 N79-21777
Urine collection apparatus
[NASA-CASE-MSC-18381-1] p0195 N79-23657

NATURAL LANGUAGE (COMPUTERS)
Attempt to describe a class of man-machine dialogue systems based on a natural language
p0251 A79-44057

NAUSEA
Vestibular Function Research (VFR) experiment. Phase B: Design definition study
[NASA-CR-152207] p0024 N79-11683

NAVIER-STOKES EQUATION
Application of numerical methods to physiological flows --- Navier-stokes equation, prosthetic heart valves and vasoconstriction
p0146 N79-18945

NAVIGATION
NT AREA NAVIGATION
NT DIGITAL NAVIGATION
Geographical disorientation and flight safety
p0291 N79-31951

NAVIGATION AIDS
NT LIGHT AIRBORNE MULTIPURPOSE SYSTEM
RNAV procedural turn anticipation techniques experiment no. 2, GAT-2A. Phase 3: 2 and 4 nmi offset tracking procedures
[AD-A060501] p0085 N79-15583

NAVIGATORS
Visual workload of the copilot/navigator during terrain flight
p0038 A79-13206
Effects on A-6E bombardier/navigator flight training with the introduction of device 2F114, A-6E weapon system trainer
[AD-A068607] p0289 N79-31933

NAVY
Naval aviation training - Perspective and prospects
[SAE PAPER 781004] p0130 A79-25886

NEARSHORE WATER
NT COASTAL WATER

NECK (ANATOMY)
Determination of cerebral and neck subcutaneous tissue PO2 with 3 and 4 +Gz in M. mulatta
p0234 A79-43205
Analysis of naval aviation head and neck injuries (1969-1978)
[AD-A057657] p0026 N79-11689
Multibody dynamics including translation between the bodies, with application to head-neck systems
[AD-A062114] p0174 N79-20747
A discrete parameter model of the head and neck with neuromuscular feedback
p0211 N79-24627
Multiaxis dynamic response of the human head and neck to impact acceleration
p0284 N79-31906

NEGATIVE FEEDBACK
NT SENSORY FEEDBACK

NEON
NT NEON ISOTOPES
NEON ISOTOPES
Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798
NEON 19
U NEON ISOTOPES
NEOPLASMS
NT CANCER
NERVES
Conduction difficulties of vagal origin in flight personnel - Significance of intrathoracic data on the bundle of His --- neural activity effects on heart block
p0103 A79-23955
Estimation of nerve-bundle conduction
p0154 N79-19672
Functional connections of the central auditory nervous system: Thalamocortical corticothalamic and corticotectal connections of the AI, AII and AAF auditory cortical fields
p0246 N79-27839
Effects of acute noise traumata on whole-nerve and single-unit activity
[IZF-1978-23] p0308 N79-32829
NERVOUS SYSTEM
NT AXONS
NT BRAIN
NT CENTRAL NERVOUS SYSTEM
NT CEREBRAL CORTEX
NT CEREBRUM
NT EFFERENT NERVOUS SYSTEMS
NT GANGLIA
NT HIPPOCAMPUS
NT NERVES
NT NEURONS
NT SPINAL CORD
NT SPINE
NT SYMPATHETIC NERVOUS SYSTEM
NT SYNAPSES
Elements of the theory of biological analyzers --- Russian book
p0132 A79-26450
The problem of optimally fast response as solved by the nerve cell
p0166 A79-31179
Tremometry as a method of evaluating the functional state of the nervous system of a pilot
p0300 A79-53065
Effect of different doses of centimeter-band electromagnetic oscillations of biochemiluminescence of central nervous system and liver tissues
p0172 N79-20738
Multi-channel stimulation of peripheral nerve trunks
p0176 N79-21753
Functional connections of the central auditory nervous system: Thalamocortical corticothalamic and corticotectal connections of the AI, AII and AAF auditory cortical fields
p0246 N79-27839
NETWORK ANALYSIS
Modeling and analysis using SAINT - A combined discrete/continuous network simulation language --- Systems Analysis of Integrated Network of Tasks for RPV
p0004 A79-11480
Combined discrete network-continuous control modeling of man-machine systems
p0260 N79-28879
NEUROLOGY
Vision
p0095 N79-15894
NEUROMUSCULAR TRANSMISSION
Stereological ultrastructural analysis of the axonal endings in the neuromuscular junction of rats after a flight on biosputnik 782
p0101 A79-23468
A simple technique for evaluation of vitality loss in aging mice, by testing their muscular coordination and vigor
p0274 A79-50205
Directional errors of movements and their correction in a discrete tracking task --- pilot reaction time and sensorimotor performance
p0086 N79-15589
A discrete parameter model of the head and neck with neuromuscular feedback
p0211 N79-24627
NEURON TRANSMISSION
U BIOELECTRICITY
NEURONS
The problem of optimally fast response as solved by the nerve cell
p0166 A79-31179
Auditory analysis of complex sound: Electrophysiological investigations --- Russian book
p0167 A79-31899
Dynamics of the impulse activity of the neurons in the posterior hypothalamus upon exposure to microwaves
p0188 A79-35918
The effect of thermal stimulation of the skin on activity of lateral crescent interneurons of lumbar segments
p0208 A79-38147
Origin of neuron responses of the superior colliculus to light flashes
p0233 A79-42294
Mathematical model of the respiration rhythm generation process
p0254 A79-46268
The effects of high nitrogen tensions of the properties of neuronal membranes and synaptic transmission
[AD-A063856] p0213 N79-24647
Biological effects of laser irradiation on nerve cells
p0247 N79-27840
NEUROPHYSIOLOGY
The sensory systems --- Russian book on neurophysiology and biophysics research
p0042 A79-14369
Intrinsic noise, threshold sensitivity, and adaptation of the retina
p0043 A79-14373
Neurophysiology of thermal reception
p0043 A79-14374
The trajectories of saccadic eye movements
p0065 A79-18250
Elements of the theory of biological analyzers --- Russian book
p0132 A79-26450
Piecewise Fourier analysis of images and the role of occipital, temporal and parietal cortex in visual perception
p0160 A79-29248
Neural regulation of coronary circulation
p0208 A79-38148
The role of the neurohormone system of the hypothalamus in physiology and pathology --- Russian book
p0251 A79-43835
Central and reflex mechanisms of controlling movements --- Russian book
p0251 A79-43950
The visual cortex of normal and deprived monkeys
p0296 A79-51174
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
p0299 A79-52475
Neurophysiological bases of vestibular conditioning
p0013 N79-10699
Vestibular Function Research (VFR) experiment. Phase B: Design definition study
[NASA-CR-152207] p0024 N79-11683
Evidence for the neural regulation of respiration During low intensity exercise in man
p0144 N79-18578
A description of the recent neuropsychological selection of pilots for land forces light aircraft
p0151 N79-19633
Regulation of the carbon dioxide tension in arterial blood during inhalation of carbon dioxide in birds and mammals
p0169 N79-20713
Experimental and theoretical investigations concerning a frequency filter behavior of the human retina regarding electric pulse currents
[NASA-TM-75372] p0314 N79-33822
NEUROSCIENCE
U NEUROLOGY
NEUTRAL PARTICLES
NT FAST NEUTRONS

NEUTRON SPECTRA
Personnel neutron monitoring in space [NASA-CR-151865] p0111 N79-16541
NEUTRONS
NT FAST NEUTRONS
NICOTINE
Clinical importance of directional statistics for electrocardiographic differentiation of smoking habits p0098 A79-21246
NIGHT FLIGHTS (AIRCRAFT)
Helicopter night operations - Feasibility and impact on the overall system --- helmet mounted FLIR detectors and image intensifier goggles p0048 A79-16235
Honest 1: Personality, heart rate, urinary catecholamine, and subjective fatigue measures related to night nap-of-the-earth flying [AD-A054888] p0055 N79-13692
Night rescue operation procedure over sea with bell UH-1D helicopters p0148 N79-19609
Observation of night shipboard helicopter operations from a 210 foot US Coast Guard cutter p0151 N79-19637
Operational consideration of AN/PVS-5 night vision goggles for helicopter night flight p0152 N79-19649
Training requirements for helicopter operation with night vision goggles p0153 N79-19650
NIGHT VISION
Night vision goggles and in-flight evaluation of the inside/outside refocusing problems in a UH-1H helicopter p0063 A79-18215
NITRATES
NT ORGANIC NITRATES
Enhancing biological production of ammonia from atmospheric nitrogen and soil nitrate [PB-286515/2] p0083 N79-15571
NITROBACTER
Nitrogen fixation with photosynthetic marine microorganisms [PB-287590/4] p0120 N79-17525
NITROGEN
Effect of decompression per se on nitrogen elimination p0067 A79-18964
Synthesis of amino acids under primitive earth conditions in the presence of clay p0203 A79-37930
Nitrogen fixation with photosynthetic marine microorganisms [PB-286000/5] p0083 N79-15570
Enhancing biological production of ammonia from atmospheric nitrogen and soil nitrate [PB-286515/2] p0083 N79-15571
Metabolism of hydrazine [AD-A062251] p0169 N79-20716
The effects of high nitrogen tensions of the properties of neuronal membranes and synaptic transmission [AD-A063856] p0213 N79-24647
NITROGEN COMPOUNDS
NT AMMONIA
NT CYANAMIDES
NT HYDROCYANIC ACID
NT HYOSCINE
NT NICOTINE
NT NITRATES
NT NITROGEN DIOXIDE
NT NITROGEN OXIDES
NT NITROGEN TETROXIDE
NT ORGANIC NITRATES
NT TRYPTOPHAN
NT UREAS
NITROGEN DIOXIDE
Developmental and hematological responses to low level continuous exposure of nitrogen dioxide in mice p0147 N79-19026
NITROGEN METABOLISM
Nitrogen fixation with photosynthetic marine microorganisms [PB-287590/4] p0120 N79-17525
NITROGEN OXIDES
NT NITROGEN DIOXIDE
NT NITROGEN TETROXIDE
Effects of oxides on nitrogen, Carbon monoxide and photochemical oxidants on the ECG during exercise and on cardiopulmonary function [PB-291595/7] p0177 N79-21763
NITROGEN TETROXIDE
Advanced life support equipment for nitrogen tetroxide environments p0169 N79-20432
NOBLE GASES
U RARE GASES
NOISE (SOUND)
NT AIRCRAFT NOISE
NT SONIC BOOMS
The influence of mechanical vibration and noise on the peripheral blood circulation at skin level [RAE-LIB-TRANS-1980] p0084 N79-15578
Overall loudness of steady sounds according to theory and experiment [NASA-RP-1001] N79-25753
Two approaches to category representation in aural classification [AD-A066705] N79-25754
Classification of amplitude-modulated noise patterns with extended practice [AD-A066703] p0222 N79-25756
The loudness of tinnitus p0246 N79-27837
NOISE ATTENUATION
U NOISE REDUCTION
NOISE ELIMINATION
U NOISE REDUCTION
NOISE GENERATORS
Monitoring the state of the human airways by analysis of respiratory sound [IAF PAPER 78-66] p0003 A79-11227
NOISE HAZARDS
U NOISE (SOUND)
NOISE INJURIES
Effects of acute noise traumata on whole-nerve and single-unit activity [IZF-1978-23] p0308 N79-32829
NOISE INTENSITY
The effective acoustic environment of helicopter crewmen p0152 N79-19645
NOISE MEASUREMENT
Responses of teachers to aircraft noise p0103 A79-23881
Temporary threshold shift from transportation noise p0254 A79-46286
The loudness of tinnitus p0246 N79-27837
NOISE POLLUTION
Conjoint effect of physical stress and noise stress on information processing performance and cardiac response p0161 A79-29715
Temporary threshold shift from transportation noise p0254 A79-46286
The influence of intermittent aircraft noise on sleep. I p0255 A79-46599
A real-world assessment of noise exposure [AD-A061692] p0155 N79-19680
Tentative evaluation of annoyance caused by noise from gunfire [IZF-1978-21] p0310 N79-32843
NOISE REDUCTION
In-flight measures of stress reduction due to wearing expandable foam earplugs p0273 A79-49986
A trade-off analysis design tool: Aircraft interior noise-motion/passenger satisfaction model p0112 N79-16549
NOISE SUPPRESSORS
U NOISE REDUCTION
NOISE TOLERANCE
Startle reactions to simulated sonic booms - Influence of habituation, boom level and background noise p0097 A79-20502
Aircraft noise and its effect on man: Methods and results of research, consequences for environmental protection --- German book p0162 A79-29763
Sources of noise stress on flying personnel p0227 A79-41169
Effects of vibration and noise on some indices of efficiency of MI-4 helicopter crews

p0015 N79-10711
A model for predicting human discomfort response to combined noise and vertical vibration
p0156 N79-19685
Human discomfort response to noise combined with vertical vibration
[NASA-TP-1374] p0190 N79-22761
Stress and fatigue in the driving environment --- physiological and psychological effects of heat and noise experienced inside automobiles
p0211 N79-24629

NONADIABATIC PROCESSES
U HEAT TRANSFER

NONDESTRUCTIVE TESTS
Noninvasive techniques in the evaluation of the peripheral circulation
p0154 N79-19675

NONFLAMMABLE MATERIALS
Aluminized firemen's (fire proximity) handwear: Redesign of experimental prototype
[AD-A069895] p0290 N79-31940

NONLINEAR FILTERS
Investigation of nonlinear motion simulator washout schemes
p0091 N79-15624
Study of the use of a nonlinear, rate limited, filter on pilot control signals
p0119 N79-17515

NONLINEAR OPTICS
Nonlinear optical susceptibility of the human eye to IR radiation in the 800 to 1355 micron range
p0188 A79-35363
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
p0301 A79-53163

NONPARAMETRIC STATISTICS
Estimating percentiles of nonnormal anthropometric populations - Final report
p0065 A79-18226
Nonparametric measures of sensory efficiency for sustained monitoring tasks
p0161 A79-29719

NORADRENALINE
Norepinephrine action on smooth muscle cells of coronary arteries
p0208 A79-38149

NOREPINEPHRINE
Norepinephrine uptake by the isolated heart of rats adapted and deadapted to hypoxia
p0097 A79-20621
Synaptosomal uptake of hypothalamic monoamines and recovery of pituitary-adrenal activity following medial forebrain bundle lesions in rats
p0275 A79-50232

NORMAL DENSITY FUNCTIONS
Estimation of the operating characteristics of item response categories, 3: The normal approach method and the Pearson system
[AD-A056747] p0145 N79-18587

NORMAL DISTRIBUTIONS
U NORMAL DENSITY FUNCTIONS

NORTH CAROLINA
Bacteria in a North Carolina salt marsh. Standing crop and importance in the decomposition of Spartina alterniflora
[PB-288816/2] p0153 N79-19668

NORTHERN HEMISPHERE
NT ARCTIC REGIONS

NORTHROP AIRCRAFT
NT F-18 AIRCRAFT

NOXIOUS MATERIALS
U CONTAMINANTS

NUCLEAR ELECTRIC POWER GENERATION
NT NUCLEAR POWER PLANTS

NUCLEAR ENERGY
Effects on populations of exposure to low levels of ionizing radiation: Implications for nuclear energy and medical radiation
[LBL-9084] p0316 N79-33833

NUCLEAR PARTICLES
NT BETA PARTICLES

NUCLEAR POWER PLANTS
Results of benthic studies at Calvert Cliffs
[PB-294261/3] p0261 N79-29788

NUCLEAR RADIATION
NT BETA PARTICLES
NT FAST NEUTRONS
NT GAMMA RAYS

NUCLEAR SHIELDING
U RADIATION SHIELDING

NUCLEI
Effects of gravity on contractile proteins
[NASA-CR-160303] p0279 N79-30913

NUCLEIC ACIDS
NT DEOXYRIBONUCLEIC ACID
NT RIBONUCLEIC ACIDS
Influence of high-altitude conditions on the metabolism of nucleic acids and proteins in the thymocytes of the rat
p0069 A79-19425
Interaction between inositol hexaphosphate and carbobenzoxy peptide - A model for nucleic acid - Nonhistone chromosomal protein interaction
p0100 A79-22082
An approach to the origin of self-replicating system. I - Intermolecular interactions
p0204 A79-37948

NUCLEOGENESIS
The study of the origin of life - Results and prospects
p0206 A79-37981
The origin of the protein synthesis mechanism
p0207 A79-37986
Evolution in open systems - Acquisition and conservation of information in bioids
p0207 A79-37987

NUCLEOSIDES
NT ADENOSINES
Microbial transformation of nucleosides
[NASA-CR-158696] p0197 N79-25704

NUCLEOTIDES
NT ADENOSINES
NT POLYNUCLEOTIDES
The augmentation algorithm and molecular phylogenetic trees
p0070 A79-20267
Speculations of the evolution of the genetic code. II
p0099 A79-22080
Cyclic nucleotides and adaptation of the organism --- Russian Book
p0133 A79-26500
Prebiotic nucleotide oligomerization in a fluctuating environment - Effects of kaolinite and cyanamide
p0162 A79-29938
Nucleotide-binding site data and the origin of the genetic code
p0206 A79-37974
Are evolutionary rates really variable --- in vertebrate protein chemistry
p0232 A79-42273
Goodman et al.'s method for augmenting the number of nucleotide substitutions
p0253 A79-45639
Augmentation algorithm - A reply to Holmquist --- for nucleotide substitutions
p0253 A79-45644

NUCLIDES
NT AMERICIUM 241
NT CARBON 14
NT CHROMIUM ISOTOPES
NT NEON ISOTOPES
NT POTASSIUM 40
NT SODIUM ISOTOPES
NT SODIUM 22
NT TRITIUM

NUMERICAL ANALYSIS
NT ERROR ANALYSIS
NT MONTE CARLO METHOD
Numerical studies of absorption of electro-magnetic energy by man
p0110 N79-16538

NUMERICAL CONTROL
Advanced teleoperators --- remote manipulation system
p0187 A79-34982
Robotic vision --- process control applications
p0187 A79-34988
Pilot decision making in a computer-aided flight management situation
p0093 N79-15633

NUTRIENTS
Algal growth under multiple nutrient limiting conditions
p0013 N79-10692

Mechanisms of deterioration of nutrients --- improved quality of freeze-dried foods
[NASA-CR-160128] p0156 N79-19686

NUTRITION
Effects of dietary composition on nutritional state in rats during exposure to high altitude
p0134 A79-27118
A technology assessment of vegetable substitutes for animal protein in human food. Volume 1: The study
[PB-284681/4] p0059 N79-13719
A technology assessment of vegetable substitutes for animal protein in human food. Volume 2: Appendices
[PB-284682/2] p0059 N79-13720
Orthomolecular enhancement of human development
p0095 N79-15895

NUTRITIONAL REQUIREMENTS
NT CALORIC REQUIREMENTS
Exercise performance and hemodynamics during dietary potassium depletion in dogs
p0067 A79-18959

NYSTAGMUS
NT VESTIBULAR NYSTAGMUS
A fast-reacting and versatile optokinetic stimulus pattern by computer graphics with application examples
p0160 A79-28993
Changes in optokinetic, postoptokinetic, and reverse postoptokinetic nystagmus after bilateral labyrinthectomy
p0255 A79-46499
Pursuit after-nystagmus
p0271 A79-49484
A study of the effects of six light conditions on caloric induced nystagmus
p0195 N79-23652

O

OBESITY
Obesity and flying fitness
p0182 A79-33188

OBSERVATION
NT VISUAL OBSERVATION

OCEAN SURFACE
The application of remote sensors to a model for fish mapping
[INPE-1379-PE/176] p0071 N79-14712
Minimum sea surface temperatures and associated survival times
[AD-A070162] p0315 N79-33824

OCEANS
Human/computer control of undersea teleoperators
p0089 N79-15612

OCULOGRAVIC ILLUSIONS
Oculogravic illusion in response to straight-ahead acceleration of a CF-104 aircraft
p0164 A79-30660

OCULOMETERS
Flight management research utilizing an oculometer --- pilot scanning behavior during simulated approach and landing
p0001 A79-10389

OCULOMOTOR NERVES
Perceptual localization, feature identification and ocular motor factors in scanning a visual display
p0068 A79-18218
Oculomotor factors in visual perceptual response efficiency
p0209 A79-38361
The effect of expectations on slow oculomotor control. I - Periodic target steps. II - Single target displacements
p0225 A79-40185
Quality of retinal image stabilization during small natural and artificial body rotations in man
p0225 A79-40187
Texture contours can facilitate stereopsis by initiating vergence eye movements
p0270 A79-48816
Forms of oculomotor activity under conditions of positive visual feedback
p0276 A79-50657

ON-LINE PROGRAMMING
Biomedical data validation through an on-line computer system
[PB-285249/9] p0057 N79-13700

ONBOARD COMPUTERS
U AIRBORNE/SPACEBORNE COMPUTERS

ONBOARD EQUIPMENT
NT AIRBORNE EQUIPMENT
NT AIRBORNE/SPACEBORNE COMPUTERS
NT AIRCRAFT EQUIPMENT
NT LIGHT AIRBORNE MULTIPURPOSE SYSTEM
Development of aerospace-aviation equipment described
p0081 N79-14795
Multi-axis hand controller for the shuttle remote manipulator system
p0117 N79-17503
US Navy development of an On-Board Oxygen Generation (OBOG) system
[AD-A063958] p0197 N79-24656

OPENINGS
NT APERTURES

OPERATIONAL HAZARDS
Health maintenance and health surveillance considerations for an SPS space construction base community
[AAS PAPER 78-176] p0099 A79-21273

OPERATIONS RESEARCH
NT MATHEMATICAL PROGRAMMING
Operational Helicopter Aviation Medicine
[AGARD-CP-255] p0148 N79-19605
A methodology for conducting human factors evaluations of vehicles in operational field tests
[AD-A061808] p0157 N79-19691
Methodological and operational aspects of programmed environment research
[AD-A068587] p0289 N79-31936

OPERATOR PERFORMANCE
On the man's adaptation to the operator's work under stressful conditions of space flight
[IAF PAPER 78-A-56] p0003 A79-11345
Psychophysiological forecasting of efficiency
p0010 A79-12867
Development and transfer of timesharing skills --- for human multiple task performance
p0035 A79-13184
Effects of vibration on humans - Performance decrements and limits
p0035 A79-13185
A composite view of task performance in hot environments
p0036 A79-13186
Seating, console and workplace design - Seated operator reach profiles
p0036 A79-13188
Seating, console, and workplace design - Integration of literature and accommodation model
p0036 A79-13189
Imagery interpreter performance in the comparison of subjective estimates of photographic image quality
p0036 A79-13191
Discrimination of density and clustering on four versions of a stochastic display --- human performance of pattern recognition
p0036 A79-13192
Tracking in two dimensions as a function of dimension priorities and tracking difficulty
p0036 A79-13193
Lateral orientation and cerebral activation - Considerations for information display
p0037 A79-13194
A prediction model of arm push strength in the transverse plane
p0037 A79-13195
Synthetic aperture radar operator tactical target acquisition research
p0037 A79-13202
Target acquisition in realistic terrain
p0037 A79-13203
Depth perception and manual control
p0038 A79-13207
The event related cortical potential as an index of task workload
p0038 A79-13208
Task functional demands as factors in dual-task performance
p0039 A79-13214
Observer performance using a video display --- in simulated air to ground target acquisition tasks
p0039 A79-13217
Experimental designs for investigating complex human operator/machine systems

p0040 A79-13225
Adaptive supervisory control of remote manipulation
p0046 A79-14987
Computer-graphic design for human performance
[AD-A055132] p0046 A79-15399
Man-machine reliability - A practical engineering tool
p0047 A79-15400
Cross-validation of regression equations to predict performance in a pursuit tracking task
p0064 A79-18222
Man/terminal interaction evaluation of computer operating system command and control service concepts --- in Spacelab
p0064 A79-18224
Target-terrain classification and detection performance --- to assess aerial photos for tanks
p0065 A79-18225
Line criteria in target acquisition with television --- visibility of target image on TV screen
p0068 A79-18997
Speed and load stress as determinants of performance in a time sharing task
p0068 A79-18999
Visual target acquisition and ocular scanning performance
p0069 A79-19000
Morbidity experience of air traffic control personnel - 1967-77
p0101 A79-23466
Army Aviation Training - Research now and then
[SAE PAPER 781008] p0130 A79-25890
Digital man-machine control systems - The effects of preview lag
p0131 A79-26149
The human operator in the control system: Linear models --- German book
p0132 A79-26356
Nonparametric model for the detection of signals observed by a human operator on a CRT screen on a noise background --- cathode-ray tube
p0159 A79-28565
Functional changes in the cardiovascular system of machine-tool operators under physical and neurologically stressful loads
p0160 A79-29270
Nonparametric measures of sensory efficiency for sustained monitoring tasks
p0161 A79-29719
A model of human decisionmaking in fault diagnosis tasks that include feedback and redundancy
p0163 A79-30222
A comparison of control modes for time-delayed remote manipulation
p0163 A79-30223
Measurement and scaling of workload in complex performance
p0164 A79-30659
Evaluation of models describing human operator control of slowly responding complex systems --- Thesis
p0167 A79-31494
Application of computer animation for dynamic display in complex energy systems --- for human operator performance improvement
p0186 A79-34172
A rationale for human operator pulsive control behavior
p0186 A79-34520
Separation of the effects of raised skin and core temperature on performance of a pursuit rotor task
p0234 A79-43204
Psychophysical assessment of angular vibration - Comparison of vertical and roll vibrations
p0234 A79-43206
Adaptive estimation schemes for minimizing uncertainty in manual control tasks
p0269 A79-48013
Human operators in adversary tracking encounters
p0269 A79-48015
An operator-aiding manipulator control system
p0269 A79-48020
Survey of human operator modeling techniques for measurement applications
[AD-A058327] p0058 N79-13713
A formal model of the adaptive and discrete control behaviors of human operators
[AD-A059039] p0059 N79-13717
Psychological aspects of the human-operator's activity while tracking
[RAE-LIB-TRANS-1979] p0079 N79-14768
Information-handling capacity of a human operator in detection of signals against a noisy background
p0081 N79-14989
The behavior of observers in detecting unbriefed targets at different aircraft speeds with side-looking radar
[AD-A060908] p0085 N79-15586
The 14th Annual Conference on Manual Control --- digital simulation of human operator dynamics
[NASA-CP-2060] p0086 N79-15588
A study of the effect of forcing function characteristics on human operator dynamics in manual control
p0086 N79-15590
Effects of uncertainty on manual tracking performance --- visual tasks
p0086 N79-15592
Modeling the human as a controller in a multitask environment
p0087 N79-15595
The internal model: A study of the relative contribution of proprioception and visual information to failure detection in dynamic systems --- sensitivity of operators versus monitors to failures
p0087 N79-15596
Closed loop models for analyzing the effects of simulator characteristics --- digital simulation of human operators
p0087 N79-15598
Petri nets as a modeling tool for discrete concurrent tasks of the human operator --- describing sequential and parallel demands on human operators
p0088 N79-15600
Human operator identification model and related computer programs
[NASA-CR-152237] p0112 N79-16551
The application of integral performance criteria to the analysis of discrete maneuvers in a driving simulator
[RS-GMR-2394] p0115 N79-17484
Multi-attribute subjective evaluations of manual tracking tasks vs. objective performance of the human operator
p0116 N79-17486
A control theoretic model of driver steering behavior
p0116 N79-17491
Modelling the human operator of slowly responding systems using linear models
p0117 N79-17492
Driver steering dynamics measured in car simulator under a range of visibility and roadmaking conditions
p0117 N79-17493
Sunglasses for drivers?
[IZF-1977-24] p0122 N79-17539
The impact of a Learn-Forget-Learn (LFL) curve and learning curves on a system effectiveness model
[AD-A061622] p0124 N79-17550
An adaptive controller which displays human operator limitations for a fighter type aircraft
p0177 N79-21767
Operator performance and localized muscle fatigue in a simulated space vehicle control
p0214 N79-24653
Selective attention: The influences of subject sex and degree of prior habituation on performance of an attention task with distraction
p0260 N79-28876
Combined discrete network-continuous control modeling of man-machine systems
p0260 N79-28879
Visual search performance during simulated radar observation with and without a sweepline
[AD-A068020] p0281 N79-30938
The application of control theory to the investigation of roll motion effects on human operator performance
p0288 N79-31931
Models of human operators in vision dependent tasks
[NASA-CP-2103] p0317 N79-33838
A survey of Applied Psychological Services' models of the human operator
p0317 N79-33839

Visual performance modeling in the human operator simulator
p0317 N79-33840
A brief overview of the theory and application of the optimal control model of the human operator
p0317 N79-33841
Analysis of visual estimation of system state from arbitrary displays
p0317 N79-33843

OPERATORS (PERSONNEL)
NT AIRCRAFT PILOTS
NT PILOTS (PERSONNEL)
Psychological aspects of the human-operator's activity while tracking
[RAE-LIB-TRANS-1979] p0079 N79-14768
The effects of alcohol on driver performance in a decision making situation
p0092 N79-15629
A decision model applied to alcohol effects on driver signal light behavior
p0092 N79-15630
Combined monitoring, decision and control model for the human operator in a command and control desk
p0092 N79-15631
The impact of a Learn-Forget-Learn (LFL) curve and learning curves on a system effectiveness model
[AD-A061622] p0124 N79-17550
Development and utilization of internal models in dynamic systems: A comparison of monitors and operators as failure detectors
[AD-A069730] p0282 N79-30942
Effects on A-6E bombardier/navigator flight training with the introduction of device 2F114, A-6E weapon system trainer
[AD-A068607] p0289 N79-31933
The use of artificial signals during SONAR-watch
[IZF-1978-25] p0309 N79-32837

OPHTHALMOLOGY
NT EYE EXAMINATIONS
Sensory illusions - The ophthalmologist's point of view
p0255 A79-46595
The retinal resolving power measured by laser interference fringes
p0304 A79-54091

OPTICAL ABSORPTION
U ELECTROMAGNETIC ABSORPTION
U LIGHT TRANSMISSION

OPTICAL ACTIVITY
A simple analogical model for the selection of optical activity and of the most efficient catalysts in the course of molecular evolution
p0204 A79-37957
Mirror symmetry breaking in biochemical evolution
p0254 A79-46462

OPTICAL DATA PROCESSING
NT SCENE ANALYSIS

OPTICAL EQUIPMENT
NT ENDOSCOPES
NT EYEPIECES
NT LASER DOPPLER VELOCIMETERS
NT OPTICAL MEASURING INSTRUMENTS
NT PHOTOMETERS
NT PRISMS
NT STROBOSCOPES
NT TELEVISION CAMERAS
Water system virus detection
[NASA-CASE-MSC-16098-1] p0013 N79-10693
Apparatus for endoscopic examination
[NASA-CASE-NPO-14092-1] p0155 N79-19678

OPTICAL ILLUSION
The common occurrence of errors of perceived distance
p0100 A79-22775
Object, illusion and frame of reference as design criteria for computer-generated displays
p0137 A79-28157
The tilt illusion - Length and luminance changes of induction line and third /disinhibiting/ line
p0228 A79-41422
Sensory illusions - The ophthalmologist's point of view
p0255 A79-46595

OPTICAL IMAGES
U IMAGES

OPTICAL MASER MODULATION
U LIGHT MODULATION

OPTICAL MASERS
U LASERS

OPTICAL MEASUREMENT
NT PHOTOMETRY
NT SPECTROPHOTOMETRY

OPTICAL MEASURING INSTRUMENTS
NT OCULOMETERS
NT PHOTOMETERS
Lightweight helmet-mounted eye movement measurement system
p0303 A79-53516

OPTICAL MODULATION
U LIGHT MODULATION

OPTICAL PROPERTIES
NT BRIGHTNESS
NT COLOR
The optical properties of smoke-protective devices
[FAA-AM-78-41] p0242 N79-26784

OPTICAL SENSORS
U OPTICAL MEASURING INSTRUMENTS

OPTICAL SPECTRUM
U LIGHT (VISIBLE RADIATION)

OPTICAL TRACKING
On the relationship between pilot rating and pilot dynamics. I - An experimental approach
p0066 A79-18474
Visual cues in manual tracking of simulated targets
p0103 A79-23792
Pursuit after-nystagmus
p02[illegible] A79-49484

OPTIMAL CONTROL
Arrangement of aircraft flight indicators with the help of optimal theoretical models for man as the controller
[DGLR PAPER 78-149] p0042 A79-14094
Effects of target motion and image on AAA tracking --- Anti-Aircraft Artillery
p0046 A79-14969
The problem of optimally fast response as solved by the nerve cell
p0166 A79-31179
Evaluation of models describing human operator control of slowly responding complex systems --- Thesis
p0167 A79-31494
Modeling human tracking performance in a high G-stress environment
p0269 A79-48012
Adaptive estimation schemes for minimizing uncertainty in manual control tasks
p0269 A79-48013
Human operators in adversary tracking encounters
p0269 A79-48015
An extension of the quickened display for manual control
p0086 N79-15591
A comparison of motor submodels in the optimal control model
p0087 N79-15597
Proceedings, 13th Annual Conference on Manual Control
[NASA-CR-158107] p0114 N79-17475
The effects of deviate internal representations in the optimal model of the human operator
p0114 N79-17477
An approach to the multi-axis problem in manual control --- optimal pilot model
p0115 N79-17482
Use of the optimal control model in the design of motion cue experiments
p0118 N79-17510
A model for the pilot's use of motion cues in roll-axis tracking tasks
p0118 N79-17512
Combined discrete network-continuous control modeling of man-machine systems
p0260 N79-28879
Performance and workload analysis of inflight helicopter missions
[NLR-MP-77013-U] p0308 N79-32834
A brief overview of the theory and application of the optimal control model of the human operator
p0317 N79-33841

OPTIMIZATION
NT OPTIMAL CONTROL
NT TRAJECTORY OPTIMIZATION
Pilot-optimal augmentation of the air-to-air tracking task
[AIAA 79-1747] p0252 A79-45388

Adaptive optimization of exchange of gases in plants in a sealed phytotron p0313 N79-33806

OPTIMUM CONTROL
U OPTIMAL CONTROL

ORBITAL ASSEMBLY
ECLSS definition for a low cost space construction base --- Environmental Control Life Support Systems [ASME PAPER 78-ENAS-15] p0007 A79-12564
Health maintenance and health surveillance considerations for an SPS space construction base community [AAS PAPER 78-176] p0099 A79-21273
Manual alignment of structural components in space [AIAA PAPER 79-0535] p0129 A79-25855

ORBITAL SPACE STATIONS
NT LONG DURATION EXPOSURE FACILITY
NT ORBITAL WORKSHOPS
NT SALYUT SPACE STATION
NT SKYLAB 3
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/ p0303 A79-53486

ORBITAL WORKSHOPS
ECLSS definition for a low cost space construction base --- Environmental Control Life Support Systems [ASME PAPER 78-ENAS-15] p0007 A79-12564

ORBITS
NT SATELLITE ORBITS

ORGANIC CHEMISTRY
Organic geochemical studies on kerogen precursors in recently deposited algal mats and oozes p0001 A79-10419

ORGANIC COMPOUNDS
NT ACETIC ACID
NT ADENOSINES
NT AMINO ACIDS
NT FATS
NT FATTY ACIDS
NT GLUTAMINE
NT LEUCINE
NT NUCLEOTIDES
NT ORGANIC SULFUR COMPOUNDS
NT PEPTIDES
NT POLYNUCLEOTIDES
NT POLYPEPTIDES
NT PROTOPROTEINS
NT SEROTONIN
NT TRYPTOPHAN
On the reality of extraterrestrial biogenesis [IAF PAPER 78-A-51] p0003 A79-11344
Synthesis of organic compounds from carbon monoxide and water by UV photolysis p0099 A79-22077
Prebiotic condensation reactions using cyanamide p0203 A79-37932
The study of the origin of life - Results and prospects p0206 A79-37981
Abundance of organic compounds photochemically produced in the atmospheres of the Outer Planets p0210 A79-39075
Exobiology and the origin of life --- organic compounds in planetary atmospheres and interstellar matter [NASA-CR-157988] p0081 N79-14782
The utilisation of organic compounds by purple bacteria in the presence of light [BLL-RTS-11213] p0141 N79-18556
Clozapine metabolism in humans [BLL-RTS-10902] p0142 N79-18567

ORGANIC NITRATES
Nitrate fermentation in Clostridium perfringens and significance in metabolic evolution p0205 A79-37968

ORGANIC PHOSPHORUS COMPOUNDS
Reactions of methamidophos with mammalian cholinesterases [AD-A058683/4] p0051 N79-12698
Percutaneous absorption of toxic agents. Part 2: The nerve bases and some other toxic organophosphates. A survey of the literature. [PML-1978-9] p0123 N79-17542

ORGANIC SULFUR COMPOUNDS
Incorporation of sulphur in chemical evolution p0203 A79-37938

ORGANIC WASTES (FUEL CONVERSION)
Emergence of biotechnology [TID-28983] p0211 N79-24626

ORGANISMS
The organism and the habitation atmosphere [NASA-TM-75536] p0049 N79-12685

ORGANIZATIONS
NT EUROPEAN SPACE AGENCY

ORGANOMETALLIC COMPOUNDS
NT CHLOROPHYLLS
NT HEMOGLOBIN
NT OXYHEMOGLOBIN
Metal porphyrins in pre-Cambrian deposits as a probable evidence for early photosynthesis p0165 A79-30695

ORGANS
NT BLADDER
NT KIDNEYS
NT LIVER
NT LUNGS
NT PITUITARY GLAND
NT STOMACH
NT TESTES
New developments in ultrasonic imaging of the chest and other body organs [UCRL-80340-REV-1] p0018 N79-10735
DNA content of animal organs during space flight on Kosmos-690 satellite p0073 N79-14728
Effects of space flight on course of radiation lesions in rat lymphoid organs p0107 N79-16516
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite p0311 N79-33796

ORIENTATION
Vertical orientation of man during 5-day antiorthostatic hypokinesia (-4, -8 and -12 deg head down position) p0313 N79-33810

ORTHOSTATIC TOLERANCE
Special tests for astronaut selection - Study of cardiovascular reactions by the orthostatism test p0047 A79-15490
Cardiac and vascular components of the systemic response of blood circulation to orthostatic influence p0097 A79-20651
Hemodynamic indices under orthostatic and vestibular effects p0098 A79-20692
Self-regulation of cerebral circulation under orthostatic influences p0221 A79-36098
Blood pressure variability of the individual in orthostatic testing p0265 A79-47328
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/ [IAF PAPER 79-87] p0302 A79-53290
Compensatory reactions of the kidneys to orthostatic factors p0015 N79-10708
Distinguishing borderline hypertensives from normotensives: A clinical study of 300 aircrewmen p0027 N79-11699
Reproducibility of human cardiovascular responses to orthostatic stress p0030 N79-11720
Effects of hyperhydration on human endurance of orthostatic and LBNP tests p0072 N79-14721
Study report on combining diagnostic and therapeutic considerations with subsystem and whole-body simulation [NASA-CR-160231] p0213 N79-24644
Development of an hypothesis for simulating anti-orthostatic bed rest [NASA-CR-160200] p0217 N79-25717
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station p0243 N79-27819
Evaluation of circulatory reactions in the head to antiorthostatic position p0245 N79-27832

Control of vertical position after flights aboard the Salyut-4 orbital station
p0311 N79-33793
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
p0313 N79-33809

OSCILLATORS
NT CATHODE RAY TUBES
Evolution of enzyme function - The coupled oscillator theory
p0205 A79-37970

OSMOSIS
Effect of oxygen poisoning on the spectrum of lactate dehydrogenase isozymes of rabbit blood plasma
p0017 N79-10721
Effects of space flight factors on electrolyte composition of rat skeletal muscles
p0109 N79-16530

OSMOTIC PRESSURE
U OSMOSIS

OSTEOPOROSIS
Space osteoporosis - An electromagnetic hypothesis
p0165 A79-30666

OTOLARYNGOLOGY
Laryngeal problems in space travel
p0011 A79-12870
Aeromedical aspects of otolaryngology
p0136 A79-27562
Medical barofunction testing of aviators with otorhinolaryngologic disease
p0298 A79-52285

OTOLITH ORGANS
Biped stability considerations with vestibular models
p0066 A79-18287

OTOLOGY
Cases of probable Aero Otitis interna
p0183 A79-33194

OUTER PLANET SPACECRAFT
U OUTER PLANETS EXPLORERS

OUTER PLANETS EXPLORERS
Planetary protection guidelines for Outer Planet missions
p0005 A79-12511

OUTPUT
NT LASER OUTPUTS

OXIDATION
NT PHOTOOXIDATION
Cardiovascular studies of reducing and oxidizing agents
p0049 N79-12682
State of process of oxidation phosphorylation of liver mitochondria on exposure to an electric field
p0075 N79-14742
Evaluation of oxidizability of air in closed areas
p0313 N79-33808

OXIDATION-REDUCTION REACTIONS
Dependence of the functional activity of liver mitochondria on microwave radiation --- oxidative phosphorylation
p0075 N79-14741

OXIDES
NT CARBON DIOXIDE
NT CARBON MONOXIDE
NT CARBON SUBOXIDES
NT NITROGEN DIOXIDE
NT NITROGEN OXIDES
NT NITROGEN TETROXIDE
NT SULFUR DIOXIDES
NT SULFUR OXIDES

OXYGEN
NT HIGH PRESSURE OXYGEN
NT OZONE
Application of an isolated heart model to investigate blood-oxygen delivery
p0296 A79-51112
Morphological and biochemical effects of oxygen toxicity
[AD-A056778] p0018 N79-10734
The organism and the habitation atmosphere
[NASA-TM-75536] p0049 N79-12685
Environmental test and evaluation of a molecular sieve on-board oxygen generation system
[AD-A061531] p0125 N79-17559
Helium-oxygen mixture and the organism hyperbaric aspect
p0243 N79-27818
Toxicity of oxygen mixed with helium
p0245 N79-27829

OXYGEN BREATHING
Reproductive adaptation in Drosophila exposed to oxygen-enriched atmospheres
p0164 A79-30657
Glucose metabolism in rat lung during exposure to hyperbaric O2
p0221 A79-36047

OXYGEN CONSUMPTION
Blood volume and cardiorespiratory responses to lower body negative pressure
p0010 A79-12864
Effects of ozone inhalation on work performance and maximal oxygen uptake
p0133 A79-27103
Physical performance and peak aerobic power at different body temperatures
p0221 A79-36046
Circulatory response to arterial hyperoxia
p0221 A79-36048
Effects of glycogen depletion and work load on postexercise O2 consumption and blood lactate
p0277 A79-50903
The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
p0296 A79-51113
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
p0296 A79-51114
Frequency and amplitude analysis of the EMG during exercise on the bicycle ergometer
p0297 A79-52022
Time course of O2-pulse during various tests of aerobic power
p0297 A79-52024
Metabolic responses of ponies to treadmill exercise in hyperoxia
p0049 N79-12681
Computer program for calculation of oxygen uptake
[NASA-TM-78585] p0174 N79-21741
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
p0307 N79-32825

OXYGEN DEFICIENCY
U HYPOXIA

OXYGEN MASKS
Oral/nasal breathing systems in the year 2000
p0183 A79-33621
The objective evaluation of aircrew protective breathing equipment. III - Improved types of mask/goggles combinations. IV - Fullface masks and hoods suitable for flight attendant use
p0184 A79-33638
Improved headgear for fixed wing Navy aircrewmen
p0184 A79-33641
Oxygen equipment and rapid decompression studies
[AD-A070285] p0289 N79-31937

OXYGEN METABOLISM
Mechanisms of the effect of oxygen toxicity on the energy metabolism
p0160 A79-29275
The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations
p0300 A79-52894
Effects of intermittent magnetic field on activity of carbohydrate metabolism enzymes and oxygen uptake in testicular tissue
p0075 N79-14738
Compatibility test of oxygen exposures in the range of 2.2 to 2.8 bar absolute
[DLR-FB-78-10] p0280 N79-30925
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
p0307 N79-32825

OXYGEN PRODUCTION
Human compatibility testing of a 2-man molecular sieve oxygen generator
[AD-A058248] p0053 N79-12710
Medical science in Siberia: Oxygen exchange in the Far North
[NASA-TM-75391] p0211 N79-24630

OXYGEN REGULATORS
The dynamic oxygen-regulator test stand
[AD-A060978] p0125 N79-17560

OXYGEN SUPPLY EQUIPMENT
NT OXYGEN MASKS
Oxygen systems for Army helicopters
p0044 A79-14421
U.S. Navy development of an on-board oxygen generation /OBOG/ system
p0183 A79-33634
Molecular sieve oxygen generating system - The argon question /A brief review/ --- effects of 5 percent Ar in breathing gas
p0274 A79-49994
Human compatibility testing of a 2-man molecular sieve oxygen generator
[AD-A058248] p0053 N79-12710
US Navy development of an On-Board Oxygen Generation (OBOG) system
[AD-A063958] p0197 N79-24656
OXYGEN SYSTEMS
U OXYGEN SUPPLY EQUIPMENT
OXYGEN TENSION
NT HYPOXEMIA
Cerebral gas exchange in rats adapted to hypoxia during inspiration of oxygen-poor mixtures
p0097 A79-20623
Organ blood flow, cardiac output, arterial blood pressure, and vascular resistance in rats exposed to various oxygen pressures
p0135 A79-27557
Effects of chronic changes in hemoglobin-O_2 affinity in rats
p0185 A79-33808
The effect of hyperoxia on the oxygen tension of blood and cerebral tissue
p0208 A79-38146
Determination of cerebral and neck subcutaneous tissue PO_2 with 3 and 4 +Gz in M. mulatta
p0234 A79-43205
Oxygen affinity of blood in altitude Sherpas
p0268 A79-47854
The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia
p0296 A79-51116
Noninvasive estimation of bilirubin and hemoglobin oxygen saturation in the skin by reflection spectrophotometry
p0054 N79-13684
OXYGEN TOXICITY
U HYPEROXIA
OXYGENATION
Evaluation of fluoropolymer membranes in oxygenators
[PB-286698/6] p0112 N79-16547
Thermodynamic studies on the oxygenation and subunit association of human hemoglobin
p0142 N79-18576
Mathematical studies of oxygen transport to tissue
p0170 N79-20723
Increased hemoglobin and content of rat blood serum as a result of decreased resistance of erythrocyte membranes to hyperbaric oxygenation, and the protective effect of urea
p0193 N79-23637
Evaluation of oxidizability of air in closed areas
p0313 N79-33808
OXYHEMOGLOBIN
Oxygen affinity of blood in altitude Sherpas
p0268 A79-47854
Application of an isolated heart model to investigate blood-oxygen delivery
p0296 A79-51112
A molecular description of oxygen binding to hemoglobin
p0194 N79-23646
Mathematical modeling of arterial oxygen saturation and eye-level blood pressure during +G sub Z stress
p0286 N79-31916
OZONE
Response of the rat erythrocyte to ozone exposure
p0067 A79-18963
Effects of exercise, vitamin E, and ozone on pulmonary function and lipid peroxidation
p0067 A79-18965
Effects of ozone inhalation on work performance and maximal oxygen uptake
p0133 A79-27103
Pulmonary function and maximum exercise responses following acute ozone exposure
p0273 A79-49987
Auditory and visual sustained attention during ozone exposure
p0273 A79-49988
The impact of sulfur dioxide on vegetation: A sulfur dioxide-ozone response model
[PB-283604/7] p0049 N79-12686
The effects of ozone on human erythrocytes and phospholipid vesicles
p0049 N79-12687
The toxicology of ozone. A bibliography with abstracts
[NTIS/PS-78/1120/1] p0057 N79-13705
The effects of H_2SO_4 on men and H_2SO_4 and O_3 on laboratory animals
p0141 N79-18354
Effects of oxides on nitrogen, Carbon monoxide and photochemical oxidants on the ECG during exercise and on cardiopulmonary function
[PB-291595/7] p0177 N79-21763

P

PAIN
Vertebral pains in helicopter pilots --- symptomology and radiology
p0153 N79-19656
PAINTS
Risks from various products used in paint spraying
[BLL-RTS-11499] p0142 N79-18569
PALEONTOLOGY
A critical assessment of the origin of life
p0207 A79-37985
Evolution of the biosphere /2nd enlarged edition/ --- Russian book
p0270 A79-48310
PALLADIUM
Decreased activity of palladium catalyst during processing of excreta
p0016 N79-10716
PAPERS
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 59. Effects of nonionizing electromagnetic radiation
[JPRS-72956] p0171 N79-20732
PARACHUTE DESCENT
Development of a specialized head/face protective device for test parachuting operations
p0045 A79-14437
The electrocardiogram recorded by telemetry during a parachute jump, compared to a trace during stress tests - A preliminary study of 29 cases
p0256 A79-46600
Ejection problems and injuries - Their causes, effects and treatments, and suggestions for preventive measures
p0267 A79-47338
PARACHUTING
U PARACHUTE DESCENT
PARALLAX
A comparison of oculomotor and motion parallax cues of egocentric distance
p0305 A79-54253
PARAMAGNETIC RESONANCE
NT ELECTRON PARAMAGNETIC RESONANCE
PARAMECIA
Preliminary results of Cytos experiment flows in Salyut VI - Investigations of Paramecium aurelia
p0229 A79-41709
PARAMETERIZATION
Parameter estimation in a human operator describing function model for a two-dimensional tracking task
p0115 N79-17481
PARAMETERS
U INDPPENDENT VARIABLES
PARANASAL SINUSES
Medical barofunction testing of aviators with otorhinolaryngologic disease
p0298 A79-52285
PARATHYROID GLAND
Morphological distinctions of the rat thyroid and parathyroid following long-term space flights
p0246 N79-27835
PARTIAL PRESSURE
NT HYPOXEMIA
NT OXYGEN TENSION
Flight test evaluation of an RAF high altitude partial pressure protective assembly
[NASA-TM-72864] p0214 N79-24654

PARTICLE BEAMS
NT PROTON BEAMS
PARTICLE DIFFUSION
NT IONIC DIFFUSION
Particle deposition due to turbulent diffusion in the upper respiratory system p0270 A79-48251
PARTICLE INTERACTIONS
NT MOLECULAR INTERACTIONS
NT WEAK ENERGY INTERACTIONS
Pacific Northwest Laboratory report for 1977 to the DOE assistant secretary for environment. Part 2: Ecological sciences [PNL-2500-PT-2] p0053 N79-13677
PARTICLE SIZE DISTRIBUTION
The dependence of the CO2 removal efficiency of LiOH on humidity and mesh size --- in spacecraft life support systems [ASME PAPER 78-ENAS-5] p0006 A79-12554
PARTICLES
NT AEROSOLS
NT BETA PARTICLES
NT CATIONS
NT DROPS (LIQUIDS)
NT ELECTRONS
NT FAST NEUTRONS
NT FOG
NT LIGHT BEAMS
NT METAL IONS
PASSENGERS
A study of the available evidence on duration effects on comfort and task proficiency under vibration p0254 A79-46399
Effects of deceleration and rate of deceleration on live seated human subjects [PB-284653/3] p0057 N79-13702
PATHOGENESIS
Cyclic nucleotides and adaptation of the organism --- Russian Book p0133 A79-26500
Third Symposium on Motion Sickness p0313 N79-33814
PATHOLOGICAL EFFECTS
How does the saccadic eye movement controller adapt for pathological states p0046 A79-14961
Statistical studies of animal response data from USF toxicity screening test method p0066 A79-18305
Renal damage in mice following exposure to the pyrolysis products of polytetrafluoroethylene p0066 A79-18306
Two-week studies of survivors from exposures to pyrolysis gases p0066 A79-18307
Laser safety bioeffects research - Histopathology of retinal effects p0138 A79-28169
Extrapolation of pulsed light data in scanned displays --- laser radiation eye exposure limits p0138 A79-28170
Low level laser light effects --- on vision p0138 A79-28171
Pathophysiology of overloads: Bibliography of Soviet publications --- Russian book p0200 A79-36385
Some problems involved in using mathematical methods for evaluation of pathophysiological changes in the body p0192 N79-23628
Effect of impact accelerations on chemical resistance of rat erythrocytes p0313 N79-33811
PATHOLOGY
NT HUMAN PATHOLOGY
Incidence of cardiovascular problems among flying personnel and their evaluation p0182 A79-33186
PATIENTS
An illness-injury severity index p0050 N79-12688
PATTERN DISTRIBUTION
U DISTRIBUTION (PROPERTY)
PATTERN RECOGNITION
Discrimination of density and clustering on four versions of a stochastic display --- human performance of pattern recognition p0036 A79-13192
Useful visual field size for pattern perception p0129 A79-25098
Training of visual recognition p0160 A79-29250
The development of integrated multidimensional displays p0187 A79-34990
Stereo 3-D perception for a robot p0019 N79-10740
A relationship between eye movement patterns and performance in a precognitive tracking task p0116 N79-17490
Training effect of recognition of different alphabets of visual stimuli p0175 N79-21747
Estimation of aircraft target motion using pattern recognition orientation measurements p0177 N79-21764
Application of pattern recognition to ultrasonic tissue characterization p0194 N79-23647
Classification of amplitude-modulated noise patterns with extended practice [AD-A066703] p0222 N79-25756
Influence of light adaptation on dark adaptation time for pattern recognition tasks [FB-31] p0316 N79-33835
PATTERN REGISTRATION
Effects of stimulus onset and image motion on contrast sensitivity p0231 A79-42231
PAYLOADS
NT SPACE SHUTTLE PAYLOADS
PEARSON DISTRIBUTIONS
Estimation of the operating characteristics of item response categories, 3: The normal approach method and the Pearson system [AD-A056747] p0145 N79-18587
PEDOLOGY
U SOIL SCIENCE
PENETRATION
A general model for the transfer of vapour through clothed skin from liquid on and in clothing [AD-A071577] p0319 N79-33853
PEPTIDES
NT POLYPEPTIDES
Interaction between inositol hexaphosphate and carbobenzoxy peptide - A model for nucleic acid - Nonhistone chromosomal protein interaction p0100 A79-22082
Biologically active short-chain peptides [FOA-C-40063-C1] p0261 N79-29785
PERCEPTION
NT AUDITORY PERCEPTION
NT CONSCIOUSNESS
NT CRITICAL FLICKER FUSION
NT KINESTHESIA
NT MOTION PERCEPTION
NT PAIN
NT PROPRIOCEPTION
NT SENSORY PERCEPTION
NT SPACE PERCEPTION
NT TACTILE DISCRIMINATION
NT TASTE
NT VERTICAL PERCEPTION
NT VIBRATION PERCEPTION
NT VISUAL DISCRIMINATION
NT VISUAL PERCEPTION
The sensory systems --- Russian book on neurophysiology and biophysics research p0042 A79-14369
Shalit Perceptual Organisation and Reduction Questionnaire (SPORQ): The instrument, design, administration and scoring [FOA-C-55021-H6] p0249 N79-27859
Hemispheric asymmetry as related to pilot and radar intercept officer performance [AD-A068087] p0289 N79-31935
The information in aircraft accidents investigation p0291 N79-31947
PERFORMANCE
Performance evaluation of test dummies with flesh parts produced with substitute foaming compounds [PB-289951/6] p0179 N79-21776
PERFORMANCE PREDICTION
NT PREDICTION ANALYSIS TECHNIQUES
Psychophysiological forecasting of efficiency p0010 A79-12867

Task taxonomy - Two ignored issues --- criteria for task evaluation with respect to empirical data p0039 A79-13212
Application of performance model to assess aviator critical incidence p0063 A79-18209
Cross-validation of regression equations to predict performance in a pursuit tracking task p0064 A79-18222
Target-terrain classification and detection performance --- to assess aerial photos for tanks p0065 A79-18225
Detection of conflict states in air traffic control of airport zones p0166 A79-31181
Predictive validity of flight simulators as a function of simulator mot[illegible] p0181 A79-32627
Prediction of pilot reserve attention capacity during air-to-air target tracking p0116 N79-17488
A method to evaluate performance reliability of individual subjects in laboratory research applied to work settings [FAA-AM-78-37] p0123 N79-17547
Quantification and validation of percept-genetic defense mechanism. A hierarchical analysis of behavior of pilots under stress [FOA-C-55020-H6] p0124 N79-17555
Performance and workload analysis of inflight helicopter missions [NLR-MP-77013-U] p0308 N79-32834

PERFORMANCE TESTS
Effects of vibration on humans - Performance decrements and limits p0035 A79-13185
The application of computer aided evaluative techniques to system test and evaluation --- of fighter aircraft pilot performance p0036 A79-13190
Imagery interpreter performance in the comparison of subjective estimates of photographic image quality p0036 A79-13191
Quantifying operator preference during human factors test and evaluation --- in helicopter design p0062 A79-18202
System operability - Concept and measurement in test and evaluation --- man system compatibility indices in F-18 aircraft example p0062 A79-18204
Engineering test and evaluation during high G. Volume 3: Anti-G suits [AD-A059122] p0052 N79-12706
Safety evaluation tests of personal protective equipment for ordnance operations [AD-A058987] p0053 N79-12712
Proceedings of the 1977 Computerized Adaptive Testing Conference [AD-A060049] p0079 N79-14771

PERFUSION
U DIFFUSION

PERIODICITY (BIOLOGY)
U RHYTHM (BIOLOGY)

PERIPHERAL CIRCULATION
Circulatory response to arterial hyperoxia p0221 A79-36048

PERIPHERAL EQUIPMENT (COMPUTERS)
NT CONSOLES

PERIPHERAL VISION
Visual-vestibular interactions. I - Influence of peripheral vision on suppression of the vestibulo-ocular reflex and visual acuity p0135 A79-27552
The effects of carbon monoxide on dual-task performance p0161 A79-29716
The peripheral critical flicker frequency p0271 A79-49482
Latency of peripheral saccades p0278 A79-50987
Technique for simulating G-induced tunnel vision p0299 A79-52286
Visual and optical assessment of gas protective face masks p0152 N79-19642

PERMEABILITY
Mechanism of effects of microwaves on erythrocyte permeability for potassium and sodium ions p0075 N79-14743
Multiple tracer diffusion methods for the evaluation of cerebral capillary permeability and capillary blood flow rate in the rat p0169 N79-20712

PERMITTIVITY
An empirical formula for broad-band SAR calculations of prolate spheroidal models of humans and animals --- Specific Absorption Rate p0278 A79-51015

PERSIAN GULF
A biogeochemical study of the Abu Dhabi algal mats - A simplified ecosystem p0132 A79-26373

PERSONALITY
Vibration, performance, and personality --- vibration effects on human performance and psychological factors p0040 A79-13224
Masculinity, femininity, androgyny. What really works at work [AD-A061177] p0156 N79-19683
The psychologist in aircraft accident investigation --- pilot personality and performance p0291 N79-31946

PERSONALITY TESTS
Personality characteristics of pilots on EPPS, MPI and DOSEFU test. II - Comparison among pilots, non-pilot officers and aviation students p0210 A79-38822

PERSONNEL
NT AIR TRAFFIC CONTROLLERS (PERSONNEL)
NT AIRCRAFT PILOTS
NT ASTRONAUTS
NT COSMONAUTS
NT FLIGHT CREWS
NT FLIGHT SURGEONS
NT FLYING PERSONNEL
NT GROUND CREWS
NT NAVIGATORS
NT OPERATORS (PERSONNEL)
NT PILOTS (PERSONNEL)
NT SCIENTISTS
NT SPACECREWS
Subjective data in human reliability estimates p0046 A79-15398

PERSONNEL DEVELOPMENT
Ergonomics laboratory studies pilots' stability for command --- psychophysiological characteristics p0121 N79-17529

PERSONNEL MANAGEMENT
Coordinated crew performance in commercial aircraft operations p0040 A79-13219
The next decade - Development, training, supervision p0102 A79-23584
Aeromedical aspects of flying training with special reference to instructor pupil relationship p0201 A79-37139
Initial training and retraining of technical agricultural flight personnel p0227 A79-41166

PERSONNEL SELECTION
NT PILOT SELECTION
Psychological selection of payload astronauts p0047 A79-15488
Selection of astronaut candidates - Contribution of the exercise ECG and spirography p0047 A79-15489
Special tests for astronaut selection - Study of cardiovascular reactions by the orthostatism test p0047 A79-15490
Special test for astronaut selection - Tests of tolerance in the centrifuge and in flight p0047 A79-15491
Special tests for astronaut selection - Muscular exercise test p0047 A79-15492
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight [IAF PAPER 79-80] p0301 A79-53288
Preliminary selection of candidates for space flights [IAF PAPER 79-83] p0302 A79-53289
Selection, training, and health care of working specialists for Shuttle/Spacelab and future

space station missions
[IAF PAPER 79-99] p0303 A79-53297
Development of a performance criterion for air traffic personnel research through air traffic control simulation
[AD-A058082] p0031 N79-11727
Some variations on derivations by Primoff and their extensions
[PB-287298/4] p0112 N79-16548
A comparison of three models for determining test fairness
[AD-A066586] N79-25751
The development of the ATC selection battery: A new procedure to make maximum use of available information when correcting correlations for restriction in range due to selection
[FAA-AM-78-36] N79-25752
The selection of air traffic control specialists: Two studies demonstrating methods to insure an accurate validity coefficient for selection devices
[AD-A068581] p0281 N79-30932

PERSPIRATION
Regulation and efficiency of sweating in man /Mathematical modeling/
p0097 A79-20622
Thermal sweat rate response to an acute short exposure at a simulated altitude of 4,600 m
p0102 A79-23474
Thermoregulation in Macaca mulatta - A thermal balance study
p0133 A79-27101
Human skin wettedness and evaporative efficiency of sweating
p0162 A79-29726
Sweating responses during heat acclimation and moderate conditioning
p0185 A79-33803
Effect of rate of change in skin temperature on local sweating rate
p0268 A79-47853
Role of skin temperature in the control of sweating
p0277 A79-50907
Influence of skin temperature on sweating and aerobic performance during severe work
p0305 A79-54268
Mechanisms of activated carbon degradation by perspiration
[AD-A059872] p0080 N79-14777
A comparison of sweating responses in men and women before and after acclimation to humid heat
p0175 N79-21752

PESTICIDES
Comparative study of acetylcholinesterase inactivation in warm-blooded animals and insects with substituted vinyl phosphates
p0121 N79-17527

PETROLEUM PRODUCTS
NT DIESEL FUELS

PH
Quality of water reclaimed from urine as related to pH of initial product
p0313 N79-33807

PH FACTOR
Characterization of a novel extremely alkalophilic bacterium
p0004 A79-11950
Polyglutaraldehyde - A new reagent for coupling proteins to microspheres and for labeling cell-surface receptors
p0274 A79-50230
Effects of different values of urine pH during long-term storage on microflora composition
p0194 N79-23643

PHANTOM AIRCRAFT
NT F-4 AIRCRAFT

PHARMACOLOGY
Effects of fenfluramine administration on activity of the pituitary-adrenal system in the rat
p0005 A79-12474
Norepinephrine action on smooth muscle cells of coronary arteries
p0208 A79-38149
Study of pharmaceutical industrial problems
[NASA-CR-160267] p0248 N79-27852

PHASE TRANSFORMATIONS
NT FREEZING
Moving phase transitions in laser-irradiated biological tissue
p0228 A79-41478
Study of model membrane fusion using photon correlation spectroscopy --- lipid bilayer phase transition in cell membranes
p0147 N79-19591

PHONOCARDIOGRAMS
U PHONOCARDIOGRAPHY

PHONOCARDIOGRAPHY
NT ECHOCARDIOGRAPHY
A continuous wave, frequency modulated, ultrasonic device with auditory output for observing the heart
p0045 A79-14602

PHOSPHATES
NT ADENOSINES
NT NUCLEOTIDES
NT POLYNUCLEOTIDES
Interaction between inositol hexaphosphate and carbobenzoxy peptide - A model for nucleic acid - Nonhistone chromosomal protein interaction
p0100 A79-22082
Heat- and exercise-induced hyperthermia - Effects on high-energy phosphates
p0266 A79-47332
Comparative study of acetylcholinesterase inactivation in warm-blooded animals and insects with substituted vinyl phosphates
p0121 N79-17527

PHOSPHENES
Mechanism of the formation of phosphenes by X-rays
p0006 A79-12516

PHOSPHORUS
Effect of phosphorus supply on algal biomass in a turbid Missouri Reservoir
[PB-293183/0] p0243 N79-27816

PHOSPHORUS COMPOUNDS
NT ADENOSINES
NT NUCLEOTIDES
NT ORGANIC PHOSPHORUS COMPOUNDS
NT PHOSPHATES
NT POLYNUCLEOTIDES
A literature review-problem definition studies on selected toxic chemicals. Volume 2: Occupational health and safety aspects of phosphorus smoke compounds
[AD-A056019] p0025 N79-11685

PHOSPHORYLATION
Dependence of the functional activity of liver mitochondria on microwave radiation --- oxidative phosphorylation
p0075 N79-14741
State of process of oxidation phosphorylation of liver mitochondria on exposure to an electric field
p0075 N79-14742

PHOTOCHEMICAL REACTIONS
NT PHOTOLYSIS
NT PHOTOSYNTHESIS
Photochemical synthesis of amino acids from aqueous solutions of ethyl alcohol, ammonia/nitrogen under varied conditions
p0105 A79-24520
Abundance of organic compounds photochemically produced in the atmospheres of the Outer Planets
p0210 A79-39075
Photochemistry and enzymology of photosynthesis
[COO-3326-70] p0239 N79-26763
Energy transfer mechanisms in photobiological reactions
[COO-875-180] p0283 N79-31898

PHOTOCHEMISTRY
U PHOTOCHEMICAL REACTIONS

PHOTODETECTORS
U PHOTOMETERS

PHOTOGRAPH INTERPRETATION
U PHOTOINTERPRETATION

PHOTOGRAPHIC EQUIPMENT
NT TELEVISION CAMERAS

PHOTOGRAPHIC FILM
A numerical method of film analysis with differentiation --- curve fitting with harmonic analysis
p0061 A79-17585

PHOTOGRAPHY
NT AUTORADIOGRAPHY
NT CINEMATOGRAPHY
NT HOLOGRAPHY
NT MULTISPECTRAL PHOTOGRAPHY
NT STEREOPHOTOGRAPHY

PHOTOINTERPRETATION
Imagery interpreter performance in the comparison of subjective estimates of photographic image quality
p0036 A79-13191
Target-terrain classification and detection performance --- to assess aerial photos for tanks
p0065 A79-18225
Peripheral acuity and photointerpretation performance
p0068 A79-18996
The interpretation of visual motion --- Book
p0186 A79-34424
Evaluation of four target-identification training techniques
[AD-A061175] p0123 N79-17548

PHOTOLYSIS
Synthesis of organic compounds from carbon monoxide and water by UV photolysis
p0099 A79-22077
Photochemical transformations of the visual pigment rhodopsin
p0181 A79-32319

PHOTOMETERS
Aphotometer for determining the biomass of microorgan from the ATP content
[BLL-RTS-11456] p0141 N79-18555

PHOTOMETRY
NT SPECTROPHOTOMETRY
Photometric methods for the analysis of human kinematic responses to impact environments
[AD-A062006] p0157 N79-19690

PHOTON ABSORPTION
U ELECTROMAGNETIC ABSORPTION

PHOTON BEAMS
NT LIGHT BEAMS

PHOTONS
NT LIGHT BEAMS

PHOTOOXIDATION
Inverse assimilation - A general principle of evolution of planetary surfaces
p0207 A79-37989
Energy transfer mechanisms in photobiological reactions
[COO-875-180] p0283 N79-31898

PHOTOPEAK
Reciprocal interaction between the photopic and scotopic systems of the visual analyzer in man
p0296 A79-51327

PHOTORECEPTORS
Apparent saturation of blue-sensitive cones occurs at a color-opponent stage
p0002 A79-10474
Intrinsic noise, threshold sensitivity, and adaptation of the retina
p0043 A79-14373
Photochemical transformations of the visual pigment rhodopsin
p0181 A79-32319
Thermal activation of the visual transduction mechanism in retinal rods
p0230 A79-41746
Suprathreshold retinal damage due to single 6 picosecond 1060 nm laser light pulses
p0266 A79-47330

PHOTOREDUCTION
U PHOTOCHEMICAL REACTIONS

PHOTOSENSITIVITY
NT LIGHT ADAPTATION
Deductive derivation of a mathematical model for spectral sensitivity of the human organ of sight. I, II
p0166 A79-31178
Nonlinear optical susceptibility of the human eye to IR radiation in the 800 to 1355 micron range
p0188 A79-35363
Origin of neuron responses of the superior colliculus to light flashes
p0233 A79-42294
Light-driven solute transport in Halobacterium halobium
p0270 A79-49194
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
p0301 A79-53163
Cerebral hemodynamics and visual analyzer function following exposure to bright light
p0109 N79-16525

PHOTOSYNTHESIS
In vitro duplication of the primary light-induced charge separation in purple photosynthetic bacteria
p0131 A79-26100
The response of selected terrestrial organisms to the Martian environment - A modeling study
p0136 A79-27928
Metal porphyrins in pre-Cambrian deposits as a probable evidence for early photosynthesis
p0165 A79-30695
Evolution of early life inferred from protein and ribonucleic acid sequences
p0206 A79-37980
Inverse assimilation - A general principle of evolution of planetary surfaces
p0207 A79-37989
A proposal concerning the origin of life on the planet earth
p0253 A79-45641
Photosynthethic carbon reduction by seagrasses exposed to ultraviolet B radiation
[NASA-CR-160144] p0175 N79-21742
Photochemistry and enzymology of photosynthesis
[COO-3326-70] p0239 N79-26763
Applications of chlorophyll fluorescence transient measurements to the functional analysis of photosynthetic processes
p0243 N79-27813
Adaptive optimization of exchange of gases in plants in a sealed phytotron
p0313 N79-33806

PHOTOTHERMOTROPISM
U TEMPERATURE EFFECTS

PHUGOID OSCILLATIONS
U OSCILLATORS
U PITCH (INCLINATION)

PHYSICAL ENDURANCE
U PHYSICAL FITNESS

PHYSICAL EXAMINATIONS
Aviation-medicine appraisal as part of the fitness regulations in transportation
p0129 A79-25373
Automatic audiometry in the practice of flight-personnel examination
p0295 A79-51084
The role of physical examinations and education in prospective medicine
p0026 N79-11694
Difficulties posed by left axis deviation in the evaluation of fliers, and their relations to the concept of left anterior hemiblock
p0029 N79-11714
Cardiac conduction and aptitude problem of fliers. The benefits of endocavital recording of the His bundles
p0030 N79-11716
The advantages of ultrasonic echocardiography in the cardiological evaluation of fliers
p0030 N79-11718
Prospective medicine opportunities in aerospace medicine
p0171 N79-20730
Specific findings in cardiology and pulmonary function with special emphasis on assessment criteria for flying
p0171 N79-20731

PHYSICAL EXERCISE
Measurement of skin temperatures of active subjects by wireless telemetry
p0011 A79-12872
Selection of astronaut candidates - Contribution of the exercise ECG and spirography
p0047 A79-15489
Special tests for astronaut selection - Muscular exercise test
p0047 A79-15492
Exercise ventilation correlates positively with ventilatory chemoresponsiveness
p0066 A79-18954
Exercise performance and hemodynamics during dietary potassium depletion in dogs
p0067 A79-18959
Effect of exercise on collateral development in dogs with normal coronary arteries
p0067 A79-18960
Phosphorylase a in human skeletal muscle during exercise and electrical stimulation
p0067 A79-18962

Effects of exercise, vitamin E, and ozone on pulmonary function and lipid peroxidation p0067 A79-18965

Effect of physical conditioning on cardiac mitochondrial function p0068 A79-18966

Effect of water and electrolyte replacement during exercise in the heat on biochemical indices of stress and performance p0127 A79-24629

Caloric and exercise requirements of space flight - Biostereometric results from Skylab p0128 A79-24637

The effects of different levels of heat production induced by diathermy and eccentric work on thermoregulation during exercise at a given skin temperature p0128 A79-24698

CO2 and exercise tidal volume p0133 A79-27104

Mechanics of the regulation of the respiratory system in man p0160 A79-29258

Plasma volume and electrolyte shifts with heavy exercise in sitting and supine positions p0161 A79-29336

Effect of sodium and calcium ingestion on thermoregulation during exercise in man p0163 A79-30624

Sweating responses during heat acclimation and moderate conditioning p0185 A79-33803

Control of skin blood flow during exercise - Thermal and nonthermal factors p0185 A79-33807

Physical performance and peak aerobic power at different body temperatures p0221 A79-36046

Anaerobic threshold alterations caused by endurance training in middle-aged men p0227 A79-41184

Response of women mountaineers to maximal exercise during hypoxia p0234 A79-43201

Limb blood flow - Rest and heavy exercise in sitting and supine positions in man p0235 A79-43208

Temperature changes during exercise measured by thermography p0235 A79-43209

Effect of physical training at moderate altitude /1850 m/ on hypoxic tolerance p0235 A79-43210

Influence of exercise and CO2 on breathing pattern of normal man p0237 A79-43704

Effects of endurance training on left ventricular dimensions in healthy men p0237 A79-43706

The evolutionary pattern of exercise-induced ST segment depression p0251 A79-44166

Hyperthermia and exercise --- plasma fluid and electrolyte effects on human thermoregulation p0252 A79-44775

Mechanical efficiency of fast- and slow-twitch muscle fibers in man during cycling p0268 A79-47852

Cross-adaptive effects of cold, hypoxia, or physical training on decompression sickness in mice p0268 A79-47855

Deconditioning-induced exercise responses as influenced by heat acclimation p0273 A79-49985

Pulmonary function and maximum exercise responses following acute ozone exposure p0273 A79-49987

Prediction of body temperatures during exercise in flying clothing p0273 A79-49989

Effects of glycogen depletion and work load on postexercise O2 consumption and blood lactate p0277 A79-50903

Frequency and amplitude analysis of the EMG during exercise on the bicycle ergometer p0297 A79-52022

Metabolic adrenergic changes during submaximal exercise and in the recovery period in man p0305 A79-54267

Effects of endogenous factors on the process of gas bubble formation in the body related to decompression p0015 N79-10713

Mechanics of breathing during graded exercise measured with the bodyplethysmograph p0029 N79-11709

Measuring systolic time intervals at rest and under stress by external methods. Advantages in the evaluation of fliers p0030 N79-11717

Metabolic responses of ponies to treadmill exercise in hyperoxia p0049 N79-12681

Isokinetic exercise: A review of the literature [NASA-CR-151841] p0051 N79-12695

Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body p0073 N79-14725

Evidence for the neural regulation of respiration During low intensity exercise in man p0144 N79-18578

Effects of physical conditioning and electric stimulation on metabolic processes in the soleus muscle and structure thereof in hypokinetic man p0192 N79-23634

External respiration and gas exchange reactions to exercise during rotation of man on a short-radius centrifuge p0193 N79-23639

The influence of various physiological responses on ratings of perceived exertion before and after training p0194 N79-23649

Evaluation of exercise-respiratory system modifications and preliminary respiratory-circulatory system integration scheme [NASA-CR-160221] p0212 N79-24639

Aortic blood flow velocity during exercise in man p0216 N79-25710

The influence of exercise on bone atrophy [NASA-CR-160196] p0216 N79-25714

User's instructions for the high speed version of the cardiovascular exercise model [NASA-CR-160211] p0218 N79-25724

Evaluation of exercise-respiratory system modifications and integration schemes for physiological systems [NASA-CR-160223] p0219 N79-25733

The effects of dehydration on peripheral cooling [AD-A065332] p0220 N79-25745

Stress management: A comparison of educational, aerobic and autosuggestive approaches p0260 N79-28875

Possibility of improving assessment of cardio-pulmonary function by submaximal exercise on a bicycle ergometer [BLL RTS-11657] p0279 N79-30918

PHYSICAL FACTORS

Effect of impermeable clothing and respirator on work performance. Part 1: Laboratory studies [SAND-77-2132] p0034 N79-11748

PHYSICAL FITNESS

Influences of physical conditioning and deconditioning on coronary vasculature of dogs p0067 A79-18955

Pulmonary blood volume and interventricular circulation time in physically trained and untrained subjects p0128 A79-24700

Effects of endurance training on left ventricular dimensions in healthy men p0237 A79-43706

Follow-up and transversal study of vital capacity and FEV sub values among personnel of the Belgian Army forces p0028 N79-11706

Coronary atherosclerosis and fitness for flying p0029 N79-11711

Cardiological findings in 115 pilots: Diagnoses and assessment of their flying fitness p0030 N79-11721

Cardiovascular fitness of pilots of transport aircraft p0031 N79-11726

Rehabilitation measures used to restore physical fitness of man after long-term restriction of

movement
p0110 N79-16534

An investigation to determine the effect of physical conditioning upon fibrinolytic reactivity in normal young men
p0110 N79-16536

Cardiac adaptation to endurance training: Determined by echocardiography and electrocardiography
p0194 N79-23648

Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
p0313 N79-33809

The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces
[AD-A069865] p0316 N79-33829

PHYSICAL WORK

Temperature effect of muscular work in the white rat during hypoxia
p0097 A79-20654

The effects of different levels of heat production induced by diathermy and eccentric work on thermoregulation during exercise at a given skin temperature
p0128 A79-24698

Changes in the circadian rhythm of performance and mood in healthy young men exposed to prolonged, heavy physical work, sleep deprivation, and caloric deficit
p0234 A79-43202

Mechanical efficiency of fast- and slow-twitch muscle fibers in man during cycling
p0268 A79-47852

Effects of glycogen depletion and work load on postexercise O2 consumption and blood lactate
p0277 A79-50903

Influence of skin temperature on sweating and aerobic performance during severe work
p0305 A79-54268

The influence of various physiological responses on ratings of perceived exertion before and after training
p0194 N79-23649

A stochastic model of muscle fatigue in frequent strenuous work cycles
p0261 N79-29789

PHYSIOCHEMISTRY

Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
p0305 A79-54267

PHYSIOLOGICAL ACCELERATION

Positive pressure breathing as a protective technique in +Gz acceleration
p0201 A79-37132

PHYSIOLOGICAL DEFENSES

Cyclic nucleotides and adaptation of the organism --- Russian Book
p0133 A79-26500

Increased survival in experimental dog heatstroke after reduction of gut flora
p0266 A79-47335

PHYSIOLOGICAL EFFECTS

NT HEMODYNAMIC RESPONSES

NT PHYSIOLOGICAL RESPONSES

The European life sciences experiments onboard the first Spacelab mission
[ASME PAPER 78-ENAS-24] p0007 A79-12573

Effect of decompression per se on nitrogen elimination
p0067 A79-18964

Effect of physical conditioning on cardiac mitochondrial function
p0068 A79-18966

Effect of alcohol and marijuana on eye movements
p0101 A79-23469

Modeling heat transfer through human skin subjected to high external temperatures
p0102 A79-23782

Effects of brief exposure of domestic fowl to very intense acceleration fields
p0127 A79-24631

Effects of altitude and two decongestant-antihistamine preparations on physiological functions and performance
p0127 A79-24635

Physiological aspects of flight --- Book
p0134 A79-27298

Laser safety bioeffects research - Histopathology of retinal effects
p0138 A79-28169

Mechanisms of the effect of oxygen toxicity on the energy metabolism
p0160 A79-29275

Conjoint effect of physical stress and noise stress on information processing performance and cardiac response
p0161 A79-29715

Biodynamic effects of canopy loss in the TF-15 aircraft
p0163 A79-30651

Spaceflight and bone turnover - Correlation with a new rat model of weightlessness
p0182 A79-33049

Cardiac changes during behavioral stress in dogs
p0200 A79-36575

Physiological effect of high, sustained +Gz forces on man
p0229 A79-41711

Prophylactic effects of intermittent acceleration against physiological deconditioning in simulated weightlessness
p0229 A79-41712

Influence of the ambient acceleration field upon acute acceleration tolerance in chickens
p0230 A79-41715

Thermal bounds to the time of stay of human beings in enclosures
p0231 A79-41770

Retinal site of transient tritanopia
p0256 A79-46623

The importance of light, postural and social cues in the regulation of the plasma cortisol rhythm in man
p0267 A79-47398

Comparison of physiological effects of head-down tilting and immersion on the human body
p0298 A79-52279

Space biology and aerospace medicine, vol. 12, no. 5, 1978
[JPRS-72115] p0013 N79-10698

Cardiac arrhythmia following postimmersion +G sub z accelerations
p0015 N79-10710

The effects of carbon monoxide and cyanide on the brain
p0024 N79-11682

Anthropometric changes in weightlessness
p0032 N79-11735

Effect of impermeable clothing and respirator on work performance. Part 1: Laboratory studies
[SAND-77-2132] p0034 N79-11748

Paul Bert
[NASA-TM-75599] p0055 N79-13687

The effect of Nap-of-the-Earth (NOE) helicopter flying on pilot blood and urine biochemicals
[AD-A055204] p0055 N79-13693

The interaction of carbon monoxide and altitude on aviator performance: Pathophysiology of exposure to carbon monoxide
[AD-A055212] p0056 N79-13694

Effect of intermittent hypoxia on functional activity of peripheral blood neutrophils
p0074 N79-14732

Chemicals in environment affect man's physiology
p0077 N79-14754

The physiological significance of light for human beings
[RAE-LIB-TRANS-1976] p0077 N79-14757

Investigations into the importance of the direction of centrifugal forces acting on the human body
[RAE-LIB-TRANS-1945] p0077 N79-14758

Evaluation of British and Canadian conductive rubber heating elements for handwear: Preliminary report
[AD-A052826] p0093 N79-15637

Development opportunities in the space environment
p0095 N79-15897

Effects of prolonged unidirectional shift of sleeping-waking cycle on physiological functions, mental productivity and sleep of man
p0109 N79-16526

The effects of the pollutant, sodium cyanide, on the morphology and physiology of oedogonium cardiacum
p0147 N79-19028

Protective approaches in the moderation of the
physiological effects of extreme ambient
conditions in helicopter operations
p0149 N79-19618
Backache in UH-1D helicopter crews
p0149 N79-19620
Implementation of a divisional aviation program to
decrease flight crew fatigue
p0150 N79-19624
Disorientation in Royal Naval helicopter pilots
p0152 N79-19648
Human circadian physiology: Internal organization
of temperature, sleep-wake and neuroendocrine
rhythms monitored in an environment free of time
cues
p0154 N79-19670
Translations on USSR science and technology:
Biomedical and behavioral sciences, no. 59.
Effects of nonionizing electromagnetic radiation
[JPRS-72956] p0171 N79-20732
Decrease in the functional abilities of the heart
as a result of exposure of an organism to an
electromagnetic field of industrial frequency
p0172 N79-20733
Effects of oxides on nitrogen, Carbon monoxide and
photochemical oxidants on the ECG during
exercise and on cardiopulmonary function
[PB-291595/7] p0177 N79-21763
Evaluation of toxic effects of organic
contaminants in recycled water
[PB-291379/6] p0190 N79-22760
Some problems involved in using mathematical
methods for evaluation of pathophysiological
changes in the body
p0192 N79-23628
Use of a mathematical model of erythropoiesis for
evaluation of effects of space flight factors
p0192 N79-23630
The adrenosympathetic system in the presence of
traumatic shock during simulation of effects of
weightlessness on the human body
p0192 N79-23633
Cardiac adaptation to endurance training:
Determined by echocardiography and
electrocardiography
p0194 N79-23648
The effects of active and passive heat
acclimatization procedures on the
cardiovascular, thermoregulatory, and sweat rate
responses to work in the heat in male humans
p0195 N79-23651
Survival and protection of aircrew in the event of
accidental immersion in cold water
[AGARD-AG-211(ENG)] p0196 N79-23661
Physical and mental working environment in a
terminal based computer system
[BLL-RTS-11634] p0197 N79-23665
Evaluation of exercise-respiratory system
modifications and preliminary
respiratory-circulatory system integration scheme
[NASA-CR-160221] p0212 N79-24639
Effects of heavy metals especially selenium,
vanadium and zirconium on movement, growth and
survival of certain animal aquatic life
[PB-292563/4] p0197 N79-25706
A prioritized set of physiological measurements
for future spaceflight experiments
[NASA-CR-160202] p0217 N79-25719
Physiological effects of a military training
program on males and females
[AD-A062936] p0220 N79-25744
A porcine bioassay study of the physiological
effects of fiber and dye degradation products
(FDP) on burn wound healing
[AD-A066990] N79-25748
Physiological effects of a high soybean protein
diet in man
p0240 N79-26777
Possibilities of preventing adverse reactions in
simulating the acute period of adaptation to
weightlessness
p0244 N79-27825
Biologically active short-chain peptides
[FDA-C-80063-C1] p0261 N79-29785
Compatibility test of oxygen exposures in the
range of 2.2 to 2.8 bar absolute
[DLR-FB-78-10] p0280 N79-30925
Effects of propranolol on Time of Useful Function
(TUF) in rats --- tolerance to rapid decompression
[AD-A068535/4] p0283 N79-31896
Composition of cerebral fluids in goats adapted to
high altitude
[AD-A070142] p0310 N79-33788
Space Biology and Aerospace Medicine, no. 4, 1979
[JPRS-74330] p0310 N79-33789
Control of vertical position after flights aboard
the Salyut-4 orbital station
p0311 N79-33793
Electrolyte composition of rat blood plasma and
skeletal muscles after flight aboard the
Cosmos-690 biosatellite
p0311 N79-33795
Influence of pressure chamber conditions on
adrenocortical function in man (according to
results of assaying blood plasma
11-hydroxycorticosteroids)
p0311 N79-33798
Distinctions of influence of the reticular
formation of the midbrain on the heart and
respiration with exposure to centripetal
accelerations
p0312 N79-33800
Significance of the vibration component to the
deleterious effect of impact accelerations
p0312 N79-33801
Effect of restricted activity on vestibular function
p0312 N79-33802
Fundamental biophysical aspects of decompression
sickness
[AD-A069998] p0315 N79-33827
Optimal methods for physiologic research on clothing
[AD-A071855] p0319 N79-33852
PHYSIOLOGICAL FACTORS
NT PHYSICAL FACTORS
Physiological biorhythm as a correlate of pilot
error accidents and incidents
p0065 A79-18228
Physiologic and performance measurements in
simulated airborne combined stress environments
p0202 A79-37710
The physiologist's view of sensory illusions
p0255 A79-46597
Physiologicohygienic and ergonomic aspects of
Salyut 6 cosmonauts extravehicular activity /EVA/
p0303 A79-53486
Effects of space flight on plasma and glandular
concentrations of pituitary hormones --- COSMOS
782 satellite
p0021 N79-11664
A system of training in aviation physiology and
human factors for Army and Navy helicopter aircrew
p0151 N79-19635
A methodology for conducting human factors
evaluations of vehicles in operational field tests
[AD-A061808] p0157 N79-19691
PHYSIOLOGICAL RESPONSES
NT HEMODYNAMIC RESPONSES
The responses of frogs to vestibular and visual
stimulation in weightlessness
p0006 A79-12513
An apparatus for studying electroretinographic
responses under conditions of space flight
p0006 A79-12517
Physiological requirements for design of
environmental control systems - Control of heat
stress in high-performance aircraft
[ASME PAPER 78-ENAS-22] p0007 A79-12571
Sustained operations and sleep deprivation -
Effects on indices of stress
p0009 A79-12859
Blood volume and cardiorespiratory responses to
lower body negative pressure
p0010 A79-12864
Studies on the erythron and the ferrokinetic
responses in beagles adapted to hypergravity
p0010 A79-12869
Computer simulation of thermoregulatory responses
to heat stress - A future work design and
training tool
p0037 A79-13196
Simulation study on time series of heart responses
p0037 A79-13197
Effects of information processing requirements on
reaction time of the eye
p0064 A79-18219
Exercise ventilation correlates positively with
ventilatory chemoresponsiveness
p0066 A79-18954

Effect of exercise on collateral development in dogs with normal coronary arteries
p0067 A79-18960

Effects of exercise, vitamin E, and ozone on pulmonary function and lipid peroxidation
p0067 A79-18965

Distribution of pulmonary ventilation and perfusion during short periods of weightlessness
p0068 A79-18967

Collision avoidance response stereotypes in pilots and nonpilots
p0068 A79-18995

Structure of biorhythms as one of the criteria for physiological adaptability of the human organism
p0097 A79-20653

Eye movements and symmetry - Foundations for a quantitative analysis of eye movements as they depend on the structure of the perception field --- German thesis
p0098 A79-20756

Responses of pial arterioles after prolonged hypercapnia and hypoxia in the awake rabbit
p0101 A79-23075

Mitral prolapse and acceleration --- in aircraft pilots
p0103 A79-23951

Cardiac reactions in tests on the wearing of the Yankee Escape System harness during minus G accelerations in the z direction
p0103 A79-23953

Automatic control of physiological functions of the human organism in pathology --- Russian book
p0132 A79-26350

Weight control and restraint of laboratory rats
p0133 A79-26584

Model of human heat exchange and identification of its parameters Physiological studies and mathematical modeling
p0159 A79-28739

Tissue gas and blood analyses of human subjects breathing 80% argon and 20% oxygen
p0164 A79-30655

Mechanical vs. ischemic mechanisms for decompression sickness
p0164 A79-30656

Responses of high altitude natives to a standard cold test at sea level
p0164 A79-30658

Oculogravic illusion in response to straight-ahead acceleration of a CF-104 aircraft
p0164 A79-30660

Cardiac response to whole-body heating
p0165 A79-30661

Paradoxical reaction of some intracellular antioxidative defense mechanisms during adaptation of the organism to hypoxia
p0165 A79-30696

Process of search control of coordinated movement in man
p0166 A79-30701

The development of laser exposure limits
p0181 A79-32320

Ageing and flying fitness
p0182 A79-33190

Nystagmographic characterization of responses to rotation of persons with different vestibular-vegetative stability
p0188 A79-35122

Immunophysiological aspects of man's adaptation to highland
p0188 A79-35123

Evaluation of physiological indices during preflight medical examination of pilots
p0188 A79-35138

Microwave apexcardiography
p0231 A79-41848

Origin of neuron responses of the superior colliculus to light flashes
p0233 A79-42294

Enchancement of luminance flicker by color-opponent mechanisms
p0252 A79-44582

Hyperthermia and exercise --- plasma fluid and electrolyte effects on human thermoregulation
p0252 A79-44775

Using color substitution pupil response to expose chromatic mechanisms
p0265 A79-47116

Particle deposition due to turbulent diffusion in the upper respiratory system
p0270 A79-48251

Effects of glycogen depletion and work load on postexercise O2 consumption and blood lactate
p0277 A79-50903

Responses of conscious rabbits to CO2 at ambient temperatures of 5, 20, and 35 C
p0277 A79-50904

The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
p0296 A79-51113

The physiological role of surface-active substances in the lung
p0296 A79-51117

Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] p0301 A79-53286

Ultrastructural development of the vestibular system of frog larvae in 0g simulation
[IAF PAPER 79-78] p0301 A79-53287

Eye torsion in response to a tilted visual stimulus
p0305 A79-54254

Clinical and morphological studies of people in the course of long-term hypokinesia and subsequent readaptation
p0015 N79-10709

Characteristics of vestibular nystagmus in rats
p0016 N79-10714

A method of evaluating the pupillary reaction to vestibular stimuli
p0016 N79-10717

Reproducibility of human cardiovascular responses to orthostatic stress
p0030 N79-11720

Modeling of visual-vestibular interaction and the fast components of nystagmus
p0050 N79-12692

Physiological responses of women to simulated weightlessness: A review of the first female bed-rest study
[NASA-SP-430] p0054 N79-13686

Biological effects of nonionizing electromagnetic radiation. Volume 2, number 4: A digest of current literature
[AD-A055569] p0055 N79-13689

Space biology and aerospace medicine, vol. 12, no. 6
[JPRS-72487] p0072 N79-14716

Dynamic medical monitoring of flight crews in the course of long-term flights
p0072 N79-14719

Principal results of experiment with mammals onboard the Kosmos-782 biosatellite
p0073 N79-14726

Space biology and aerospace medicine, volume 13, no. 1, 1979
[JPRS-72826] p0107 N79-16514

Antiorthostatic hypokinesia as an approximate model of weightlessness
p0108 N79-16520

Bioelectrical activity of the brain during 49-day antiorthostatic hypokinesia in individuals with early signs of vegetovascular dysfunction
p0108 N79-16521

Heart rate: Physiological characteristics and quantification methods for use in behavioral studies
[CSIR-SR-PE 3-276] p0121 N79-17531

A comparison of the physiological responses in young men and women to heat and cold stress
[AD-A061024] p0155 N79-19675

The influence of various physiological responses on ratings of perceived exertion before and after training
p0194 N79-23649

Design specification for the whole-body algorithm
[NASA-CR-160226] p0212 N79-24641

Systems identification and application systems development for monitoring the physiological and health status of crewmen in space
[NASA-CR-160235] p0212 N79-24642

Study report on combining diagnostic and therapeutic considerations with subsystem and whole-body simulation
[NASA-CR-160231] p0213 N79-24644

A prioritized set of physiological measurements for future spaceflight experiments
[NASA-CR-160202] p0217 N79-25719

User's instructions for the whole-body algorithms
[NASA-CR-160233] p0219 N79-25735
The validation of biodynamic models
p0286 N79-31914
Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
p0313 N79-33813

PHYSIOLOGICAL TELEMETRY
U BIOTELEMETRY

PHYSIOLOGICAL TESTS
NT BODY SWAY TEST
NT EAR PRESSURE TEST
NT ELECTRONYSTAGMOGRAPHY
NT VESTIBULAR TESTS
Motion sickness susceptibility - A retrospective comparison of laboratory tests
p0010 A79-12861
Selection of astronaut candidates - Contribution of the exercise ECG and spirography
p0047 A79-15489
Special tests for astronaut selection - Study of cardiovascular reactions by the orthostatism test
p0047 A79-15490
Special test for astronaut selection - Tests of tolerance in the centrifuge and in flight
p0047 A79-15491
Special tests for astronaut selection - Muscular exercise test
p0047 A79-15492
Phosphorylase a in human skeletal muscle during exercise and electrical stimulation
p0067 A79-18962
Evoked potential correlates of display image quality
p0068 A79-18998
Regional blood supply under hypoxic hypoxia
p0097 A79-20652
Interaction between hypothalamic and bulbar levels of regulating blood circulation
p0098 A79-21242
The time parameter in exposures to microwave radiation --- rodent experiments on damage and recovery
p0105 A79-24419
CO2 and exercise tidal volume
p0133 A79-27104
Individual differences in hypoxic responses at high altitudes
p0159 A79-28738
Mechanics of the regulation of the respiratory system in man
p0160 A79-29258
Effect of paradoxical sleep deprivation on the acquisition of sound discrimination
p0167 A79-31988
Changes in the bioelectrical activity of some cerebral structures in rabbits exposed to microwaves
p0188 A79-35917
Dynamics of the impulse activity of the neurons in the posterior hypothalamus upon exposure to microwaves
p0188 A79-35918
Predictive accuracy of Q-X/Q-T ratio, Q-Tc interval, S-T depression and R wave amplitude during stress testing --- heart pathology
p0225 A79-40464
Anaerobic threshold alterations caused by endurance training in middle-aged men
p0227 A79-41184
Erythropoietic effects of space flight
p0231 A79-42193
Some forms of adaptation to extreme influences in the blood system
p0256 A79-46679
Epiphysis of rats under the combined action of hypoxia, hypercapnia and cooling
p0256 A79-46680
Reproducibility of +Gz tolerance testing
p0267 A79-47337
Design, fabrication and utility of a flight oriented performance test
p0271 A79-49728
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
p0273 A79-49984
Pulmonary function and maximum exercise responses following acute ozone exposure
p0273 A79-49987
Prediction of body temperatures during exercise in flying clothing
p0273 A79-49989
Biomechanical properties of muscles and the efficiency of movement
p0276 A79-50652
Dynamical characteristics of visual functions
p0276 A79-50656
Forms of oculomotor activity under conditions of positive visual feedback
p0276 A79-50657
Auditory evoked potentials during short-term auditory stimulation
p0277 A79-50659
Time parameter in microwave irradiation --- rodent experiments on damage and recovery
p0277 A79-50694
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
p0296 A79-51114
The effect of the reduction of inspired gas density on external respiration
p0296 A79-51115
A cinematographic technique for investigating some aspects of visual recognition
p0300 A79-53067
Continuous long-duration recording of the heart rate by means of a noncontact technique
p0300 A79-53068
Changes in critical duration during dark-adaptation
p0304 A79-54252
Standardized examination methods in ergometry
p0029 N79-11710
Detection of coronary artery disease in apparently healthy, asymptomatic aircrew members using thallium-201 myocardial perfusion scintigraphy
p0029 N79-11712
Cardiological findings in 115 pilots: Diagnoses and assessment of their flying fitness
p0030 N79-11721
Normal and pathological cardiovascular findings in applicants to the Air Force service
p0031 N79-11722
Stability of circadian system of the body
p0073 N79-14723
Comparative experiments on performance and fatigue effects on pilots using tracking tests and physiological measurement parameters
[RAE-LIB-TRANS-1971] p0080 N79-14774
Ergometric tests in expert medical certification of flight personnel
p0109 N79-16527
Results of a 64Cu-loading test applied to patients with an inherited defect in their Cu-metabolism (Menkes' disease)
[IRI-133-77-04] p0240 N79-26774
The oral 64Cu-loading test: Applications and problems
[IRI-133-78-02] p0240 N79-26775
Effects of acute noise traumata on whole-nerve and single-unit activity
[IZF-1978-23] p0308 N79-32829
Effects of amphetamine on response selection and response execution processes in choice reaction tasks
[IZF-1978-8] p0309 N79-32839

PHYSIOLOGY
NT ELECTROPHYSIOLOGY
NT HEMATOPOIETIC SYSTEM
NT NEUROPHYSIOLOGY
NT PSYCHOPHYSIOLOGY
NT RESPIRATORY PHYSIOLOGY
Relations between research and instruction in physiology and aerospace ergonomy in the military health services
p0104 A79-23960
Ecological physiology of animals. I - General ecological physiology and physiology of adaptations --- Russian book
p0275 A79-50474
Aircrew inflight physiological data acquisition system 2
[AD-A055638] p0055 N79-13690
Information on the comparative physiology of digestive enzymes
[BLL-RTS-11203] p0142 N79-18572
Application of numerical methods to physiological flows --- Navier-stokes equation, prosthetic

heart valves and vasoconstriction p0146 N79-18945
Physiological system integrations with emphasis on the respiratory-cardiovascular system [NASA-CR-160230] p0213 N79-24643
The application of sensitivity analysis to models of large scale physiological systems [NASA-CR-160228] p0213 N79-24645
Study report on interfacing major physiological subsystem models: An approach for developing a whole-body algorithm [NASA-CR-160232] p0218 N79-25729
Physiological fluid dynamics [VKI-LECTURE-SERIES-32] p0287 N79-27883
Diagnosis of cutaneous thermal burn injuries by multispectral imaging analysis [NASA-CR-162103] p0279 N79-30922

PHYTOTRONS
Adaptive optimization of exchange of gases in plants in a sealed phytotron p0313 N79-33806

PICOSECOND PULSES
Suprathreshold retinal damage due to single 6 picosecond 1060 nm laser light pulses p0266 A79-47330

PIGMENTS
NT CHLOROPHYLLS
NT CYTOCHROMES
NT MELANIN
NT VISUAL PIGMENTS

PILOT ERROR
False hypothesis and the pilot --- aircraft accidents due to decision making errors [SAE PAPER 780520] p0001 A79-10399
Application of performance model to assess aviator critical incidence p0063 A79-18209
Physiological biorhythm as a correlate of pilot error accidents and incidents p0065 A79-18228
Human error accidents - Some case studies --- for aircraft p0183 A79-33193
Judgement evaluation and instruction in civil pilot training [AD-A057440] p0019 N79-10737
Directional errors of movements and their correction in a discrete tracking task --- pilot reaction time and sensorimotor performance p0086 N79-15589
Human Factors Aspects of Aircraft Accidents and Incidents [AGARD-CP-254] p0290 N79-31942
Three decades of USAF efforts to reduce human error accidents, 1947-1977 p0290 N79-31943
Analysis of the intervention of the human factor as a principal cause or influence in accidents of Mirage aircraft in the Belgian Air Force p0290 N79-31945
Pilot incapacity in flight p0291 N79-31950
Geographical disorientation and flight safety p0291 N79-31951

PILOT PERFORMANCE
Flight management research utilizing an oculometer --- pilot scanning behavior during simulated approach and landing p0001 A79-10389
The application of computer aided evaluative techniques to system test and evaluation --- of fighter aircraft pilot performance p0036 A79-13190
The effects of ambient illumination, aircraft velocity and feedback on absolute distance judgments during simulated night nap-of-the-earth flight p0038 A79-13204
Investigation of arrangement of multipurpose displays and use of tailored control logic in a fighter aircraft cockpit p0038 A79-13205
Visual workload of the copilot/navigator during terrain flight p0038 A79-13206
Four years of color research for visual displays --- human performance consideration for use in aircraft p0039 A79-13210
Response surface methodology as a manipulator of complex task difficulty --- for computer generated aircraft area navigation control-display systems evaluation p0039 A79-13211
Multifunction keyboard configurations for single-seat, air-to-ground fighter cockpits p0039 A79-13213
The assessment of rotary wing aviator precision performance during extended helicopter flights p0040 A79-13221
Development of automated performance measures for introductory air combat maneuvers p0040 A79-13223
Experimental and psychological investigations in aviation and astronautics --- Russian book p0041 A79-13998
Increasing pilot's performance capacity during flight through use of a control element serving as information carrier [DGLR PAPER 78-152] p0042 A79-14097
High 'Q' escape protection --- pilot restraint during high speed ejection p0044 A79-14428
The multiloop concept of the pilot work load as a basis of future experiments and studies [ONERA, TP NO. 1978-10] p0045 A79-14795
Application of control theory to the investigation of roll motion effects on pilot control behavior [AD-A058921] p0046 A79-14972
Selection and techniques for analysis of indices of visual data reception. II --- aircraft pilot eye movements p0047 A79-15494
The man-computer division of tasks in the case of the control of complex technical systems --- applied to aircraft p0061 A79-17683
Quantifying operator preference during human factors test and evaluation --- in helicopter design p0062 A79-18202
Time estimation as a technique to measure workload --- of aircraft pilot in flight simulation p0062 A79-18203
AWAVS, a research facility for defining flight trainer visual system requirements p0062 A79-18207
Augmented feedback in adaptive motor skill training p0062 A79-18208
The effects of prediction, quickening, frequency separation, and percent of pursuit in perspective displays for low-visibility landing p0063 A79-18210
An investigation of pictorial and symbolic aircraft displays for landing p0063 A79-18211
Pilot performance during flight simulation with peripherally presented visual signals p0063 A79-18213
Human factors considerations in the design and evaluation of a helmet mounted display using a light emitting diode matrix p0063 A79-18214
Night vision goggles and in-flight evaluation of the inside/outside refocusing problems in a UH-1H helicopter p0063 A79-18215
Simulator Training Requirements and Effectiveness Study /STRES/ p0063 A79-18216
Air Combat Maneuvering Range /ACMR/ - Has operational performance measurement entered a Golden Age p0064 A79-18221
On the relationship between pilot rating and pilot dynamics. I - An experimental approach p0066 A79-18474
On the relationship between pilot rating and pilot dynamics. II - An analytical approach p0066 A79-18475
Human engineering study of information processing applicable to helmet-mounted displays p0068 A79-18994
Collision avoidance response stereotypes in pilots and nonpilots p0068 A79-18995
Incapacitation time for +Gz-induced loss of consciousness

p0102 A79-23475

Choice and techniques of analysis of indices for the perception of visual information. III --- by pilots
p0103 A79-23954

Universal airborne approach to pilot performance assessment
[SAE PAPER 781009] p0130 A79-25891

A study of progress in flying performance revealed from daily check sheets in a primary flight training course. III - Comparison of progress between two courses
p0134 A79-27119

Current role of alcohol as a factor in civil aircraft accidents
p0136 A79-27561

Windshield quality and pilot performance measurement utilizing computer-generated imagery
p0137 A79-28165

Short-term memory factors in ground controller/pilot communication
p0181 A79-32626

Predictive validity of flight simulators as a function of simulator motion
p0181 A79-32627

Frequency analysis of heart rate variability under flight conditions
p0202 A79-37713

Concurrent loss of consciousness and sino-atrial block during +Gz stress
p0202 A79-37714

Methodological considerations of visual workloads of helicopter pilots
p0209 A79-38363

Visual workload of the copilot/navigator during terrain flight
p0209 A79-38364

Analysis of electroencephalogram during psychomotor performance
p0209 A79-38820

Measurements of pilot workload during low altitude and high speed maneuvers of F-1 supersonic jet fighter
p0209 A79-38821

Pilot workload in the aircraft of the future
p0226 A79-40646

Tracking-task performance during heat stress simulating cockpit conditions in high-performance aircraft
p0236 A79-43675

Pilot-optimal augmentation of the air-to-air tracking task
[AIAA 79-1747] p0252 A79-45388

Sensory illusions - The ophthalmologist's point of view
p0255 A79-46595

Sensory illusions of vestibular origin
p0255 A79-46596

The physiologist's view of sensory illusions
p0255 A79-46597

The vestibule and flying --- pilot disorientation
p0255 A79-46598

Modeling human tracking performance in a high G-stress environment
p0269 A79-48012

Pilot workload during final approach in congested airspace
p0269 A79-48014

Delayed effects of alcohol ingestion on + Gz tolerance
p0272 A79-49730

In-flight measures of stress reduction due to wearing expandable foam earplugs
p0273 A79-49986

Man and automation --- for human-automatic pilot interfaces
p0275 A79-50372

Advanced transport operation effects on pilot scan patterns
p0295 A79-51098

Technique for simulating G-induced tunnel vision
p0299 A79-52286

The influence of low frequency vibration on pilot performance /as measured in a fixed base simulator/
p0299 A79-52326

Lightweight helmet-mounted eye movement measurement system
p0303 A79-53516

Effects of vibration and noise on some indices of efficiency of MI-4 helicopter crews
p0015 N79-10711

Experience with periodic aviation medical examinations
p0026 N79-11696

A prospective medicine approach to the problem of ischemic vascular disease in the USAF
p0027 N79-11697

The significance of rhythm disturbances in asymptomatic persons
p0027 N79-11698

Cardiovascular diseases as a cause of unfitness for flying service in aircrews of Italian Air Force: Etiopathogenesis, influence of performance in flight, and prevention
p0031 N79-11725

Psychophysiological effects of aging: Developing a functional age index for pilots. 2: Taxonomy of psychological factors
[FAA-AM-78-16] p0054 N79-13685

Honest 1: Personality, heart rate, urinary catecholamine, and subjective fatigue measures related to night nap-of-the-earth flying
[AD-A054888] p0055 N79-13692

The interaction of carbon monoxide and altitude on aviator performance: Pathophysiology of exposure to carbon monoxide
[AD-A055212] p0056 N79-13694

Dynamics of impairment of pilot performance in the presence of hypoxia
p0073 N79-14724

A simulator study of the interaction of pilot workload with errors, vigilance, and decisions
[NASA-TM-78482] p0079 N79-14769

Comparative experiments on performance and fatigue effects on pilots using tracking tests and physiological measurement parameters
[RAE-LIB-TRANS-1971] p0080 N79-14774

The development and evaluation of objective frequency domain based pilot performance measures in ASUPT
[AD-A059477] p0080 N79-14776

A study of the effect of forcing function characteristics on human operator dynamics in manual control
p0086 N79-15590

Modeling the effects of high-G stress on pilots in a tracking task
p0087 N79-15593

Discrete-time pilot model --- human dynamics and digital simulation
p0088 N79-15601

Pilot-optimal augmentation synthesis
p0088 N79-15603

Prediction, evaluation, and specification of flying qualities by means of step target tracking
p0088 N79-15604

Analysis of a VTOL hover task with predictor displays using an optimal control model of the human operator
p0088 N79-15605

A method motion simulator design based on modeling characteristics of the human operator
p0091 N79-15623

Pilot decision making in a computer-aided flight management situation
p0093 N79-15633

Pilot workload qualification for avionics design
p0114 N79-16564

Training implications
p0114 N79-16565

An approach to the multi-axis problem in manual control --- optimal pilot model
p0115 N79-17482

Error rate information in attention allocation pilot models
p0115 N79-17483

The effects of participatory mode and task workload on the detection of dynamic system failures
p0116 N79-17487

Prediction of pilot reserve attention capacity during air-to-air target tracking
p0116 N79-17488

Prediction of pilot-aircraft stability boundaries and performance contours
p0118 N79-17507

Discrete time modeling of heavy transport plane pilot behavior p0118 N79-17508

A model for the pilot's use of motion cues in roll-axis tracking tasks p0118 N79-17512

Motion cue effects on human pilot dynamics in manual control p0119 N79-17514

Study of the use of a nonlinear, rate limited, filter on pilot control signals p0119 N79-17515

Ergonomics laboratory studies pilots' stability for command --- psychophysiological characteristics p0121 N79-17529

Psychophysiological effects of aging: Developing a functional age index for pilots. 3: Measurement of pilot performance [FAA-AM-78-27] p0123 N79-17546

An analysis of helicopter pilot control behaviour and workload during instrument flying tasks [NLR-MP-78003-U] p0124 N79-17553

Influence of motion wash-out filters on pilot tracking performance [NLR-MP-78005-U] p0124 N79-17554

Quantification and validation of percept-genetic defense mechanism. A hierarchical analysis of behavior of pilots under stress [FOA-C-55020-H6] p0124 N79-17555

Motion cue models for pilot-vehicle analysis [AD-A061477] p0125 N79-17561

Characteristics of medically disqualified airman applicants in calendar years 1975 and 1976 [FAA-AM-78-25] p0144 N79-18582

Stress factors on pilot performance. A bibliography with abstracts [NTIS/PS-78/1289/4] p0145 N79-18589

An evaluation of the effects of a stability augmentation system upon aviator performance/workload during a MEDEVAC high hover operation p0148 N79-19612

Changes in the rotary wing aviator's ability to perform an uncommon low altitude rearward hover maneuver as a function of extended flight requirements and aviator fatigue p0150 N79-19623

An analysis of helicopter pilot control behavior and workload during instrument flying tasks p0150 N79-19630

Visual requirements for the helicopter pilot p0151 N79-19636

Oculomotor performance of aviators during an autorotation maneuver in a helicopter simulator p0151 N79-19638

Visual performance/workload of helicopter pilots during instrument flight p0152 N79-19640

Sensorial aspects of helicopter operations p0152 N79-19644

Disorientation in Royal Naval helicopter pilots p0152 N79-19648

Head aiming/tracking accuracy in a helicopter environment p0153 N79-19651

Aviator visual performance: A comparative study of a helicopter simulator and the UH-1 helicopter p0153 N79-19652

The effects of pilot age, lighting, and head-down time on visual accomodation [AD-A064912] N79-25747

An adaptive controller which displays human operator limitations for a fighter type aircraft [AD-A066193] p0223 N79-25763

Air Force female pilots program: Initial performance and attitudes [AD-A065641] p0241 N79-26783

Balance training of the equilibrium organ and its effect on flight strategy p0242 N79-27074

Stress factors on pilot performance. Citations from the International Aerospace Abstracts data base [NTIS/PS-79/0506/0] p0260 N79-28878

Crew workload assessment. Development of a measure of operator workload [AD-A068616] p0261 N79-28884

The application of control theory to the investigation of roll motion effects on human operator performance p0288 N79-31931

The psychologist in aircraft accident investigation --- pilot personality and performance p0291 N79-31946

Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view [AD-A070231] p0308 N79-32832

Performance and workload analysis of inflight helicopter missions [NLR-MP-77013-U] p0308 N79-32834

Undergraduate pilot training: Visual discrimination pretraining for land task [AD-A068141] p0317 N79-33844

The role of cognitive switching in head-up displays --- to determine pilot ability to accurately extract information from either of two sources [NASA-CR-3137] p0318 N79-33851

PILOT SELECTION

An Air Combat Effectiveness Study /ACES/ program p0040 A79-13222

Nystagmographic characterization of responses to rotation of persons with different vestibular-vegetative stability p0188 A79-35122

Personality characteristics of pilots on EPPS, MPI and DOSEFU test. II - Comparison among pilots, non-pilot officers and aviation students p0210 A79-38822

The relative effects of multiple factors on target acquisition --- by combat pilots p0267 A79-47765

Medical barofunction testing of aviators with otorhinolaryngologic disease p0298 A79-52285

The impact of coronary vascular risk factors on professional aircrew license loss in the United Kingdom p0031 N79-11724

Stability of circadian system of the body p0073 N79-14723

Assessment of factors possibly contributing to the susceptibility of sickle trait erythrocytes to mild hypoxia. Volume 1: Design considerations and research protocol [AD-A059412] p0084 N79-15577

A description of the recent neuropsychological selection of pilots for land forces light aircraft p0151 N79-19633

PILOT TRAINING

Piloted aircraft simulation - Advantages, disadvantages, and practical problems [SAE PAPER 780548] p0001 A79-10407

A computer-based simulator simulator --- computer-assisted pilot training p0039 A79-13215

Transfer of a computer-assisted instrument procedures trainer to flight p0039 A79-13216

Joint testing of the RAF high altitude protective ensemble p0044 A79-14434

The importance of providing stereoscopic vision in training for nap-of-the-earth /NOE/ flight p0062 A79-18206

AWAVS, a research facility for defining flight trainer visual system requirements p0062 A79-18207

Augmented feedback in adaptive motor skill training p0062 A79-18208

Application of performance model to assess aviator critical incidence p0063 A79-18209

Simulator Training Requirements and Effectiveness Study /STRES/ p0063 A79-18216

A visual simulator with transformation of the perspective in the raster of television pictures --- German book on pilot training systems p0069 A79-19375

Role of autogenic training in psychophysiological conditioning of aviation school students p0098 A79-21244

Naval aviation training - Perspective and prospects [SAE PAPER 781004] p0130 A79-25886

Cost analysis of pilot training systems
[SAE PAPER 781005] p0130 A79-25887
Recent studies of simulation training effectiveness
[SAE PAPER 781006] p0130 A79-25888
Recent developments and plans for pilot training devices
[SAE PAPER 781007] p0130 A79-25889
A study of progress in flying performance revealed from daily check sheets in a primary flight training course. III - Comparison of progress between two courses
p0134 A79-27119
Transfer of landing skill after training with supplementary visual cues
p0138 A79-28167
Aeromedical aspects of flying training with special reference to instructor pupil relationship
p0201 A79-37139
Personality characteristics of pilots on EPPS, MPI and DOSEFU test. II - Comparison among pilots, non-pilot officers and aviation students
p0210 A79-38822
The relationship between flight simulator motion and training requirements
p0267 A79-47766
Soviet civil aviation training programs
p0270 A79-49221
Synthetic training and evaluation - Some current issues
p0275 A79-50550
Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators
p0297 A79-52276
Judgement evaluation and instruction in civil pilot training
[AD-A057440] p0019 N79-10737
Subjective motion discrimination in the simulator for air-to-air combat
[AD-A059742] p0079 N79-14770
The development and evaluation of objective frequency domain based pilot performance measures in ASUPT
[AD-A059477] p0080 N79-14776
Stress and simulation in pilot training
[AD-A066670] p0222 N79-25757
Flight simulator training, volume 2. A bibliography with abstracts
[NTIS/PS-79/0277/8] p0222 N79-25758
Undergraduate pilot training: Visual discrimination pretraining for land task
[AD-A068141] p0317 N79-33844

PILOTED CENTRIFUGES
U HUMAN CENTRIFUGES

PILOTLESS AIRCRAFT
NT DRONE AIRCRAFT

PILOTS
US Army aviation fatigue-related accidents, 1971-1977
[AD-A062486] p0171 N79-20725

PILOTS (PERSONNEL)
NT AIRCRAFT PILOTS
Evaluation of physiological indices during preflight medical examination of pilots
p0188 A79-35138
Incidence of spinal disability amongst IAF pilots - Follow up of 38 cases
p0201 A79-37133
Tremometry as a method of evaluating the functional state of the nervous system of a pilot
p0300 A79-53065
Specific Findings in Cardiology and Pulmonary Function with Special Emphasis on Assessment criteria for Flying
[AGARD-CP-232] p0028 N79-11705
Long term pulmonary function patterns in the aviator: The thousand Aviator study
p0028 N79-11708
Coronary atherosclerosis and fitness for flying
p0029 N79-11711
Detection of coronary artery disease in apparently healthy, asymptomatic aircrew members using thallium-201 myocardial perfusion scintigraphy
p0029 N79-11712
The significance of I wave abnormalities
p0029 N79-11713
Left Anterior Hemiblock (LAH): Diagnosis and aeromedical risk
p0029 N79-11715
Reproducibility of human cardiovascular responses to orthostatic stress
p0030 N79-11720
The effect of Nap-of-the-Earth (NOE) helicopter flying on pilot blood and urine biochemicals
[AD-A055204] p0055 N79-13693
Methodology to assess psychological stress and its impact in the air combat environment
[AD-A053474] p0057 N79-13707
Hemispheric asymmetry as related to pilot and radar intercept officer performance
[AD-A068087] p0289 N79-31935

PINEAL GLAND
Epiphysis of rats under the combined action of hypoxia, hypercapnia and cooling
p0256 A79-46680

PITCH (INCLINATION)
Ergonomic research into human tolerances for roll and pitch as well as their influence on individual perception and reactions to control parameters
[BMVG-FBWT-78-18] p0282 N79-30944

PITCH ANGLES
U PITCH (INCLINATION)

PITUITARY GLAND
Inhibition of the pituitary-adrenal response to stress during deprivation-induced feeding
p0235 A79-43605
Obtaining growth hormone from calf blood
[NASA-TM-75326] p0283 N79-31895

PITUITARY HORMONES
NT ADRENOCORTICOTROPIN (ACTH)
Effects of fenfluramine administration on activity of the pituitary-adrenal system in the rat
p0005 A79-12474
Identification of a tripeptidyl aminopeptidase in the anterior pituitary gland - Effect on the chemical and biological properties of rat and bovine growth hormones
p0069 A79-19449
Insulin-like effect of bovine growth hormone in vivo as demonstrated by oxidation of C/14/-U-glucose in diabetic rats
p0252 A79-44797
Studies on the bioassayable growth hormone-like activity of plasma
p0267 A79-47848
Purification and cultivation of human pituitary growth hormone secreting cells
[NASA-CR-151853] p0051 N79-12697
Purification and cultivation of human pituitary growth hormone secreting cells
[NASA-CR-160242] p0219 N79-25736
Obtaining growth hormone from calf blood
[NASA-TM-75326] p0283 N79-31895

PLANET ORIGINS
U PLANETARY EVOLUTION

PLANETARY ATMOSPHERES
NT JUPITER ATMOSPHERE
Ion-molecule condensation reactions - A mechanism for organic synthesis in ionized reducing atmospheres
p0099 A79-22079
Exobiology and the origin of life --- organic compounds in planetary atmospheres and interstellar matter
[NASA-CR-157988] p0081 N79-14782

PLANETARY ENVIRONMENTS
NT JUPITER ATMOSPHERE
NT MARS ENVIRONMENT
NT PLANETARY ATMOSPHERES
Publications of the planetary biology program for 1978: A special bibliography
[NASA-TM-80745] p0319 N79-33854

PLANETARY EVOLUTION
HCN did not condense to give heteropolypeptides on the primitive earth
p0133 A79-26542
Habitable zones about main sequence stars
p0136 A79-27930

PLANETARY EXPLORATION
U SPACE EXPLORATION

PLANETARY EXPLORER
U OUTER PLANETS EXPLORERS

PLANETARY QUARANTINE
Public health considerations associated with a Mars surface sample return mission
p0005 A79-12510

PLANETARY SURFACES
NT MARS SURFACE
PLANETS
NT EARTH (PLANET)
NT GAS GIANT PLANETS
NT MARS (PLANET)
PLANIGRAPHY
U TOMOGRAPHY
PLANKTON
Determination of the secondary production and population dynamics of the zooplankton of the Lake Champlain ecosystem
[PB-286094/8] p0084 N79-15572
Distribution of phytoplankton in North Carolina lakes
[PB-286387/6] p0084 N79-15573
Distribution of phytoplankton in Arkansas lakes
[PB-292742/4] p0240 N79-26768
PLANKTON BLOOM
U PLANKTON
PLANNING
NT MANAGEMENT PLANNING
NT MISSION PLANNING
NT REGIONAL PLANNING
Some of the problems involved in planning biological experiments
p0312 N79-33805

PLANTS (BOTANY)
NT GRASSES
NT SEA GRASSES
Convective control of long-range coherence in plant growth regulation
p0006 A79-12515
Serendipitous solution to the problem of culturing Arabidopsis plants in sealed containers for spaceflights of long duration
p0229 A79-41704
Importance of temperature control for HEFLEX, a biological experiment for Spacelab 1 --- plant gravitational physiology study
p0230 A79-41716
Biological experiments carried out aboard the biological satellite Cosmos-936
p0230 A79-41717
Influence of orbital flight conditions on formation of genitals in Muscari racemosum and Anethum graveolens
p0230 A79-41718
Response of crown gall tissue to the space environment: Residual carbohydrates in supporting tissue --- COSMOS 782
p0020 N79-11653
Responses of crown gall tissue to the space environment: Tumor development and anatomy --- cosmos 782
p0020 N79-11654
Responses of crown gall tissue to the space environment: Glutamine synthetase activity --- cosmos 782
p0020 N79-11655
Responses to crown gall tissue to the space environment: Isozyme patterns --- cosmos 782
p0020 N79-11656
The morphogenetic responses of cultured totipotent cells of carrot (Daucus carota L.) at zero gravity --- cosmos 782
p0021 N79-11657
The impact of sulfur dioxide on vegetation: A sulfur dioxide-ozone response model
[PB-283604/7] p0049 N79-12686
Pacific Northwest Laboratory report for 1977 to the DOE assistant secretary for environment. Part 2: Ecological sciences
[PNL-2500-PT-2] p0053 N79-13677
Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582] p0071 N79-14711
Mechanism of plant virus inactivation in soil injected with municipal wastewater and treatment plant sludges
[PB-287012/9] p0107 N79-16513
Microanalytical identification of barium sulphate crystals in statoliths of Chara Rhizoids
[NASA-TM-75611] p0175 N79-21744
A study of the mechanism of thigmomorphogenesis in plants, with special reference to the role of ethylene and its significance to research with plants in space
[NASA-CR-158506] p0190 N79-23625
Adaptive optimization of exchange of gases in plants in a sealed phytotron
p0313 N79-33806

PLASMAS (PHYSICS)
NT BETA PARTICLES
PLASMOLYSIS
Effects of regional hemoconcentration during LBNP on plasma volume determinations --- Lower Body Negative Pressure
p0265 A79-47326
Experiment K-002: Results of histological examination of inguinal lymph nodes, supplementary report --- COSMOS 782 satellite
p0021 N79-11662

PLASMONS
A hypothesis of plasmonic absorption of RF energy by biological objects
p0233 A79-42506

PLASTICS
NT ACRYLIC RESINS
NT POLYETHYLENES
NT POLYTETRAFLUOROETHYLENE
PLASTISOLS
NT SMOKE
PLATINUM
Use of platinum electrodes for the electrochemical detection of bacteria
p0131 A79-26146

PLATINUM ALLOYS
Metal bioelectrode polarization: A frequency and time domain analysis
p0176 N79-21755

PLAYA LAKES
U LAKES
PLETHYSMOGRAPHY
NT ELECTROPLETHYSMOGRAPHY
Mechanics of breathing during graded exercise measured with the bodyplethysmograph
p0029 N79-11709

PLEURAE
Improved measurements of shear modulus and pleural membrane tension of the lung
p0236 A79-43702

PLSS
U PORTABLE LIFE SUPPORT SYSTEMS
PNEUMOTHORAX
Pneumothorax and flight personnel --- incidence, etiology and treatment
p0103 A79-23956

POIKILOTHERMIA
NT FROGS
POINT MATCHING METHOD (MATHEMATICS)
U BOUNDARY VALUE PROBLEMS
POINT SOURCES
Crawford and Lavoisier on the method of development and place of formation of body heat
[BLL-RTS-11228] p0142 N79-18568
POISONS
NT ENDOTOXINS
NT PESTICIDES
POISSON PROCESS
U STOCHASTIC PROCESSES
POLAR REGIONS
NT ARCTIC REGIONS
Human psychophysiology in extremal conditions --- Russian book on polar region adaptation
p0048 A79-15977

POLARIZATION (CHARGE SEPARATION)
In vitro duplication of the primary light-induced charge separation in purple photosynthetic bacteria
p0131 A79-26100
Metal bioelectrode polarization: A frequency and time domain analysis
p0176 N79-21755

POLICIES
Assessing the efficacy and safety of medical technologies
[PB-286929/5] p0085 N79-15580
POLLUTANTS
U CONTAMINANTS
POLLUTION
NT AIR POLLUTION
NT ENVIRONMENT POLLUTION
NT NOISE POLLUTION
NT THERMAL POLLUTION
NT WATER POLLUTION

POLLUTION CONTROL
Citric acid enhancement of copper sulfate toxicity to blue-green algae and other nuisance organisms
[PB-289490/5] p0170 N79-20718
POLLUTION MONITORING
Water system microbial check valve development
[NASA-CR-151843] p0032 N79-11733
POLYACRYLATES
U ACRYLIC RESINS
POLYETHYLENES
Trace contaminant studies of HSC adsorbent
[NASA-CR-160148] p0177 N79-21769
POLYMERS
Two-week studies of survivors from exposures to pyrolysis gases
p0066 A79-18307
Carbon suboxide and the genetic code --- in biochemical evolution
p0252 A79-44865
Polymers produced by heating an amino acid mixture in sea water enriched with transition elements
p0254 A79-46461
POLYNUCLEOTIDES
Prebiotic condensation of oligonucleotide
p0204 A79-37945
POLYPEPTIDES
Identification of a tripeptidyl aminopeptidase in the anterior pituitary gland - Effect on the chemical and biological properties of rat and bovine growth hormones
p0069 A79-19449
HCN did not condense to give heteropolypeptides on the primitive earth
p0133 A79-26542
POLYSACCHARIDES
NT GLYCOGENS
Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates
p0297 A79-51701
POLYTETRAFLUOROETHYLENE
Renal damage in mice following exposure to the pyrolysis products of polytetrafluoroethylene
p0066 A79-18306
POPULATIONS
Estimating percentiles of nonnormal anthropometric populations - Final report
p0065 A79-18226
Variability in human body size
p0032 N79-11736
Estimating percentiles of nonnormal anthropometric populations
[AD-A061151] p0122 N79-17535
Radar, Insect Population Ecology, and Pest Management
[NASA-CP-2070] p0147 N79-19592
The role of insect dispersal and migration in population processes
p0147 N79-19593
PORPHYRINS
NT CHLOROPHYLLS
Porphyrin-like compounds genesis under simulated abiotic conditions
p0099 A79-22078
Metal porphyrins in pre-Cambrian deposits as a probable evidence for early photosynthesis
p0165 A79-30695
PORTABLE EQUIPMENT
Portable device for detection of petit mal epilepsy
p0254 A79-46226
PORTABLE LIFE SUPPORT SYSTEMS
Microbiological evaluation of the mobile biological isolator system
[NASA-CR-162293] p0307 N79-32822
POSITION ERRORS
Perception of graphic displays of space
p0062 A79-18205
Perception of depth - Processing of simple positional disparity as a function of viewing distance
p0139 A79-28197
POSITIONING
Visually estimating workpiece pose in a robot hand using the feature points method
p0269 A79-48018
An operator-aiding manipulator control system
p0269 A79-48020
POSITIVE IONS
Prebiotic condensation of oligonucleotide
p0204 A79-37945
POSTFLIGHT ANALYSIS
Skylab medical data evaluation program (SMEDEP)
[NASA-CR-160279] p0259 N79-28869
POSTULATES
U AXIOMS
POSTURE
Systolic time intervals during combined hand cooling and head-up tilt
p0135 A79-27554
Changes in apparent body orientation and sensory localization induced by vibration of postural muscles - Vibratory myesthetic illusions
p0163 A79-30653
Mechanism for the regulation of human posture during movements of the foot
p0276 A79-50651
Cardiopulmonary readjustments in passive tilt
p0277 A79-50901
Control of vertical position after flights aboard the Salyut-4 orbital station
p0311 N79-33793
POTABLE LIQUIDS
NT POTABLE WATER
POTABLE WATER
A thermoelectric integrated membrane evaporation system
[ASME PAPER 78-ENAS-19] p0007 A79-12568
Microbial Check Valve for Shuttle
[ASME PAPER 78-ENAS-27] p0008 A79-12576
Four-man rated dual catalyst system for the recovery of water from urine
[NASA-CR-152227] p0112 N79-16550
Microflora of water reclaimed in sealed compartments
p0193 N79-23638
POTASSIUM
NT POTASSIUM 40
Exercise performance and hemodynamics during dietary potassium depletion in dogs
p0067 A79-18959
Relationship between proton motive force and potassium ion transport in Halobacterium halobium envelope vesicles
p0227 A79-40775
Mechanism of effects of microwaves on erythrocyte permeability for potassium and sodium ions
p0075 N79-14743
Studying the state of cellular metal ions by the extended X-ray absorption fine structure
[AD-A069799] p0279 N79-30914
POTASSIUM ISOTOPES
NT POTASSIUM 40
POTASSIUM 40
Determination of muscle mass changes in legs from K-40 measurements
p0274 A79-49997
POTENTIAL ENERGY
NT BIOELECTRIC POTENTIAL
NT ELECTRIC POTENTIAL
POTENTIAL GRADIENTS
Coupling of aspartate and serine transport to the transmembrane electrochemical gradient for sodium ions in Halobacterium halobium - Translocation stoichiometries and apparent cooperativity
p0002 A79-10425
POTENTIOMETRIC ANALYSIS
Seating, console and workplace design - Seated operator reach profiles
p0036 A79-13188
POTENTIOMETRY
U POTENTIOMETRIC ANALYSIS
PRECAUTIONS
U ACCIDENT PREVENTION
PREDICTION ANALYSIS TECHNIQUES
Predicting aircraft detectability
p0208 A79-38358
Predictive accuracy of Q-X/Q-T ratio, Q-Tc interval, S-T depression and R wave amplitude during stress testing --- heart pathology
p0225 A79-40464
An examination of statistical impact acceleration injury prediction models based on -Gx accelerator data from subhuman primates
[AD-A057276] p0026 N79-11690
The prediction of the existence or nonexistence of coronary artery disease using routine clinical laboratory measurement
p0028 N79-11703

PREDICTIONS
NT LINEAR PREDICTION
NT PERFORMANCE PREDICTION
Some Bayesian inference procedures for use in developing an impact acceleration injury prediction model [AD-A067228] p0220 N79-25741
PREDICTORS
U PREDICTIONS
PREFLIGHT ANALYSIS
Evaluation of physiological indices during preflight medical examination of pilots p0188 A79-35138
PREFLIGHT OPERATIONS
Pilot preflight briefing utilizing an interactive computer generated Voice Response System p0167 A79-31887
PREHEATING
U HEATING
PRESERVING
Method and arrangement for the preparation of solid foodstuffs for long-term storage [BLL-RTS-11445] p0145 N79-18590
PRESSURE
NT ATMOSPHERIC PRESSURE
NT BLOOD PRESSURE
NT DIASTOLIC PRESSURE
NT HIGH PRESSURE
NT HYDROSTATIC PRESSURE
NT HYPERTENSION
NT HYPOXEMIA
NT INTRACRANIAL PRESSURE
NT INTRAOCULAR PRESSURE
NT LOW PRESSURE
NT LUMINANCE
NT LUMINOUS INTENSITY
NT OXYGEN TENSION
NT PARTIAL PRESSURE
PRESSURE BREATHING
The influence of hyperbaric environment in combination with workload and confinement on human information processing [DLR-FB-78-12] p0280 N79-30926
Hyperbaric oxygenation. A bibliography with abstracts [NTIS/PS-79/0744/7] p0317 N79-33837
PRESSURE CHAMBERS
NT HYPERBARIC CHAMBERS
Energy expenditures of man during long exposure to a periodically changing atmosphere p0312 N79-33799
PRESSURE EFFECTS
Capillary fragility during air exposure of man to 1-5 ATA and after decompression p0010 A79-12863
Cardio-pulmonary response to shock [AD-A065672] p0196 N79-23659
Possibilities of preventing adverse reactions in simulating the acute period of adaptation to weightlessness p0244 N79-27825
Probability of caisson disease while wearing a space suit when exiting from a spacecraft with an atmosphere close to that of earth p0244 N79-27826
A head injury model p0286 N79-31918
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids) p0311 N79-33798
Energy expenditures of man during long exposure to a periodically changing atmosphere p0312 N79-33799
PRESSURE GAGES
NT MANOMETERS
PRESSURE MEASUREMENTS
The value of measuring ocular tonus as a test for detecting glaucoma in flight personnel p0104 A79-23959
Telemetry of intracranial pressure p0227 A79-41400
Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements p0294 A79-51037
A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles p0294 A79-51038
PRESSURE REDUCTION
NT EXPLOSIVE DECOMPRESSION
Capillary fragility during air exposure of man to 1-5 ATA and after decompression p0010 A79-12863
Changes in lung volume, lung density, and distribution of ventilation during hypobaric decompression p0185 A79-33806
Dynamics of the catalase activity of the blood of athletes under the influence of local decompression p0271 A79-49699
Applied analysis of computer simulated decompression profiles p0017 N79-10722
Early diagnosis for decompression sickness. Changes in the blood found shortly after decompression. Part 2: Experiments on rats [NBL-1978-7] p0120 N79-17524
Effects of propranolol on Time of Useful Function (TUF) in rats --- tolerance to rapid decompression [AD-A068535/4] p0283 N79-31896
Oxygen equipment and rapid decompression studies [AD-A070285] p0289 N79-31937
PRESSURE SUITS
NT SPACE SUITS
An assessment of the RAE Type 'B' full pressure suit automatic head enclosure p0044 A79-14432
Development of the Air Force S-1030 full pressure suit assembly p0044 A79-14433
Joint testing of the RAF high altitude protective ensemble p0044 A79-14434
Evaluation of assisted positive-pressure breathing on +Gz tolerance p0266 A79-47336
Evolution of space suit technology [IAF PAPER 79-92] p0302 A79-53293
Engineering test and evaluation during high G. Volume 3: Anti-G suits [AD-A059122] p0052 N79-12706
Flight test evaluation of an RAF high altitude partial pressure protective assembly [NASA-TM-72864] p0214 N79-24654
Microbiological evaluation of the mobile biological isolator system [NASA-CR-162293] p0307 N79-32822
PRESSURIZING
Responses of retinal and visual pathway potentials of the guinea pig to nitrogen and helium at high pressure p0266 A79-47331
PRETESTS
U TESTS
PREVENTION
NT ACCIDENT PREVENTION
NT FIRE PREVENTION
The Canadian Forces Life Quality Improvement Programme p0026 N79-11693
PRIMATES
NT CHIMPANZEES
NT HUMAN BEINGS
NT MONKEYS
Two primate biological facility module in Spacelab [IAF PAPER 78-70] p0003 A79-11229
Primate cone sensitivity to flicker during light and dark adaptation as indicated by the foveal local electroretinogram p0104 A79-24065
PRIMITIVE EARTH ATMOSPHERE
Synthesis of organic compounds from carbon monoxide and water by UV photolysis p0099 A79-22077
Porphyrin-like compounds genesis under simulated abiotic conditions p0099 A79-22078
HCN did not condense to give heteropolypeptides on the primitive earth p0133 A79-26542
Synthesis of amino acids under primitive earth conditions in the presence of clay

p0203 A79-37930

Prebiotic synthesis of amino acids by carboxylation of amines in oxidative atmosphere
p0203 A79-37937

Incorporation of sulphur in chemical evolution
p0203 A79-37938

Inverse assimilation - A general principle of evolution of planetary surfaces
p0207 A79-37989

Carbon suboxide and the genetic code --- in biochemical evolution
p0252 A79-44865

A proposal concerning the origin of life on the planet earth
p0253 A79-45641

An ultraviolet light induced bacteriophage in Beneckea gazogenes --- organism growth on precambrian earth
p0258 A79-46463

PRINTED CIRCUITS
NT LARGE SCALE INTEGRATION

PRISMS
The influence of rapid prism adaptation upon fixation disparity
p0231 A79-42230

PRIVATE AIRCRAFT
U GENERAL AVIATION AIRCRAFT

PROBABILITY DENSITY FUNCTIONS
NT NORMAL DENSITY FUNCTIONS
NT PEARSON DISTRIBUTIONS

PROBES
Subcutaneous channeling probe [NASA-CASE-ARC-11091-1] p0025 N79-11684

PROBLEM SOLVING
Study of pharmaceutical industrial problems [NASA-CR-160267] p0248 N79-27852

Selective attention: The influences of subject sex and degree of prior habituation on performance of an attention task with distraction
p0260 N79-28876

Some of the problems involved in planning biological experiments
p0312 N79-33805

PROCEDURES
NT CREW PROCEDURES (INFLIGHT)

PROCESS CONTROL (INDUSTRY)
Robotic vision --- process control applications
p0187 A79-34984

PROCUREMENT
NT GOVERNMENT PROCUREMENT

PRODUCT DEVELOPMENT
New combined aspirator for sampling developed
p0170 N79-20722

PRODUCTION ENGINEERING
Selected examples of dispersal of arthropods associated with agricultural crop and animal production
p0148 N79-19595

PRODUCTION METHODS
U PRODUCTION ENGINEERING

PROFICIENCY
U ABILITIES

PROGRAM MANAGEMENT
U PROJECT MANAGEMENT

PROGRAMMED INSTRUCTION
NT COMPUTER ASSISTED INSTRUCTION

PROGRAMMING LANGUAGES
NT MACHINE ORIENTED LANGUAGES
NT NATURAL LANGUAGE (COMPUTERS)
Modeling and analysis using SAINT - A combined discrete/continuous network simulation language --- Systems Analysis of Integrated Network of Tasks for RPV
p0004 A79-11480

PROGRAMS
NT APOLLO SOYUZ TEST PROJECT
NT ASSESS PROGRAM
NT NASA PROGRAMS
NT SEASAT PROGRAM
NT SKYLAB PROGRAM
NT TERMINAL CONFIGURED VEHICLE PROGRAM
NT U.S.S.R. SPACE PROGRAM

PROJECT MANAGEMENT
Possible impact of radar on pest management operations
p0148 N79-19599

PROJECTS
NT APOLLO SOYUZ TEST PROJECT

PROLATE SPHEROIDS
Electromagnetic absorption in a multilayered model of man
p0226 A79-40650

An empirical formula for broad-band SAR calculations of prolate spheroidal models of humans and animals --- Specific Absorption Rate
p0278 A79-51015

PROMETHAZINE
Prevention and treatment of space sickness in Shuttle-Orbiter missions
p0128 A79-24639

PROOFS
U PROVING

PROPELLANTS
NT SOLID PROPELLANTS
Safety evaluation tests of personal protective equipment for ordnance operations [AD-A058987] p0053 N79-12712

PROPHYLAXIS
Prophylactic effects of intermittent acceleration against physiological deconditioning in simulated weightlessness
p0229 A79-41712

PROPRIOCEPTION
Evaluation of kinesthetic-tactual displays using a critical tracking task
p0119 N79-17516

PROPRIOCEPTORS
The internal model: A study of the relative contribution of proprioception and visual information to failure detection in dynamic systems --- sensitivity of operators versus monitors to failures
p0087 N79-15596

PROSTATE GLAND
Preparation of some prostaglandin E sub 1 omega-homo-prostaglandin E sub 1 esters and their inhibiting properties on rat blood platelet aggregation
p0239 N79-26765

PROSTHETIC DEVICES
Computer design synthesis of a below knee-Syme prosthesis
p0251 A79-44300

Biocompatible materials, volume 2. A bibliography with abstracts [NTIS/PS-78/0675/5] p0019 N79-10736

Functional outcomes of prosthetic cardiac valve replacement
p0076 N79-14746

Prosthetic urinary sphincter [NASA-CASE-MFS-23717-1] p0077 N79-14756

Microprocessor: Based prosthetic control [PB-286652/3] p0113 N79-16559

Prosthetic EMG control enhancement through the application of man-machine principles
p0117 N79-17505

Compact artificial hand [NASA-CASE-NPO-13906-1] p0214 N79-24652

Prosthesis coupling [NASA-CASE-KSC-11069-1] p0240 N79-26772

PROTECTION
NT ENVIRONMENT PROTECTION
NT EYE PROTECTION
NT RADIATION PROTECTION
NT RADIATION SHIELDING
NT THERMAL PROTECTION
Solar radiation, light protection and tanning of human skin [BLL-RTS-11580] p0142 N79-18574

PROTECTIVE CLOTHING
NT HELMETS
NT PRESSURE SUITS
NT SPACE SUITS
A biophysical model for evaluating auxiliary heating and cooling systems --- for protective clothing systems design [ASME PAPER 78-ENAS-33] p0008 A79-12581

Firefighters Integrated Response Equipment System [ASME PAPER 78-ENAS-39] p0009 A79-12586

Design considerations for inflatable head/neck restraint systems
p0043 A79-14407

Development of integrated tubing fabric for liquid conditioning undergarments
p0044 A79-14415

An overview of helicopter mission specific survival equipment

p0183 A79-33625
Bioassay of thermal protection afforded by
candidate flight suit fabrics
p0298 A79-52280
Cold water survival suits for aircrew
p0298 A79-52282
Effect of impermeable clothing and respirator on
work performance. Part 1: Laboratory studies
[SAND-77-2132] p0034 N79-11748
Safety evaluation tests of personal protective
equipment for ordnance operations
[AD-A058987] p0053 N79-12712
Translations on USSR science and technology:
Biomedical and behavioral sciences, no. 51
[JPRS-72588] p0076 N79-14745
Liberation of carbon monoxide by man when working
in protective gear
p0076 N79-14748
Mechanisms of activated carbon degradation by
perspiration
[AD-A059872] p0080 N79-14777
Engineering test and evaluation during high G.
Volume 2: Anti-G valves
[AD-A059521] p0081 N79-14780
Protective clothing and equipment for
firefighters: Current standards and practices
[PB-286990/7] p0113 N79-16557
Antiradiation suit and other special clothing at
industrial safety exhibition
p0114 N79-16793
Visual and optical assessment of gas protective
face masks
p0152 N79-19642
Biomedical constraints on thermal protective
flight clothing design: A bioengineering analysis
p0153 N79-19662
Advanced life support equipment for nitrogen
tetroxide environments
p0169 N79-20432
Guidelines for fit testing and evaluation of USAF
personal-protective clothing and equipment
[AD-A065901] p0197 N79-23668
Flight test evaluation of an RAF high altitude
partial pressure protective assembly
[NASA-TM-72864] p0214 N79-24654
A porcine bioassay study of the physiological
effects of fiber and dye degradation products
(FDP) on burn wound healing
[AD-A066990] N79-25748
Evaluation of four thermally protective fabrics
using the USAARL bioassay method
[AD-A067351] p0223 N79-25762
Aluminized firefighters' crash-rescue protective
hood: Facepiece-visor redesign study
[AD-A066492] p0223 N79-25764
Field evaluation of experimental crash-crew
firefighter's facepiece
[AD-A066544] p0223 N79-25765
Mathematical models of skin burns induced by
simulated postcrash fires as aids in thermal
protective clothing design and selection
[AD-A066946] p0223 N79-25766
The optical properties of smoke-protective devices
[FAA-AM-78-41] p0242 N79-26784
Cold water survival suits for aircrew
[ARL/SYS-NOTE-56] p0261 N79-28882
Insulated firefighters' crash-crew rescue boots
and components: Field and laboratory evaluation
[AD-A068264] p0262 N79-29795
Improved airline-type supplied-air plastic suit
[DPSPU-78-30-12] p0282 N79-30943
Aluminized firemen's (fire proximity) handwear:
Redesign of experimental prototype
[AD-A069895] p0290 N79-31940
Optimal methods for physiologic research on clothing
[AD-A071855] p0319 N79-33852
PROTECTIVE COATINGS
Method and arrangement for the preparation of
solid foodstuffs for long-term storage
[BLL-RTS-11445] p0145 N79-18590
PROTECTORS
NT EAR PROTECTORS
PROTEIN METABOLISM
NT LIPID METABOLISM
The comparative study of metabolism changes
dynamics during hypoxia and hyperoxia in mice
lungs
[IAF PAPER 78-51] p0002 A79-11221
In vivo response of ornithine decarboxylase
activity to growth hormone as demonstrated by
oxidation of L-ornithine-1-/C-14/ in
hypophysectomized rats
p0005 A79-12400
Influence of high-altitude conditions on the
metabolism of nucleic acids and proteins in the
thymocytes of the rat
p0069 A79-19425
The effect of plasmoidal slime on the metabolism
of haploid cells of Physarum flavicomum and the
respiration of isolated mitochondria
p0105 A79-24513
Senescent changes in the ribosomes of animal cells
in vivo and in vitro
p0134 A79-27226
RBC-/Cr-51/ half-life and albumin turnover in
growing Beagle dogs during chronic radial
acceleration
p0135 A79-27553
Changes in metabolism of soleus muscle tissue in
rats following the flight aboard the Kosmos-690
biosatellite
p0108 N79-16518
Distinctions referable to excretion of end
products of protein metabolism in urine of man
submitted to 182-day antiorthostatic hypokinesia
p0193 N79-23635
Tissular metabolism in mixed type fibers of rat
skeletal muscles after flight aboard Cosmos-690
biosatellite
p0244 N79-27823
PROTEINS
NT ADENOSINES
NT ALBUMINS
NT COENZYMES
NT FIBRIN
NT FIBRINOGEN
NT GAMMA GLOBULIN
NT GLOBULINS
NT LIPOPROTEINS
NT MELANIN
NT NUCLEOTIDES
NT OXYHEMOGLOBIN
NT PEPTIDES
NT POLYNUCLEOTIDES
NT POLYPEPTIDES
NT PROTOPROTEINS
The growth of single crystals from proteins in
gravity-free space
[AIAA PAPER 79-0311] p0069 A79-19665
Interaction between inositol hexaphosphate and
carbobenzoxy peptide - A model for nucleic acid
- Nonhistone chromosomal protein interaction
p0100 A79-22082
Effects of low temperature on in vivo and in vitro
protein synthesis in Escherichia coli and
Pseudomonas fluorescens
p0131 A79-26141
Beta-galactosidase and selective neutrality ---
amino acid composition of proteins
p0132 A79-26169
An approach to the origin of self-replicating
system. I - Intermolecular interactions
p0204 A79-37948
The point mutation process in proteins
p0205 A79-37972
Some characteristic features of the origin and
evolution of the amino acid composition of
proteins - A theoretical consideration
p0206 A79-37973
Are evolutionary rates really variable --- in
vertebrate protein chemistry
p0232 A79-42273
On investigating the statistical properties of the
populous path algorithm by computer simulation -
Counterconclusions to those of Tateno and Nei
--- for mutational change in protein evolution
p0253 A79-45640
Inadequacy of prebiotic synthesis as origin of
proteinous amino acids
p0253 A79-45643
Polyglutaraldehyde - A new reagent for coupling
proteins to microspheres and for labeling
cell-surface receptors
p0274 A79-50230
Energy transduction in Halobacterium halobium
p0300 A79-53000

Protein fractions and enzymatic activity thereof in the rat myocardium after the flight on Kosmos-690 biosatellite
p0014 N79-10700
A technology assessment of vegetable substitutes for animal protein in human food. Volume 1: The study
[PB-284681/4] p0059 N79-13719
A technology assessment of vegetable substitutes for animal protein in human food. Volume 2: Appendices
[PB-284682/2] p0059 N79-13720
Effect of 49-day space flight on parameters of immunological reactivity and protein composition of blood in the crew of Salyut-5
p0107 N79-16515
Analysis of visible spectra and thermodynamic parameters in hemeprotein systems
p0144 N79-18579
Physiological effects of a high soybean protein diet in man
p0240 N79-26777
Characteristics of proteins of some unicellular organisms as potential components of ecological life support systems
p0246 N79-27834
Effects of gravity on contractile proteins
[NASA-CR-160303] p0279 N79-30913

PROTON BEAMS
Relationship between proton motive force and potassium ion transport in Halobacterium halobium envelope vesicles
p0227 A79-40775

PROTOPLASM
Ultrastructural development of the vestibular system under conditions of simulated weightlessness
p0298 A79-52284

PROTOPROTEINS
The origin of life on earth - Recent studies
p0134 A79-27335
Evolution in open systems - Acquisition and conservation of information in bioids
p0207 A79-37987

PROTOTYPES
Spacecraft utensil/hand cleansing fixture
[NASA-CR-151845] p0032 N79-11731
Spacecraft utensil/hand cleansing fixture, addendum
[NASA-CR-151846] p0032 N79-11732
The proto-type wrist joint assembly TACPAW (Triple Axis Common Pivot Arm Wrist), phase 2
[NASA-CR-150885] p0093 N79-15635

PROTOZOA
NT PARAMECIA

PROVING
The driving simulator developed by the Institute for Perception TNO. A validation study in straight road driving
[IZF-1978-16-PR-1] p0145 N79-18588

PRUSSIC ACID
U HYDROCYANIC ACID

PSEUDORANDOM SEQUENCES
Application of pseudo random binary sequence input to identification of respiratory control dynamics
p0268 A79-48011

PSYCHIATRY
Psychiatric education in aerospace medicine
p0202 A79-37712

PSYCHOACOUSTICS
Aircraft noise and its effect on man: Methods and results of research, consequences for environmental protection --- German book
p0162 A79-29763

PSYCHOLOGICAL EFFECTS
NT ILLUSIONS
NT OCULOGRAVIC ILLUSIONS
NT OPTICAL ILLUSION
Changes in apparent body orientation and sensory localization induced by vibration of postural muscles - Vibratory myesthetic illusions
p0163 A79-30653
Consciousness alteration in space
[AIAA PAPER 79-1430] p0187 A79-34853
Cardiac changes during behavioral stress in dogs
p0200 A79-36575
Effects of partial sleep deprivation on psychological performance and behaviour
p0200 A79-37130
The influence of intermittent aircraft noise on sleep. I
p0255 A79-46599
Physical and mental working environment in a terminal based computer system
[BLL-RTS-11634] p0197 N79-23665
Stress and fatigue in the driving environment --- physiological and psychological effects of heat and noise experienced inside automobiles
p0211 N79-24629

PSYCHOLOGICAL FACTORS
False hypothesis and the pilot --- aircraft accidents due to decision making errors
[SAE PAPER 780528] p0001 A79-10399
Vibration, performance, and personality --- vibration effects on human performance and psychological factors
p0040 A79-13224
Experimental and psychological investigations in aviation and astronautics --- Russian book
p0041 A79-13998
Role of autogenic training in psychophysiological conditioning of aviation school students
p0098 A79-21244
Engineering-psychological study of information imaging systems --- manual control of spaceship docking
p0099 A79-21404
Psychologists vs engineers --- flight simulators training requirements
p0132 A79-26499
Investigation of psychological compatibility of crew members of multiseat aircraft
p0166 A79-31165
Aeromedical aspects of flying training with special reference to instructor pupil relationship
p0201 A79-37139
Psychological training - One of the most important factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] p0303 A79-53426
Judgement evaluation and instruction in civil pilot training
[AD-A057440] p0019 N79-10737
Variability in human body size
p0032 N79-11736
Effects of uncertainty on manual tracking performance --- visual tasks
p0086 N79-15592
Masculinity, femininity, androgyny. What really works at work
[AD-A061177] p0156 N79-19683
Human processing of information and the computerized mode of presentation: Ergonomic parameters
[FOA-C-56018-H9] p0263 N79-29797
Psychological selection of Spacelab payload specialists: The evaluation of German applicants
[DLR-FB-78-29] p0281 N79-30936

PSYCHOLOGICAL INDEXES
U PSYCHOLOGICAL TESTS

PSYCHOLOGICAL TESTS
An Air Combat Effectiveness Study /ACES/ program
p0040 A79-13222
Psychological selection of payload astronauts
p0047 A79-15488
Locus of the effect of specific practice in continuous visual search
p0129 A79-25099
Chromatic border distinctness - Not an index of hue or saturation differences
p0139 A79-28332
A further investigation of visual dominance
p0186 A79-33949
Personality characteristics of pilots on EPPS, MPI and DOSEFU test. II - Comparison among pilots, non-pilot officers and aviation students
p0210 A79-38822
Relationship between the reproduction tactics and the major indices of speech retention-reproduction processes
p0254 A79-46276
Design, fabrication and utility of a flight oriented performance test
p0271 A79-49728
Information processing in humans, volume 3. A bibliography with abstracts
[NTIS/PS-78/1154/0] p0058 N79-13710
Quantification and validation of percept-genetic defense mechanism. A hierarchical analysis of

behavior of pilots under stress
[FOA-C-55020-H6] p0124 N79-17555
Estimation of the operating characteristics of item response categories, 3: The normal approach method and the Pearson system
[AD-A056747] p0145 N79-18587
A description of the recent neuropsychological selection of pilots for land forces light aircraft
p0151 N79-19633
A construct validation of adaptive achievement testing
[AD-A063148] p0173 N79-20742
Shalit Perceptual Organisation and Reduction Questionnaire (SPORQ): The instrument, design, administration and scoring
[FOA-C-55021-H6] p0249 N79-27859
Personality profiles of divers involved in research activities
[DLR-FB-78-11] p0281 N79-30935
Shalit Perceptual Organization and Reduction Questionnaire (SPORQ). Report 2: Characteristics and reliability
[FOA-C-55031-H6] p0309 N79-32836

PSYCHOLOGY
NT COGNITIVE PSYCHOLOGY
NT MILITARY PSYCHOLOGY
NT PSYCHOACOUSTICS
Applications of two-parameter decision theories in psychology
[AD-A059010] p0052 N79-12705
A comparison of the job attitudes and interest patterns of air traffic and airway facility personnel
[AD-A067826] p0281 N79-30933
Making it in academic psychology: Demographic and personality correlates of eminence
[NASA-CR-162287] p0289 N79-31932
Methodological and operational aspects of programmed environment research
[AD-A068587] p0289 N79-31936
The psychologist in aircraft accident investigation --- pilot personality and performance
p0291 N79-31946

PSYCHOMETRICS
Psychological selection of payload astronauts
p0047 A79-15488
Some variations on derivations by Primoff and their extensions
[PB-287298/4] p0112 N79-16548

PSYCHOMOTOR PERFORMANCE
Human Factors Society, Annual Meeting, 21st, San Francisco, Calif., October 17-20, 1977, Proceedings
p0035 A79-13181
Psychological selection of payload astronauts
p0047 A79-15488
Augmented feedback in adaptive motor skill training
p0062 A79-18208
Perceptual localization, feature identification and ocular motor factors in scanning a visual display
p0064 A79-18218
Head acceleration and psychomotor performance --- related to crash accident survival rates
p0135 A79-27559
The inhibitory trace effect as a manifestation of the integrative activity of the human brain in performing voluntary motor acts
p0159 A79-28737
Analysis of electroencephalogram during psychomotor performance
p0209 A79-38820
Separation of the effects of raised skin and core temperature on performance of a pursuit rotor task
p0234 A79-43204
Design, fabrication and utility of a flight oriented performance test
p0271 A79-49728
The effect of a reclined sitting position on psychomotor performance during exposure to high, sustained +Gsub z acceleration
[FPRC-1362] p0248 N79-27856
The effect of acceleration and seat back angle on performance of a reaction time task
[FPRC-1364] p0248 N79-27857

PSYCHOPHYSICS
NT PSYCHOACOUSTICS

PSYCHOPHYSIOLOGY
NT WORKLOADS (PSYCHOPHYSIOLOGY)
Psychophysiological forecasting of efficiency
p0010 A79-12867
Intrinsic noise, threshold sensitivity, and adaptation of the retina
p0043 A79-14373
Human psychophysiology in extremal conditions --- Russian book on polar region adaptation
p0048 A79-15977
Role of autogenic training in psychophysiological conditioning of aviation school students
p0098 A79-21244
Spatial frequency masking in human vision - Binocular interactions
p0232 A79-42284
Guidelines for designing machines and devices for acoustic vibrations from the point of view of the physiological and psychological properties of the human organism
p0236 A79-43608
Psychophysiological effects of aging: Developing a functional age index for pilots. 2: Taxonomy of psychological factors
[FAA-AM-78-16] p0054 N79-13685
Information processing in humans, volume 2. A bibliography with abstracts
[NTIS/PS-78/1153/2] p0058 N79-13709
Effect of psychophysiological self-regulation on emotional stability of aviation cadets in flight and on effectiveness of assimilation of flight training program
p0074 N79-14735
Ergonomics laboratory studies pilots' stability for command --- psychophysiological characteristics
p0121 N79-17529
Heart rate: Physiological characteristics and quantification methods for use in behavioral studies
[CSIR-SR-PERS-276] p0121 N79-17531
Psychophysiological effects of aging: Developing a functional age index for pilots. 3: Measurement of pilot performance
[FAA-AM-78-27] p0123 N79-17546
Perceived quantization error. Effect of quantization function, reconstruction function and number of levels
[FOA-C-56015-H9] p0124 N79-17556
Contributions of psychophysiological techniques to aircraft design and other operational problems
[AGARD-AG-244] p0290 N79-31941

PSYCHOSES
Psychosis in air force flight personnel during the last 25 years
p0103 A79-23957

PSYCHOTHERAPY
Evaluation of biofeed therapy
[PB-287777/7] p0123 N79-17543

PSYCHROPHILES
Effects of low temperature on in vivo and in vitro protein synthesis in Escherichia coli and Pseudomonas fluorescens
p0131 A79-26141

PUBLIC HEALTH
Public health considerations associated with a Mars surface sample return mission
p0005 A79-12510
A new case of autochthonous malaria in the Paris region associated with frequentation of airports - Recommendations of prophylactic procedures
p0104 A79-23958
A literature review-problem definition studies on selected toxic chemicals. Volume 1: Occupational health and safety aspects of diesel fuel and white smoke generated from it
[AD-A056018] p0025 N79-11686
The role of physical examinations and education in prospective medicine
p0026 N79-11694
Environment monitoring in the USSR and hygienic practice --- anthropogenic effects
p0121 N79-17528
Health effects associated with diesel exhaust emissions, literature review and evaluation
[PB-289817/9] p0171 N79-20727
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 81
[JPRS-73729] p0249 N79-27860
Mutagenic components of alternate energy sources
[CONF-780636-8] p0280 N79-30923

PUBLIC LAW
NT LEGAL LIABILITY
PUBLICATIONS
U DOCUMENTS
PULMONARY CIRCULATION
Growth of pulmonary circulation in normal pig - Structural analysis and cardiopulmonary function p0067 A79-18961
Pulmonary blood volume and interventricular circulation time in physically trained and untrained subjects p0128 A79-24700
Cardiopulmonary readjustments in passive tilt p0277 A79-50901
The lung as a filter for microbubbles p0277 A79-50906
Noninvasive assessment of pulmonary hypertension using bubble ultrasonic ringing (BURP) method, part 2 [PB-283935/5] p0051 N79-12699
Noninvasive assessment of pulmonary hypertension [PB-285121/0] p0057 N79-13701
A systematic approach to computer analysis of pulmonary vascular patterns p0176 N79-21756
The pulmonary circulation: Studies on alveolar hypoxia and vascular smooth muscle metabolism p0195 N79-23650
PULMONARY FUNCTIONS
Monitoring the state of the human airways by analysis of respiratory sound [IAF PAPER 78-66] p0003 A79-11227
Growth of pulmonary circulation in normal pig - Structural analysis and cardiopulmonary function p0067 A79-18961
Effects of exercise, vitamin E, and ozone on pulmonary function and lipid peroxidation p0067 A79-18965
Distribution of pulmonary ventilation and perfusion during short periods of weightlessness p0068 A79-18967
Changes in lung volume, lung density, and distribution of ventilation during hypobaric decompression p0185 A79-33806
Glucose metabolism in rat lung during exposure to hyperbaric O2 p0221 A79-36047
Improved measurements of shear modulus and pleural membrane tension of the lung p0236 A79-43702
Distribution of regional volumes and ventilation in excised canine lobes p0236 A79-43703
A revised model of gas transport in human lungs p0253 A79-45768
Pulmonary functional tolerance to ionizing radiation - An experimental study p0256 A79-46601
Adaptation to chronic hyperoxia in the rat - A study of pulmonary surfactant, tissue levels of superoxide dismutases and histology p0256 A79-46603
Absence of effects of hypoxia on small airway function in humans p0268 A79-47851
Pulmonary function and maximum exercise responses following acute ozone exposure p0273 A79-49987
Lung inflation and longitudinal distribution of pulmonary vascular resistance during hypoxia p0277 A79-50905
Evidence for increased intrathoracic fluid volume in man at high altitude p0305 A79-54266
Specific Findings in Cardiology and Pulmonary Function with Special Emphasis on Assessment Criteria for Flying [AGARD-CP-232] p0028 N79-11705
Detection and supervision of obstructed respiratory flow in fliers. Advantages of debit-volume graphs p0028 N79-11707
Long term pulmonary function patterns in the aviator: The thousand Aviator study p0028 N79-11708
Technical evaluation report on the Aerospace Medical Panel London Specialists' Meeting, Fall 1977 --- disease prevention, flight fitness, and findings in cardiology and pulmonary function [AGARD-AR-131] p0171 N79-20729
Specific findings in cardiology and pulmonary function with special emphasis on assessment criteria for flying p0171 N79-20731
Effects of oxides on nitrogen, Carbon monoxide and photochemical oxidants on the ECG during exercise and on cardiopulmonary function [PB-291595/7] p0177 N79-21763
Cardio-pulmonary response to shock [AD-A065672] p0196 N79-23659
Pneumotachographic distinctions of external respiration in man in the presence of excess intrapulmonary pressure on ground level and at high altitudes p0245 N79-27827
Possibility of improving assessment of cardio-pulmonary function by submaximal exercise on a bicycle ergometer [BLL-RTS-11657] p0279 N79-30918
PULMONARY LESIONS
The effects of strong shock waves on mortality rates and percentages of pulmonary lesions in rats as a function of the number of exposures [NASA-TM-75598] p0053 N79-13676
Evidence for increased intrathoracic fluid volume in man at high altitude [AD-A065333] p0220 N79-25743
PULSATING FLOW
U UNSTEADY FLOW
PULSE DURATION
Changes in critical duration during dark-adaptation p0304 A79-54252
PULSE RECORDERS
U COUNTERS
PULSE WIDTH
U PULSE DURATION
PULSED LASERS
The development of laser exposure limits p0181 A79-32320
Suprathreshold retinal damage due to single 6 picosecond 1060 nm laser light pulses p0266 A79-47330
PULSED RADIATION
NT ELECTROMAGNETIC PULSES
A sample volume tracking unit for pulsed Doppler echocardiography p0200 A79-36869
A mechanism for high-frequency electromagnetical field-induced biological damage p0231 A79-41847
PULSES
NT ELECTROMAGNETIC PULSES
NT PICOSECOND PULSES
PUMPS
NT BLOOD PUMPS
PUPIL SIZE
A method of evaluating the pupillary reaction to vestibular stimuli p0016 N79-10717
PUPILS
Evidence for the equivalent-background hypothesis in cones --- for dark adaptation thresholds p0232 A79-42233
Using color substitution pupil response to expose chromatic mechanisms p0265 A79-47116
PURIFICATION
NT AIR PURIFICATION
PURSUIT TRACKING
Tracking in two dimensions as a function of dimension priorities and tracking difficulty p0036 A79-13193
Depth perception and manual control p0038 A79-13207
Augmented feedback in adaptive motor skill training p0062 A79-18208
The effects of prediction, quickening, frequency separation, and percent of pursuit in perspective displays for low-visibility landing p0063 A79-18210
Cross-validation of regression equations to predict performance in a pursuit tracking task p0064 A79-18222
The effects of participatory mode and task workload on the detection of dynamic system failures p0098 A79-21156

Contrast effects on smooth-pursuit eye movement velocity
p0104 A79-24068
Velocity precision in smooth pursuit eye movements
p0129 A79-25399
Digital man-machine control systems - The effects of preview lag
p0131 A79-26149
The role of perceived motion in smooth pursuit eye movements
p0225 A79-40184
The effect of expectations on slow oculomotor control. I - Periodic target steps. II - Single target displacements
p0225 A79-40185
Separation of the effects of raised skin and core temperature on performance of a pursuit rotor task
p0234 A79-43204
Tracking-task performance during heat stress simulating cockpit conditions in high-performance aircraft
p0236 A79-43675
Pilot-optimal augmentation of the air-to-air tracking task
[AIAA 79-1747] p0252 A79-45388
Pursuit after-nystagmus
p0271 A79-49484
Effect on performance of cycling deep body temperature between 37.0 and 37.6 C
p0274 A79-49993
Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance
p0299 A79-52327
Optokinetic reactions in man elicited by localized retinal motion stimuli
p0304 A79-54251

PUSHING
A prediction model of arm push strength in the transverse plane
p0037 A79-13195

PYRAZINES
NT AZINES

PYRIMIDINES
NT MITOCHONDRIA
NT THYMIDINE

PYROLYSIS
Statistical studies of animal response data from USP toxicity screening test method
p0066 A79-18305
Renal damage in mice following exposure to the pyrolysis products of polytetrafluoroethylene
p0066 A79-18306
Two-week studies of survivors from exposures to pyrolysis gases
p0066 A79-18307

PYROMETRY
U TEMPERATURE MEASUREMENT

PYRROLES
NT INDOLES
NT TRYPTOPHAN

Q

QUALIFICATIONS
Characteristics of medically disqualified airman applicants in calendar years 1975 and 1976
[FAA-AM-78-25] p0144 N79-18582

QUALITY
NT RIDING QUALITY
NT WATER QUALITY

QUALITY CONTROL
Speech quality measurement
[AD-A056272] p0033 N79-11745
Biomedical data validation through an on-line computer system
[PB-285249/9] p0057 N79-13700

QUANTITATIVE ANALYSIS
Computer quantitation of angiocardiographic images
p0293 A79-51028
Quantitative analysis of selected bone parameters
p0022 N79-11668
Quantitative review of human susceptibility to magnetic fields
[UCID-17773] p0026 N79-11691

QUANTIZER
U COUNTERS

R

RABBITS
Transient changes in arterial blood gases and heart rate during and after acutely induced hypoxia and hyperoxia to rabbits
p0134 A79-27120

RADAR
NT MOVING TARGET INDICATORS
NT SIDE-LOOKING RADAR
NT SURVEILLANCE RADAR
NT SYNTHETIC APERTURE RADAR
Radar, Insect Population Ecology, and Pest Management
[NASA-CP-2070] p0147 N79-19592

RADAR DETECTION
Synthetic aperture radar operator tactical target acquisition research
p0037 A79-13202
Target acquisition in realistic terrain
p0037 A79-13203
The effect of increased monitoring load on vigilance performance using a simulated radar display
p0236 A79-43674

RADAR EQUIPMENT
Capabilities of radar as they might relate to entomological studies
p0148 N79-19598

RADAR IMAGERY
Visual cues in manual tracking of simulated targets
p0103 A79-23792

RADAR MAPS
NT RADAR IMAGERY

RADAR OBSERVATION
U RADAR TRACKING

RADAR SCANNING
Real-time reconnaissance systems simulator
p0139 A79-28175

RADAR TRACKING
Evolution of the man-machine interface in surveillance radar systems
p0001 A79-10322
Possible impact of radar on pest management operations
p0148 N79-19599
Radar observation of insects: Mosquitoes
p0148 N79-19600
Visual search performance during simulated radar observation with and without a sweepline
[AD-A068020] p0281 N79-30938

RADIANT FLUX DENSITY
NT LUMINANCE
NT LUMINOUS INTENSITY

RADIATION ABSORPTION
NT ELECTROMAGNETIC ABSORPTION
NT MOLECULAR ABSORPTION
NT ULTRAVIOLET ABSORPTION
NT X RAY ABSORPTION

RADIATION CHEMISTRY
NT PHOTOLYSIS

RADIATION DAMAGE
NT LASER DAMAGE
Atlas of the dose characteristics of external ionizing radiation /Handbook/
p0098 A79-20669
Changes in the bioelectrical activity of some cerebral structures in rabbits exposed to microwaves
p0188 A79-35917
Dynamics of the impulse activity of the neurons in the posterior hypothalamus upon exposure to microwaves
p0188 A79-35918
Genetic effects of cosmic radiation on bacteriophage T4Br/+/ /On materials of biological experiment Soyuz-Apollo/
p0229 A79-41708
A mechanism for high-frequency electromagnetical field-induced biological damage
p0231 A79-41847
Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798
Suprathreshold retinal damage due to single 6 picosecond 1060 nm laser light pulses

p0266 A79-47330

Role of n-aminobenzoic acid in repairing UV and gamma radiation damage
p0301 A79-53211

Spermatogenesis in dogs during many years of chronic exposure to gamma radiation and in the aftereffect period
p0073 N79-14727

DNA content of animal organs during space flight on Kosmos-690 satellite
p0073 N79-14728

Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation
p0312 N79-33804

RADIATION DETECTORS
NT DOSIMETERS

RADIATION DISTRIBUTION
NT DIFFRACTION PATTERNS

RADIATION DOSAGE

Some advances in astronaut radiation dosimetry
[IAF PAPER 78-67] p0003 A79-11228

Atlas of the dose characteristics of external ionizing radiation /Handbook/
p0098 A79-20669

The time parameter in exposures to microwave radiation --- rodent experiments on damage and recovery
p0105 A79-24419

Development capacity of artemia cysts and lettuce seeds flown in Cosmos 936 and directly exposed to cosmic rays
p0127 A79-24632

Electromagnetic absorption in a multilayered model of man
p0226 A79-40650

Autoradiographic enhancement of mammograms
p0227 A79-40773

The dose rate of cosmic ray radiation received by a biological target in the stratosphere and at altitudes of satellite orbits
p0233 A79-42623

Time parameter in microwave irradiation --- rodent experiments on damage and recovery
p0277 A79-50694

Comparative analysis of causes of animal deaths during chronic exposure to gamma radiation and the aftereffect period
p0016 N79-10718

Space radiation dosimetry onboard COSMOS 936: US portion of experiment K-206
p0023 N79-11677

Translations on USSR science and technology: Biomedical and behavioral sciences, no. 57
[JPRS-72808] p0121 N79-17526

Atmospheric neutrons
[NASA-CR-3126] p0211 N79-24631

Dose-effect relationships for ultrasound irradiation of brain tissue
p0242 N79-27812

Problems related to the assessment of safe exposure levels for radio frequency and microwave radiation
[ISS-P-78/7] p0248 N79-27855

Dose-rate conversion factors for external exposure to photon and electron radiation from radionuclides occurring in routine releases from nuclear fuel cycle facilities
[NUREG-CR-0494] p0259 N79-28873

Cell biology basis for the life of an organism in the radiation field
[ANL-TRANS-1152] p0261 N79-29786

Metabolic and physical scaling in microwave/radiofrequency bioeffects studies
[UR-3490-1561] p0316 N79-33831

Health effects of low-level ionizing radiation
[LBL-9918] p0316 N79-33834

RADIATION EFFECTS
NT LASER DAMAGE
NT RADIATION DAMAGE
NT RADIATION INJURIES

Mechanism of the formation of phosphenes by X-rays
p0006 A79-12516

Light flashes in space --- cosmic ray interaction with astronaut visual system
p0100 A79-22261

Electromagnetic power absorption in cylindrical tissue models excited by a loop antenna
p0136 A79-27959

Biological effects of electromagnetic fields
p0184 A79-33712

Effect of electromagnetic fields in long-, medium-, and short-wave ranges on biological objects
p0185 A79-33713

Cell mechanisms for the biological effects of electromagnetic fields
p0188 A79-35569

The Biostack experiment in the U.S. long exposure duration test program
p0227 A79-41230

Preliminary results of Cytos experiment flown in Salyut VI - Investigations of Paramechium aurelia
p0229 A79-41709

A hypothesis of plasmonic absorption of RF energy by biological objects
p0233 A79-42506

Thermal effects during the exposure of ocular fundus tissues to laser radiation
p0234 A79-43057

Histological and histochemical studies of the liver of rats flown aboard Kosmos-690 biosatellite
p0014 N79-10703

State of spermatogenesis in rats flown aboard Kosmos-690 biosatellite
p0014 N79-10704

Rat behavior in maze after flight aboard Kosmos-690 biosatellite
p0014 N79-10705

Effect of accelerations combined with radiation on occurrence of gene mutations in the drosophila
p0016 N79-10720

Cosmic ray effects on the eyes of stationary and centrifuged rats flown on COSMOS 936, experiment K-207
p0024 N79-11678

Biological effects of nonionizing electromagnetic radiation. Volume 2, number 4: A digest of current literature
[AD-A055569] p0055 N79-13689

Translations on USSR science and technology: Biomedical and behavioral sciences, No. 53. Effects of nonionizing electromagnetic radiation
[JPRS-72606] p0074 N79-14736

Investigation of the activity of some enzymatic systems in response to a super-high frequency electromagnetic field
p0074 N79-14737

Effects of intermittent magnetic field on activity of carbohydrate metabolism enzymes and oxygen uptake in testicular tissue
p0075 N79-14738

Effects of microwaves on catecholamine metabolism in the brain
p0075 N79-14739

Dependence of the functional activity of liver mitochondria on microwave radiation --- oxidative phosphorylation
p0075 N79-14741

Mechanism of effects of microwaves on erythrocyte permeability for potassium and sodium ions
p0075 N79-14743

Changes in metabolism of soleus muscle tissue in rats following the flight aboard the Kosmos-690 biosatellite
p0108 N79-16518

Effect on mice of microwaves in the non-thermal intensity region. Respiration, rectal temperature and mental reaction
[FOA-C-54021-H2(H6)] p0120 N79-17523

The effect of 17alpha-ethynylestradiol on the radiation sensitivity of mice
p0141 N79-18557

A technical review of the biological effects of non-ionizing radiation
[PB-290166/8] p0171 N79-20728

Effect of different doses of centimeter-band electromagnetic oscillations of biochemiluminescence of central nervous system and liver tissues
p0172 N79-20738

Biological effects of laser radiation, volume 1. A bibliography with abstracts
[NTIS/PS-79/0019/4] p0176 N79-21760

Biological effects of laser radiation, volume 2. A Bibliography with abstracts
[NTIS/PS-79/0020/2] p0176 N79-21761

Use of a mathematical model of erythropoiesis for evaluation of effects of space flight factors
p0192 N79-23630
Studies on the microwave-induced auditory effect
[PB-290598/2] p0213 N79-24648
Dose-effect relationships for ultrasound irradiation of brain tissue
p0242 N79-27812
The combined effect of space flight factors and radiation on rat skeletal muscles
p0244 N79-27821
Cell biology basis for the life of an organism in the radiation field
[ANL-TRANS-1152] p0261 N79-29786
Biological effects of microwaves, volume 1. A bibliography with abstracts
[NTIS/PS-79/0832/9] p0280 N79-30929
Biological effects of microwaves, volume 2. A bibliography with abstracts
[NTIS/PS-79/0833/7] p0280 N79-30930
Space Biology and Aerospace Medicine, no. 4, 1979
[JPRS-74330] p0310 N79-33789
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation
p0312 N79-33804
Biological effects of nonionizing electromagnetic radiation, volume 3, number 4
[AD-A070242] p0315 N79-33826
RADIATION EXPOSURE
U RADIATION DOSAGE
RADIATION HAZARDS
Interdisciplinary and international contributions to research on biological effects of electromagnetic waves - Past performances and future challenges
p0129 A79-24878
A hazard assessment method for the U.S. Army Microwave Radiation Protection Program
p0129 A79-25304
Laser eye protection for flight personnel
p0135 A79-27555
Laser safety bioeffects research - Histopathology of retinal effects
p0138 A79-28169
No harmful effects through infrared light emitting diodes
p0184 A79-33650
Health and safety hazards associated with solar concentration systems
p0200 A79-36628
On the measurement of hazardous e.m. fields radiated through an aperture
p0233 A79-42486
Protection against laser beams
p0236 A79-43609
Pulmonary functional tolerance to ionizing radiation - An experimental study
p0256 A79-46601
Aviation and radiation hazards
p0271 A79-49727
Protection standards for microwave and radiofrequency radiations
p0300 A79-52878
Nonionizing radiation protection special study: Infrared radiation hazard evaluation of the rotary forge, Watervliet Arsenal, Watervliet, New York, March - April 1978
[AD-A055643] p0055 N79-13691
Evaluation of the risks involved in the application of tritium gas and measures which have to be taken
[MBL-1978-6] p0122 N79-17541
Problems related to the assessment of safe exposure levels for radio frequency and microwave radiation
[ISS-P-78/7] p0248 N79-27855
Dose-rate conversion factors for external exposure to photon and electron radiation from radionuclides occurring in routine releases from nuclear fuel cycle facilities
[NUREG-CR-0494] p0259 N79-28873
Some considerations of hazards in the use of lasers for artistic displays
[PB-294513/7] p0281 N79-30931
RADIATION INJURIES
Effect of ultrasonic irradiation on mammalian cells and chromosomes in vitro
p0134 A79-27239
The development of laser exposure limits
p0181 A79-32320
Thermally induced retina injury due to high doses of optical radiation
p0278 A79-50974
Radiation lesion to liver DNA of rats exposed to radiation during flight aboard the Kosmos-690 biosatellite
p0014 N79-10702
Effects of space flight on course of radiation lesions in rat lymphoid organs
p0107 N79-16516
Acceptable radiation levels in the ultraviolet visible infrared regions
[IZP-1978-15] p0248 N79-27853
RADIATION MEASUREMENT
A hazard assessment method for the U.S. Army Microwave Radiation Protection Program
p0129 A79-25304
Review of unfolding methods used in the US and their standardization for dosimetry
[BNWL-SA-6503] p0307 N79-32828
RADIATION MEASURING INSTRUMENTS
NT DOSIMETERS
NT FLIR DETECTORS
NT INFRARED INSTRUMENTS
NT PHOTOMETERS
RADIATION MEDICINE
NT RADIOBIOLOGY
Computerized positron emission tomography /PET/ for the assessment of myocardial integrity
p0293 A79-51031
RADIATION PRESSURE
NT LUMINANCE
NT LUMINOUS INTENSITY
RADIATION PROTECTION
NT RADIATION SHIELDING
A hazard assessment method for the U.S. Army Microwave Radiation Protection Program
p0129 A79-25304
Protection against laser beams
p0236 A79-43609
Protection standards for microwave and radiofrequency radiations
p0300 A79-52878
Nonionizing radiation protection special study: Infrared radiation hazard evaluation of the rotary forge, Watervliet Arsenal, Watervliet, New York, March - April 1978
[AD-A055643] p0055 N79-13691
Antiradiation suit and other special clothing at industrial safety exhibition
p0114 N79-16793
Chemical protection against ionizing radiation: A survey of possible mechanisms
[MBL-1977-8] p0122 N79-17540
Radiation protection activities, 1977
[PB-290215/3] p0176 N79-21759
Improved airline-type supplied-air plastic suit
[DPSPU-78-30-12] p0282 N79-30943
Radiation protection
[GPO-35-583] p0283 N79-31899
RADIATION RESISTANCE
U RADIATION TOLERANCE
RADIATION SHIELDING
Solar radiation, light protection and tanning of human skin
[BLL-RTS-11580] p0142 N79-18574
RADIATION SICKNESS
Intestinal autoflora as an indicator of severity of radiation lesion
p0121 N79-17530
RADIATION SOURCES
NT POINT SOURCES
RADIATION SPECTRA
NT ABSORPTION SPECTRA
NT INFRARED SPECTRA
NT VIBRATIONAL SPECTRA
Review of unfolding methods used in the US and their standardization for dosimetry
[BNWL-SA-6503] p0307 N79-32828
RADIATION THERAPY
Hyperthermia as an Antineoplastic Treatment Modality
[NASA-CP-2051] p0017 N79-10728
The effect of hyperthermia on the radiation response of crypt cells in mouse jejunum
p0018 N79-10731
The design and construction of a miniature dosimeter for the study of the effects of air

cavities in radiation therapy p0176 N79-21757

RADIATION TOLERANCE
Experimental determination of maximum permissible exposure to laser radiation of 1.54-micron wavelength --- corneal damage p0002 A79-10648
Extrapolation of pulsed light data in scanned displays --- laser radiation eye exposure limits p0138 A79-28170
Low level laser light effects --- on vision p0138 A79-28171
Biological effects of electromagnetic fields p0184 A79-33711
Effect of microwave radiation on the resistance of rats to transverse acceleration loading p0275 A79-50496
Recovery of hemopoiesis in rats exposed to radiation during space flight p0014 N79-10701
Hyperthermia in the treatment of cancer: A review of the radiobiological basis p0017 N79-10729

RADICALS
NT HYDROXYL RADICALS

RADIO COMMUNICATION
NT RADIO TELEMETRY

RADIO EMISSION
Protection standards for microwave and radiofrequency radiations p0300 A79-52878

RADIO FREQUENCIES
NT LOW FREQUENCIES
NT MICROWAVE FREQUENCIES
NT SUPERHIGH FREQUENCIES
NT ULTRAHIGH FREQUENCIES
Interdisciplinary and international contributions to research on biological effects of electromagnetic waves - Past performances and future challenges p0129 A79-24878
Single frequency RF powered ECG telemetry system p0131 A79-26074
Survey of microwave and radiofrequency biological effects and mechanisms p0082 N79-15552
Radiofrequency radiation levels and population exposure in urban areas of the eastern United States [PB-292855/4] p0241 N79-26779

RADIO FREQUENCY DISCHARGE
Measurements of radiofrequency field intensity in buildings with close proximity to broadcast stations [PB-290944/8] N79-25750

RADIO FREQUENCY HEATING
Hyperthermia as an Antineoplastic Treatment Modality [NASA-CP-2051] p0017 N79-10728
Temperature uniformity in hyperthermal tumor therapy p0018 N79-10730
A microangiographic study of the effect of hyperthermia on the rabbit bladder p0018 N79-10732
The combined effects of pulsed magnetic radiation (diapulse) and chemotherapy on tumor bearing mice. The measurement of rodent palatal explants as a device for measurement of the biologic effects of nonionic radiation (EMR) p0018 N79-10733

RADIO FREQUENCY INTERFERENCE
NT ATMOSPHERICS
Measurements of radiofrequency field intensity in buildings with close proximity to broadcast stations [PB-290944/8] N79-25750

RADIO FREQUENCY RADIATION
U RADIO WAVES

RADIO INTERFERENCE
U RADIO FREQUENCY INTERFERENCE

RADIO PROBING
Computerized positron emission tomography /PET/ for the assessment of myocardial integrity p0293 A79-51031

RADIO PROPAGATION
U RADIO TRANSMISSION

RADIO SIGNAL PROPAGATION
U RADIO TRANSMISSION

RADIO TELEMETRY
Measurement of skin temperatures of active subjects by wireless telemetry p0011 A79-12872
A long-range and long-life telemetry data-acquisition system for heart rate and multiple body temperatures from free-ranging animals [NASA-TM-78590] p0239 N79-26762

RADIO TRACKING
NT WILDLIFE RADIOLOCATION
Radio tracking of a fin whale /Balaenoptera physalus/ p0061 A79-18008

RADIO TRANSMISSION
An inductively powered telemetry system for temperature, EKG, and activity monitoring p0228 A79-41424

RADIO WAVES
NT MICROWAVE EMISSION
NT MICROWAVES
NT MILLIMETER WAVES
NT RADIO EMISSION
A technical review of the biological effects of non-ionizing radiation [PB-290166/8] p0171 N79-20728
Effect of radio waves of a millimeter frequency range on the body of man and animals p0172 N79-20735

RADIOACTIVE ISOTOPES
NT AMERICIUM 241
NT CARBON 14
NT COPPER ISOTOPES
NT POTASSIUM 40
NT SODIUM 22
NT TRITIUM

RADIOBIOLOGY
Some advances in astronaut radiation dosimetry [IAF PAPER 78-67] p0003 A79-11228
Life sciences and space research XVI; Proceedings of the Open Meetings of the Working Group on Space Biology, Tel Aviv, Israel, June 7-18, 1977 p0005 A79-12508
An apparatus for studying electroretinographic responses under conditions of space flight p0006 A79-12517
Radiobiological investigations in Cosmos 782 space flight /Biobloc SF1 experiment/ p0006 A79-12518
Biological study of tobacco seeds flown in the joint Apollo-Soyuz test-project p0006 A79-12519
Genetic effects of balloon flight in Drosophila melanogaster p0006 A79-12520
Study of specific effects of hyperfrequencies on the central nervous system. II - Exploratory research on rat /Wistar/ behaviour p0047 A79-15493
Atlas of the dose characteristics of external ionizing radiation /Handbook/ p0098 A79-20669
The time parameter in exposures to microwave radiation --- rodent experiments on damage and recovery p0105 A79-24419
Electromagnetic fields and power deposition in body-of-revolution models of man p0130 A79-26007
Biological effects of electromagnetic fields p0184 A79-33711
Effect of electromagnetic fields in long-, medium-, and short-wave ranges on biological objects p0185 A79-33713
Changes in the bioelectrical activity of some cerebral structures in rabbits exposed to microwaves p0188 A79-35917
Dynamics of the impulse activity of the neurons in the posterior hypothalamus upon exposure to microwaves p0188 A79-35918
Accuracy of RGD approximation for computing light scattering properties of diffusing and motile bacteria --- Rayleigh-Gans-Debye p0233 A79-42448
On the measurement of hazardous e.m. fields radiated through an aperture p0233 A79-42486

Thermal effects during the exposure of ocular fundus tissues to laser radiation
p0234 A79-43057
Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798
Aviation and radiation hazards
p0271 A79-49727
Effect of microwave radiation on the resistance of rats to transverse acceleration loading
p0275 A79-50496
Time parameter in microwave irradiation --- rodent experiments on damage and recovery
p0277 A79-50694
Role of n-aminobenzoic acid in repairing UV and gamma radiation damage
p0301 A79-53211
Space biology and aerospace medicine, vol. 12, no. 5, 1978
[JPRS-72115] p0013 N79-10698
Laser eye protection for flight personnel, volume 1
[AD-A057417] p0034 N79-11747
Biological effects of laser radiation, volume 1. A bibliography with abstracts
[NTIS/PS-79/0019/4] p0176 N79-21760
Biological effects of laser radiation, volume 2. A Bibliography with abstracts
[NTIS/PS-79/0020/2] p0176 N79-21761
Biological effects of microwaves, volume 1. A bibliography with abstracts
[NTIS/PS-79/0432/9] p0280 N79-30929

RADIOCHEMISTRY
Chemical protection against ionizing radiation: A survey of possible mechanisms
[MBL-1977-8] p0122 N79-17540

RADIOGRAPHY
NT ANGIOGRAPHY
NT AUTORADIOGRAPHY
NT TOMOGRAPHY
Iodine imaging using spectral analysis --- radiography for visualization of small blood vessels
p0294 A79-51034
Radiographic comparison of human lung shape during normal gravity and weightlessness
p0305 A79-54269
Histological studies on tibial bone of rats in the 1975 COSMOS-782 flight. Part 2: Microradiographic study of cortical bone
p0022 N79-11666
Mineralization in teeth and jaws, as judged radiographically, in rats of the COSMOS-782 experiment
p0022 N79-11667
A systematic approach to computer analysis of pulmonary vascular patterns
p0176 N79-21756

RADIOIMMUNOASSAY
Obtaining growth hormone from calf blood
[NASA-TM-75326] p0283 N79-31895

RADIOLOGY
Radiological diagnosis of spinal injuries and deformities
p0272 A79-49735
Radiological examination of the Rachis and fitness for employment as a helicopter pilot
p0151 N79-19634
Vertebral pains in helicopter pilots --- symptomology and radiology
p0153 N79-19656
Computed axial tomography (CAT)
[ISS-R-78/4] p0262 N79-29791

RADIOPATHOLOGY
Comparative analysis of causes of animal deaths during chronic exposure to gamma radiation and the aftereffect period
p0016 N79-10718
Effects of long-term and chronic radiation on hemopoiesis
p0016 N79-10719
Morphological study of adrenals of rats irradiated during flight aboard Kosmos-690 satellite
p0108 N79-16517

RADIOPROTECTIVE AGENTS
U ANTIRADIATION DRUGS

RADIOSENSITIVITY
U RADIATION TOLERANCE

RADIOTHERAPY
U RADIATION THERAPY

RAMAN SPECTROSCOPY
Raman spectroscopy of biological membranes and other biological systems
p0141 N79-18559

RANDOM ACCESS MEMORY
The robot's eyes - Stereo vision system for automated scene analysis
p0004 A79-12006

RANDOM DISTRIBUTIONS
U STATISTICAL DISTRIBUTIONS

RANDOM NOISE
Information-handling capacity of a human operator in detection of signals against a noisy background
p0081 N79-14989

RANDOM PROCESSES
The human as a detector of changes in variance and bandwidth
p0117 N79-17496

RANGE (EXTREMES)
Visual acuity of the aging hyperopic eye in the intermediate range
p0037 A79-13198

RANGES (FACILITIES)
NT MISSILE RANGES
NT TEST RANGES

RAPID EYE MOVEMENT STATE
Effect of paradoxical sleep deprivation on the acquisition of sound discrimination
p0167 A79-31988

RARE GASES
NT ARGON
NT HELIUM
NT NEON ISOTOPES
Analysis of inert gas exchange in the middle ear
p0017 N79-10723

RATE METERS
U MEASURING INSTRUMENTS

RATES (PER TIME)
NT ACCELERATION (PHYSICS)
NT AIRSPEED
NT ANGULAR ACCELERATION
NT ANGULAR VELOCITY
NT ARRHYTHMIA
NT BRADYCARDIA
NT EVAPORATION RATE
NT FLOW VELOCITY
NT HEART RATE
NT HIGH ACCELERATION
NT HIGH GRAVITY ENVIRONMENTS
NT IMPACT ACCELERATION
NT LUMINANCE
NT LUMINOUS INTENSITY
NT PHYSIOLOGICAL ACCELERATION
NT RESPIRATORY RATE
NT SYSTOLE
Estimation of rate constants in the Michaelis-Menten model
[AD-A070360] p0307 N79-32824

RATINGS
On the relationship between pilot rating and pilot dynamics. I - An experimental approach
p0066 A79-18474
On the relationship between pilot rating and pilot dynamics. II - An analytical approach
p0066 A79-18475
The influence of various physiological responses on ratings of perceived exertion before and after training
p0194 N79-23649

RATIONS
NT SPACE RATIONS

RATIOS
NT SIGNAL TO NOISE RATIOS

RATS
Weight control and restraint of laboratory rats
p0133 A79-26584
Effects of dietary composition on nutritional state in rats during exposure to high altitude
p0134 A79-27118
Studies on thermoregulation in the rat
p0162 A79-30019
Low tryptophan diet decreases brain serotonin and alters response to apomorphine
p0226 A79-40672
Thermoregulation in unrestrained rats during and after exposure to 1.5-4 G
p0227 A79-41185

Studies of amino acid metabolism in the muscles of rats flown aboard the biosatellite Cosmos 782
p0230 A79-41714

Absence of gastric ulceration in rats after flight on the COSMOS 782
p0021 N79-11660

Experiment K-002: Results of histological examination of inguinal lymph nodes, supplementary report --- COSMOS 782 satellite
p0021 N79-11662

Alterations in erythrocyte survival parameters in rats after 19.5 days aboard COSMOS 782
p0021 N79-11663

Effects of space flight on plasma and glandular concentrations of pituitary hormones --- COSMOS 782 satellite
p0021 N79-11664

Histological studies on tibial bone of rats in the 1975 COSMOS-782 flight. Part 1: Endochondral osteogenesis; medullary bone turnover
p0022 N79-11665

Histological studies on tibial bone of rats in the 1975 COSMOS-782 flight. Part 2: Microradiographic study of cortical bone
p0022 N79-11666

Mineralization in teeth and jaws, as judged radiographically, in rats of the COSMOS-782 experiment
p0022 N79-11667

The lymph nodes and lymph vessels of the white rat
[BLL-RTS-11309] p0141 N79-18554

Preparation of some prostaglandin E sub 1 omega-homo-prostaglandin E sub 1 esters and their inhibiting properties on rat blood platelet aggregation
p0239 N79-26765

Influences of dietary fats on coronary flow rate and left ventricular work of the isolated rat heart
p0239 N79-26766

Effects of dietary fats on the coronary flow rate and the left ventricular function of the isolated rat heart
p0239 N79-26767

RAYLEIGH SCATTERING

Accuracy of RGD approximation for computing light scattering properties of diffusing and motile bacteria --- Rayleigh-Gans-Debye
p0233 A79-42448

REACTION KINETICS

Photochemical transformations of the visual pigment rhodopsin
p0181 A79-32319

A simple analogical model for the selection of optical activity and of the most efficient catalysts in the course of molecular evolution
p0204 A79-37957

Preliminary results of Cytos experiment flown in Salyut VI - Investigations of Paramechium aurelia
p0229 A79-41709

Polyglutaraldehyde - A new reagent for coupling proteins to microspheres and for labeling cell-surface receptors
p0274 A79-50230

Estimation of rate constants in the Michaelis-Menten model
[AD-A070360] p0307 N79-32824

REACTION TIME

Effects of information processing requirements on reaction time of the eye
p0064 A79-18219

Correlation of choice reaction time performance with biorhythmic criticality and cycle phase
p0102 A79-23471

Spatial summation in human vision - Simple reaction time measurements
p0265 A79-47115

Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time
p0297 A79-52025

Target redundancy in visual search - Do repetitions of the target within the display impair processing
p0299 A79-52540

Effects of information processing requirements on reaction time of the eye
[AD-A060099] p0080 N79-14778

Directional errors of movements and their correction in a discrete tracking task --- pilot reaction time and sensorimotor performance
p0086 N79-15589

AAA gunnermodel based on observer theory --- predicting a gunner's tracking response
p0087 N79-15594

Discrete-time pilot model --- human dynamics and digital simulation
p0088 N79-15601

The effect of acceleration and seat back angle on performance of a reaction time task
[FPRC-1364] p0248 N79-27857

REACTIVITY

Immunological reactivity of rats flown aboard Cosmos-605 and Cosmos-690 biosatellites
p0244 N79-27824

REACTOR CHEMISTRY
U RADIOCHEMISTRY

REAL TIME OPERATION

Piloted aircraft simulation - Advantages, disadvantages, and practical problems
[SAE PAPER 780548] p0001 A79-10407

Real-time reconnaissance systems simulator
p0139 A79-28175

Contour detector and data acquisition system for the left ventricular outline
[NASA-CASE-ARC-10985-1] p0017 N79-10724

REAL VARIABLES
NT LINEAR EQUATIONS
NT MEASURE AND INTEGRATION
NT WEIGHTING FUNCTIONS

REBREATHING

Analysis of Pco2 differences during rebreathing due to slow pH equilibration in blood
p0067 A79-18958

RECEPTORS (PHYSIOLOGY)
NT CHEMORECEPTORS
NT GRAVIRECEPTORS
NT PHOTORECEPTORS
NT PROPRIOCEPTORS
NT THERMORECEPTORS

The sensory systems --- Russian book on neurophysiology and biophysics research
p0042 A79-14369

Effect of electroconvulsive shock on monoaminergic receptor binding sites in rat brain
p0162 A79-29925

RECLAMATION
NT MATERIALS RECOVERY
NT WATER RECLAMATION

RECOGNITION
NT PATTERN RECOGNITION
NT SPEECH RECOGNITION
NT TARGET RECOGNITION

RECOMBINATION REACTIONS

Mechanisms of recombination and function of DNA in bacteria
[ORO-3941-33] p0072 N79-14715

RECONNAISSANCE
NT AERIAL RECONNAISSANCE

RECOVERABLE SPACECRAFT
NT SPACE SHUTTLES

RECYCLING

Waste treatment options for use in closed systems --- in space colonies
[AIAA PAPER 79-1409] p0187 A79-34843

Evaluation of toxic effects of organic contaminants in recycled water
[PB-291379/6] p0190 N79-22760

RED BLOOD CELLS
U ERYTHROCYTES

REDUCED GRAVITY

Effects of LBNP on catecholamines and adrenal cortex
p0110 N79-16532

REDUCTION (CHEMISTRY)

Nitrate fermentation in Clostridium perfringens and significance in metabolic evolution
p0205 A79-37968

Cardiovascular studies of reducing and oxidizing agents
p0049 N79-12682

REDUNDANCY

A model of human decisionmaking in fault diagnosis tasks that include feedback and redundancy
p0163 A79-30222

REFERENCES (STANDARDS)
U STANDARDS

REFLECTED RADIATION
U REFLECTED WAVES

REFLECTED RAYS
U REFLECTED WAVES
REFLECTED WAVES
Visual performance assessment through clear and sunscreen-treated windows
[AD-A059750] p0080 N79-14775
REFLECTION
Internal cockpit reflections of external point light sources for the model YAH-64 advanced attack helicopter
[AD-A056489] p0033 N79-11744
REFLEXES
NT CAROTID SINUS REFLEX
NT CONDITIONED REFLEXES
NT HERING-BREUER REFLEX
NT RESPIRATORY REFLEXES
NT VESTIBULAR NYSTAGMUS
Central and reflex mechanisms of controlling movements --- Russian book
p0251 A79-43950
REFRACTORY MATERIALS
NT CHROMIUM ISOTOPES
REFRACTORY METALS
NT CHROMIUM ISOTOPES
REFRASIL (TRADEMARK)
U FIBERS
REFUELING
NT AIR TO AIR REFUELING
REGENERATION (PHYSIOLOGY)
Closed regenerative life support systems for space travel - Their development poses fundamental questions for ecological science
p0228 A79-41702
Strontium metabolism in the rebuilding of skeletal tissue
[NASA-CR-160195] p0216 N79-25713
REGIONAL PLANNING
Regional program for acquisition of medical experiments
[NASA-CR-160121] p0155 N79-19677
REGIONS
NT ARCTIC REGIONS
NT HABITATS
NT LUMBAR REGION
NT POLAR REGIONS
NT TEMPERATE REGIONS
REGRESSION (STATISTICS)
U REGRESSION ANALYSIS
REGRESSION ANALYSIS
Cross-validation of regression equations to predict performance in a pursuit tracking task
p0064 A79-18222
Regression models of search time for color-coded information displays
p0209 A79-38359
REGULATION
U CONTROL
REGULATIONS
Radiation protection activities, 1977
[PB-290215/3] p0176 N79-21759
REGULATORS
NT CURRENT REGULATORS
NT OXYGEN REGULATORS
REHEATING
U HEATING
REJECTION
Characteristics of medically disqualified airman applicants in calendar years 1975 and 1976
[FAA-AM-78-25] p0144 N79-18582
RELATIONSHIPS
NT STRESS-STRAIN RELATIONSHIPS
RELIABILITY ANALYSIS
Subjective data in human reliability estimates
p0046 A79-15398
A method to evaluate performance reliability of individual subjects in laboratory research applied to work settings
[FAA-AM-78-37] p0123 N79-17547
RELIABILITY CONTROL
U QUALITY CONTROL
U RELIABILITY ENGINEERING
RELIABILITY ENGINEERING
Computer-graphic design for human performance
[AD-A055132] p0046 A79-15399
Man-machine reliability - A practical engineering tool
p0047 A79-15400
REMOTE CONTROL
Adaptive supervisory control of remote manipulation
p0046 A79-14987
A comparison of control modes for time-delayed remote manipulation
p0163 A79-30223
Computer augmented manual control of remote manipulators
p0269 A79-48019
Manned simulations of the SRMS in SIMFAC
p0089 N79-15611
Display aids for remote control of untethered undersea vehicles
p0090 N79-15613
Terminal guidance sensor system
[NASA-CASE-NPO-14521-1] p0174 N79-20746
Proximity-vision system for protoflight manipulator arm
[NASA-CR-158652] p0197 N79-24658
Study of modeling and evaluation of remote manipulation tasks with force feedback
[NASA-CR-158721] p0242 N79-26785
REMOTE HANDLING
The mechanical properties of manipulation systems
p0231 A79-42017
Simple models for the shuttle remote manipulator system
[NASA-CR-151881] p0113 N79-16554
REMOTE REGIONS
NT ARCTIC REGIONS
REMOTE SENSORS
Advanced teleoperators --- remote manipulation system
p0187 A79-34982
The application of remote sensors to a model for fish mapping
[INPE-1379-PE/176] p0071 N79-14712
Human/computer control of undersea teleoperators
p0089 N79-15612
REMOTELY PILOTED VEHICLES
Modeling and analysis using SAINT - A combined discrete/continuous network simulation language --- Systems Analysis of Integrated Network of Tasks for RPV
p0004 A79-11480
Communications management by the remote system - An adaptive approach --- modeling of RPV autopilot/operator systems
p0041 A79-13226
REMOVAL
Effects of methylprednisolone sodium succinate on clearance of living E. coli from peripheral blood of dogs
[AD-A062123] p0169 N79-20717
REMS
U RAPID EYE MOVEMENT STATE
RENAL FUNCTION
A review of the consequences of fluid and electrolyte shifts in weightlessness
[IAF PAPER 78-50] p0002 A79-11220
Renal damage in mice following exposure to the pyrolysis products of polytetrafluoroethylene
p0066 A79-18306
Circadian rhythm of electrolyte uresis in healthy persons
p0257 A79-46681
Compensatory reactions of the kidneys to orthostatic factors
p0015 N79-10708
Changes in human renal function in passive head-up and head-down positions
p0072 N79-14722
A compact low-volume, self-regenerating artificial kidney
[PB-287808/0] p0123 N79-17545
Effect of acute hypoxia on some parameters of renal excretory function and renal hemodynamics
p0245 N79-27828
REPETITION
Target redundancy in visual search - Do repetitions of the target within the display impair processing
p0299 A79-52540
REPORTS
NT CONGRESSIONAL REPORTS
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 59. Effects of nonionizing electromagnetic radiation
[JPRS-72956] p0171 N79-20732
REPRODUCTION (BIOLOGY)
Reproductive adaptation in Drosophila exposed to

oxygen-enriched atmospheres
p0164 A79-30657
Quantitative analysis of mating behavior in aging male Drosophila Melanogaster
p0252 A79-44799
The effect of 1 to 5 keV electrons on the reproductive integrity of microorganisms
p0147 N79-19025

REPRODUCTIVE SYSTEMS
NT TESTES

REPUBLIC MILITARY AIRCRAFT
U MILITARY AIRCRAFT

RESCUE OPERATIONS
Evaluation of the helicopter in aeromedical transfers
p0128 A79-24638
Night rescue operation procedure over sea with bell UH-1D helicopters
p0148 N79-19609
An evaluation of the effects of a stability augmentation system upon aviator performance/workload during a MEDEVAC high hover operation
p0148 N79-19612
Human exposure to mechanical vibration at lying posture in the ambulance helicopter UH-1D
p0149 N79-19617
Protective approaches in the moderation of the physiological effects of extreme ambient conditions in helicopter operations
p0149 N79-19618
Advanced life support equipment for nitrogen tetroxide environments
p0169 N79-20432

RESEARCH
NT DYNAMIC PROGRAMMING
NT MARKET RESEARCH
NT MATHEMATICAL PROGRAMMING
NT OPERATIONS RESEARCH

RESEARCH AND DEVELOPMENT
Imagery interpreter performance in the comparison of subjective estimates of photographic image quality
p0036 A79-13191
General activities related to medical research
[TNO-MFI-PR-6] p0262 N79-29793

RESEARCH MANAGEMENT
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 52 --- with emphasis on research management
[JPRS-72604] p0078 N79-14760
A complex system for planning scientific medical research
p0078 N79-14761
Problem-oriented program approach to planning and management of medicine
p0078 N79-14762
New principles of automation of biomedical research
p0078 N79-14763
The conception of the systems analytic approach to planning and organization of medical scientific research
p0078 N79-14764
Current status and prospects of continued refinement of planning and coordination of scientific medical research
p0078 N79-14765
The systems analytic approach to the problem of classification of scientific medical research
p0078 N79-14766
Use of the systems analytic approach for organization and coordination of complex biomedical research
p0079 N79-14767
Biomedical application in space, pilot program in the southern California region
[NASA-CR-160171] p0195 N79-23653

RESEARCH PROJECTS
Four years of color research for visual displays --- human performance consideration for use in aircraft
p0039 A79-13210
Relations between research and instruction in physiology and aerospace ergonomy in the military health services
p0104 A79-23960

RESERVOIRS
Effect of phosphorus supply on algal biomass in a turbid Missouri Reservoir
[PB-293183/0] p0243 N79-27816

RESINS
NT ACRYLIC RESINS

RESOLUTION
NT HIGH RESOLUTION
NT IMAGE RESOLUTION

RESONANCE
NT ELECTRON PARAMAGNETIC RESONANCE
NT MICROWAVE RESONANCE
Electromagnetic absorption in a multilayered model of man
p0226 A79-40650

RESOURCES
NT FORESTS
NT GEOTHERMAL RESOURCES
NT SPRINGS (WATER)

RESPIRATION
NT HIGH ALTITUDE BREATHING
NT PRESSURE BREATHING
Effect of decompression per se on nitrogen elimination
p0067 A79-18964
Effect of physical conditioning on cardiac mitochondrial function
p0068 A79-18966
Distribution of pulmonary ventilation and perfusion during short periods of weightlessness
p0068 A79-18967
The effect of plasmoidal slime on the metabolism of haploid cells of Physarum flavicomum and the respiration of isolated mitochondria
p0105 A79-24513
An improved method for inducing hypothermia and rewarming
p0267 A79-47339
The effect of the reduction of inspired gas density on external respiration
p0296 A79-51115
Influence of skin temperature on sweating and aerobic performance during severe work
p0305 A79-54268
Mechanics of breathing during graded exercise measured with the bodyplethysmograph
p0029 N79-11709
Density dependence of maximum expiratory flow
p0050 N79-12691
Effect on mice of microwaves in the non-thermal intensity region. Respiration, rectal temperature and mental reaction
[POA-C-54021-H2(H6)] p0120 N79-17523
Regulation of the carbon dioxide tension in arterial blood during inhalation of carbon dioxide in birds and mammals
p0169 N79-20713
Metabolism of hydrazine
[AD-A062251] p0169 N79-20716
The effects of brain ischemia on the control of breathing in unanesthetized goats
p0190 N79-23624
External respiration and gas exchange reactions to exercise during rotation of man on a short-radius centrifuge
p0193 N79-23639
Cardio-pulmonary response to shock
[AD-A065672] p0196 N79-23659
Medical science in Siberia: Oxygen exchange in the Far North
[NASA-TM-75391] p0211 N79-24630
Respiration
p0247 N79-27845
Energy expenditures of man during long exposure to a periodically changing atmosphere
p0312 N79-33799
External respiration and gas exchange reactions of man during rotation on a short-arm centrifuge
p0313 N79-33812

RESPIRATORS
Effect of impermeable clothing and respirator on work performance. Part 1: Laboratory studies
[SAND-77-2132] p0034 N79-11748

RESPIRATORY DISEASES
Early detection of disease: The correlation of the volatile organic profiles from patients with upper respiratory infections with subjects of normal profiles
[NASA-CR-160100] p0121 N79-17532

RESPIRATORY IMPEDANCE
Detection and supervision of obstructed respiratory flow in fliers. Advantages of

debit-volume graphs p0028 N79-11707

RESPIRATORY PHYSIOLOGY

Monitoring the state of the human airways by analysis of respiratory sound [IAF PAPER 78-66] p0003 A79-11227

Blood volume and cardiorespiratory responses to lower body negative pressure p0010 A79-12864

Thermoregulation in Macaca mulatta - A thermal balance study p0133 A79-27101

Effects of ozone inhalation on work performance and maximal oxygen uptake p0133 A79-27103

CO2 and exercise tidal volume p0133 A79-27104

Mechanics of the regulation of the respiratory system in man p0160 A79-29258

Application of pseudo random binary sequence input to identification of respiratory control dynamics p0268 A79-48011

Responses of conscious rabbits to CO2 at ambient temperatures of 5, 20, and 35 C p0277 A79-50904

The physiological role of surface-active substances in the lung p0296 A79-51117

Time course of O2-pulse during various tests of aerobic power p0297 A79-52024

The role of lesser circulation hemodynamic changes in pulmonary gas exchange p0300 A79-53066

Tissular respiration of the brain after exposure of rats to hypertoxic helium and oxygen mixtures at atmospheric and elevated pressure p0015 N79-10712

Evidence for the neural regulation of respiration During low intensity exercise in man p0144 N79-18578

User's instructions for the Grodins' respiratory control model using the UNIVAC 1110 remote batch and demand processing [NASA-CR-160225] p0212 N79-24635

RESPIRATORY RATE

Influence of exercise and CO2 on breathing pattern of normal man p0237 A79-43704

Mathematical model of the respiration rhythm generation process p0254 A79-46268

Cardiovascular, metabolic, and respiratory responses of sedentary females to equal metabolic workloads on the bicycle ergometer and treadmill p0024 N79-11681

Follow-up and transversal study of vital capacity and FEV sub values among personnel of the Belgian Army forces p0028 N79-11706

RESPIRATORY REFLEXES

NT HERING-BREVER REFLEX

Abolition of a viscerosomatic reflex during oxygen deprivation p0227 A79-41187

Evaluation of assisted positive-pressure breathing on +Gz tolerance p0266 A79-47336

RESPIRATORY SYSTEM

NT BRONCHI

NT DIAPHRAGM (ANATOMY)

NT LUNGS

NT TRACHEA

Growth of pulmonary circulation in normal pig - Structural analysis and cardiopulmonary function p0067 A79-18961

Cardiorespiratory assessment of decongestant-antihistamine effects on altitude, +Gz, and fatigue tolerances p0127 A79-24628

Particle deposition due to turbulent diffusion in the upper respiratory system p0270 A79-48251

Specific Findings in Cardiology and Pulmonary Function with Special Emphasis on Assessment criteria for Flying [AGARD-CP-232] p0028 N79-11705

Evaluation of exercise-respiratory system modifications and preliminary respiratory-circulatory system integration scheme [NASA-CR-160221] p0212 N79-24639

Physiological system integrations with emphasis on the respiratory-cardiovascular system [NASA-CR-160230] p0213 N79-24643

Investigations of respiratory control systems simulation [NASA-CR-160213] p0218 N79-25726

Evaluation of exercise-respiratory system modifications and integration schemes for physiological systems [NASA-CR-160223] p0219 N79-25733

Techniques of cumulative quantitative characterization of the thorax using audiosonic methods p0240 N79-26769

Pneumotachographic distinctions of external respiration in man in the presence of excess intrapulmonary pressure on ground level and at high altitudes p0245 N79-27827

Toxicity of oxygen mixed with helium p0245 N79-27829

Respiration p0247 N79-27845

RESPONSES

NT DYNAMIC RESPONSE

NT GALVANIC SKIN RESPONSE

NT HEMODYNAMIC RESPONSES

NT MODAL RESPONSE

NT PHYSIOLOGICAL RESPONSES

NT TRANSIENT RESPONSE

Effects of amphetamine on response selection and response execution processes in choice reaction tasks [IZF-1978-8] p0309 N79-32839

REST

NT BED REST

Limb blood flow - Rest and heavy exercise in sitting and supine positions in man p0235 A79-43208

Measuring systolic time intervals at rest and under stress by external methods. Advantages in the evaluation of fliers p0030 N79-11717

RESTRAINTS

U CONSTRAINTS

RETARDANTS

NT FLAME RETARDANTS

RETARDING

Suppression of the immune response by ultrasound p0142 N79-18560

RETENTION (PSYCHOLOGY)

Short-term memory factors in ground controller/pilot communication p0181 A79-32626

Retention and transfer of training on a procedural task interaction of training strategy and cognitive style [AD-A058966] p0052 N79-12704

Individual differences in knowledge acquisition from maps [AD-A065040] p0196 N79-23663

A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology [AD-A069983] p0308 N79-32833

RETINA

NT FOVEA

NT VISUAL PIGMENTS

Mechanism of the formation of phosphenes by X-rays p0006 A79-12516

The equivalent background and retinal eccentricity p0104 A79-24066

Laser safety bioeffects research - Histopathology of retinal effects p0138 A79-28169

Smooth pursuit eye movements - Is perceived motion necessary p0139 A79-28375

The development of laser exposure limits p0181 A79-32320

Thermal activation of the visual transduction mechanism in retinal rods p0230 A79-41746

Suprathreshold retinal damage due to single 6 picosecond 1060 nm laser light pulses

p0266 A79-47330
Responses of retinal and visual pathway potentials of the guinea pig to nitrogen and helium at high pressure
p0266 A79-47331
Thermally induced retina injury due to high doses of optical radiation
p0278 A79-50974
Orientation relative to the retina determines perceptual organization
p0299 A79-52539
Mechanisms of retinal damage from chronic laser radiation: Thresholds and mechanisms
[AD-A058449] p0056 N79-13698
Electrophysiological determination of retinal sensitivity to color after intense monochromatic light adaptation
[AD-A063852] p0189 N79-22756
Experimental and theoretical investigations concerning a frequency filter behavior of the human retina regarding electric pulse currents
[NASA-TM-75372] p0314 N79-33822

RETINAL ADAPTATION
NT DARK ADAPTATION
NT LIGHT ADAPTATION
Intrinsic noise, threshold sensitivity, and adaptation of the retina
p0043 A79-14373
Photochemical transformations of the visual pigment rhodopsin
p0181 A79-32319
Quality of retinal image stabilization during small natural and artificial body rotations in man
p0225 A79-40187
Retinal site of transient tritanopia
p0256 A79-46623
Electrophysiological determination of retinal sensitivity to color after intense monochromatic light adaptation
[AD-A063852] p0189 N79-22756
Effects of vestibular factors on color-discriminating function of the human eyes following color preadaptation
p0192 N79-23632
Restoration of color perception after deadapting flashes
p0193 N79-23640

RETINAL IMAGES
Contributions of the retina and of the eye optical system to the modulation lowering of the aerial image
p0100 A79-22771
The perceived direction of the binocular image
p0104 A79-24069
The interpretation of visual motion --- Book
p0186 A79-34424
Quality of retinal image stabilization during small natural and artificial body rotations in man
p0225 A79-40187
Motion and vision. I - Stabilized images of stationary gratings
p0278 A79-50986
Optokinetic reactions in man elicited by localized retinal motion stimuli
p0304 A79-54251

RETRIEVAL
NT INFORMATION RETRIEVAL
A head-up display for mid-air drone recovery
p0090 N79-15615

REUSABLE SPACECRAFT
NT SPACE SHUTTLES

REVERSE TIME
U REACTION TIME

REVISIONS
Modifications to the steady-state 41-node thermoregulatory model including validation of the respiratory and diffusional water loss equations
[NASA-CR-160219] p0219 N79-25738

RH-2 HELICOPTER
U UH-1 HELICOPTER

RHEOLOGY
Development and application of resistive pulse spectroscopy: Studies on the size, form and deformability of red blood cells
[LBL-8640] p0280 N79-30924

RHEOMETERS
Reliability of determining the cardiac output by the method of quadrupole chest impedance rheography
p0098 A79-21243
Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics
p0296 A79-51118

RHYTHM (BIOLOGY)
NT CIRCADIAN RHYTHMS
Physiological biorhythm as a correlate of pilot error accidents and incidents
p0065 A79-18228
Structure of biorhythms as one of the criteria for physiological adaptability of the human organism
p0097 A79-20653
Correlation of choice reaction time performance with biorhythmic criticality and cycle phase
p0102 A79-23471
Rhythms in human performance - 1-1/2-hour oscillations in cognitive style
p0210 A79-39601

RIBONUCLEIC ACIDS
Senescent changes in the ribosomes of animal cells in vivo and in vitro
p0134 A79-27226
Evolution of transfer RNA
p0206 A79-37975
Structure-stability relationship of thermophile tRNA - A model for biological adaptation and limit of life at high temperature
p0206 A79-37976
Subcellular organisms and evolution of cell structure
p0206 A79-37978
Evolution of early life inferred from protein and ribonucleic acid sequences
p0206 A79-37980

RICHARDSON-DUSHMAN EQUATION
U TEMPERATURE EFFECTS

RIDING QUALITY
A model for predicting human discomfort response to combined noise and vertical vibration
p0156 N79-19685
Human discomfort response to noise combined with vertical vibration
[NASA-TP-1374] p0190 N79-22761

RIEMANN INTEGRAL
U MEASURE AND INTEGRATION

RIGID BODIES
U RIGID STRUCTURES

RIGID STRUCTURES
Computation of rigid-body rotation in three-dimensional space from body-fixed linear acceleration measurements
[ASME PAPER 78-WA/BIO-5] p0069 A79-19759

RISK
Prospective Medicine Opportunities in Aerospace Medicine --- conferences
[AGARD-CP-231] p0026 N79-11692
Evaluation of cardiac risk and subject response to ameliorative efforts
p0031 N79-11723
The impact of coronary vascular risk factors on professional aircrew license loss in the United Kingdom
p0031 N79-11724
Risks from various products used in paint spraying
[BLL-RTS-11499] p0142 N79-18569
The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces
[AD-A069865] p0316 N79-33829

RNA
U RIBONUCLEIC ACIDS

ROBOTS
The robot's eyes - Stereo vision system for automated scene analysis
p0004 A79-12006
Overview of the use of robots in space missions
[DGLR PAPER 78-154] p0042 A79-14099
Adaptive control of a robotic manipulator
p0046 A79-15001
Robots and artificial intelligence --- Russian book
p0061 A79-17569
Multi-PIERRE - A learning robot system
p0066 A79-18425
Control of robot manipulators from the modeling of their dynamics --- French thesis
p0101 A79-23427
Object-handling system for manual industry
p0101 A79-23464

Control systems for robots and manipulators --- Russian book
p0134 A79-27303

ISAAC-1 - A color sensing robot
p0138 A79-28168

Adaptive locomotion of a multilegged robot over rough terrain
p0163 A79-30217

Robotic vision --- process control applications
p0187 A79-34984

Some properties of conservative systems --- walking robot model
p0221 A79-35942

Stabilization of the horizontal motion of a bipedal walking robot
p0251 A79-44081

Visually estimating workpiece pose in a robot hand using the feature points method
p0269 A79-48018

Goal-directed mechanics of controlled manipulators --- Russian book
p0275 A79-50447

Stereo 3-D perception for a robot
p0019 N79-10740

General methods to enable robots with vision to acquire, orient, and transport workpieces
[PB-287199/4] p0113 N79-16556

Advanced industrial robot control systems
[PB-287273/7] p0113 N79-16558

The development of a six degree-of-constraint robot performance evaluation test
p0117 N79-17504

Proximity-vision system for protoflight manipulator arm
[NASA-CR-158652] p0197 N79-24658

ROCKET FLIGHT

Development of space biology experiments for the Space Shuttle - A student's perspective
[AAS PAPER 78-134] p0099 A79-21252

ROCKET PROPELLED SLEDS

Performance evaluation of test dummies with flesh parts produced with substitute foaming compounds
[PB-289951/6] p0179 N79-21776

RODENTS

NT MICE
NT RABBITS
NT RATS

RODS

Light adaptation in a normal and a rod monochromat - Psychophysical and VEP increment threshold comparisons
p0232 A79-42234

ROLL

Application of control theory to the investigation of roll motion effects on pilot control behavior
[AD-A054921] p0046 A79-14972

Psychophysical assessment of angular vibration - Comparison of vertical and roll vibrations
p0234 A79-43206

The effects of closed loop tracking on a subjective tilt threshold in the roll axis
p0090 N79-15620

Roll tracking effects of G-vector tilt and various types of motion washout
p0091 N79-15622

A model for the pilot's use of motion cues in roll-axis tracking tasks
p0118 N79-17512

Ergonomic research into human tolerances for roll and pitch as well as their influence on individual perception and reactions to control parameters
[BMVG-FBWT-78-18] p0282 N79-30944

The application of control theory to the investigation of roll motion effects on human operator performance
p0288 N79-31931

ROLL CONTROL

U LATERAL CONTROL

ROOMS

NT CLEAN ROOMS

ROOTS OF EQUATIONS

Bandpass channels, zero-crossings, and early visual information processing
[AD-A062338] p0170 N79-20724

ROTARY DRIVES

U MECHANICAL DRIVES

ROTARY WING AIRCRAFT

NT HELICOPTERS
NT MILITARY HELICOPTERS
NT UH-1 HELICOPTER

ROTARY WINGS

In-flight toxicology of fixed and rotary wing aircraft crew stations
p0149 N79-19619

ROTATING

U ROTATION

ROTATING BODIES

NT ROTARY WINGS

Computation of rigid-body rotation in three-dimensional space from body-fixed linear acceleration measurements
[ASME PAPER 78-WA/BIO-5] p0069 A79-19759

ROTATING ENVIRONMENTS

Estimated body rotation as a predictor of motion sickness susceptibility
p0273 A79-49990

ROTATING MIRRORS

Dynamics of an image viewed through a rotating mirror
p0221 A79-36365

ROTATING VEHICLES

U ROTATING BODIES

ROTATION

NT AUTOROTATION

Quality of retinal image stabilization during small natural and artificial body rotations in man
p0225 A79-40187

Modeling of visual-vestibular interaction and the fast components of nystagmus
p0050 N79-12692

External respiration and gas exchange reactions of man during rotation on a short-arm centrifuge
p0313 N79-33812

ROTATIONAL FLOW

U FLUID FLOW

ROTORS

NT ROTARY WINGS

RPV

U REMOTELY PILOTED VEHICLES

RUBBER

NT ELASTOMERS

RULES

NT INSTRUMENT FLIGHT RULES

RUNNING

Thermoregulation in swimmers and runners
p0227 A79-41186

S

S BAND

U SUPERHIGH FREQUENCIES
U ULTRAHIGH FREQUENCIES

SACCADIC EYE MOVEMENTS

Saccadic eye movements and visual stability
p0035 A79-13075

How does the saccadic eye movement controller adapt for pathological states
p0046 A79-14961

Perceptual localization, feature identification and ocular motor factors in scanning a visual display
p0064 A79-18218

The trajectories of saccadic eye movements
p0065 A79-18250

Omnidirectional increase in threshold for image shifts during saccadic eye movements
p0139 A79-28198

Saccadic velocity characteristics - Intrinsic variability and fatigue
p0165 A79-30663

Oculomotor factors in visual perceptual response efficiency
p0209 A79-38361

Dynamics of the eye and head during movement between displays - A qualitative and quantitative guide for designers
p0209 A79-38362

An analysis of the saccadic system by means of double step stimuli
p0270 A79-49480

Latency of peripheral saccades
p0278 A79-50987

Upper-velocity threshold for detection of movement
p0299 A79-52541

SACCHARIDES

U CARBOHYDRATES

SACCHAROMYCES
Effects of aeration on formation and localization of the acetyl coenzyme A synthetases of Saccharomyces cerevisiae
p0162 A79-30125
SAFETY
NT AIRCRAFT SAFETY
NT FLIGHT SAFETY
NT INDUSTRIAL SAFETY
SAFETY DEVICES
NT AIR BAG RESTRAINT DEVICES
NT EJECTION SEATS
NT HELMETS
NT SPACE SUITS
Design considerations for inflatable head/neck restraint systems
p0043 A79-14407
An inflatable restraint system --- for helicopter crash protection
p0044 A79-14408
Oral/nasal breathing systems in the year 2000
p0183 A79-33621
An overview of helicopter mission specific survival equipment
p0183 A79-33625
Current trends in UK military aircrew survival equipment
p0183 A79-33633
The fitting of Canadian Forces aircrew helmets - Why the difference
p0184 A79-33645
Whole body response research program
[PB-286151/6] p0093 N79-15640
Test and evaluation of head restraints, seat backs, and anchorages in vehicles subjected to rear impact collision
[PB-289779/1] p0178 N79-21773
Development of a solid propellant inflation technique for the subcompact car passenger restraint system, phase 1
[PB-290328/4] p0178 N79-21775
Guidelines for fit testing and evaluation of USAF personal-protective clothing and equipment
[AD-A065901] p0197 N79-23668
A subhuman primate restraint system
[AD-A069607] p0279 N79-30915
SAFETY FACTORS
Experimental determination of maximum permissible exposure to laser radiation of 1.54-micron wavelength --- corneal damage
p0002 A79-10648
High 'Q' escape protection --- pilot restraint during high speed ejection
p0044 A79-14428
The helmet protects the aviator's head - Or does it
p0044 A79-14429
Ejection problems and injuries - Their causes, effects and treatments, and suggestions for preventive measures
p0267 A79-47338
Evaluation of occupant protection devices and restraint systems
[PB-284299/5] p0053 N79-12713
Effects of deceleration and rate of deceleration on live seated human subjects
[PB-284653/3] p0057 N79-13702
Evaluation of the risks involved in the application of tritium gas and measures which have to be taken
[MBL-1978-6] p0122 N79-17541
SAFETY MANAGEMENT
A hazard assessment method for the U.S. Army Microwave Radiation Protection Program
p0129 A79-25304
Protection standards for microwave and radiofrequency radiations
p0300 A79-52878
Development of recommendations to improve controls operability
[PB-284433/0] p0053 N79-12714
SAILPLANES
U GLIDERS
SALINITY
The effects of temperature, salinity, and other factors on the growth and formation of UV-absorbing substances by the fungus Aspergillus
p0005 A79-12512
SALMONELLA
Biomedical data validation through an on-line computer system
[PB-285249/9] p0057 N79-13700
SALYUT SPACE STATION
Preliminary results of Cytos experiment flows in Salyut VI - Investigations of Paramechium aurelia
p0229 A79-41709
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
p0303 A79-53486
Man in space and on earth
[NASA-TM-75602] p0122 N79-17533
Salyut-6--Soyuz-29: Our commentary, the crew and the station
[NASA-TM-75393] p0174 N79-20745
Studies of microbial flora and immunity of Salyut-3 crew
p0192 N79-23629
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819
Studies of venous circulation in the crew of the Salyut-5 orbital station
p0310 N79-33791
Fluid-electrolyte metabolism in the crew of Salyut-4
p0311 N79-33792
Control of vertical position after flights aboard the Salyut-4 orbital station
p0311 N79-33793
SAMPLES
NT MARS SURFACE SAMPLES
SAMPLING
NT AIR SAMPLING
Automated biowaste sampling system feces monitoring system
[NASA-CR-160301] p0281 N79-30937
SARCOMA
U CANCER
SATAN (SENSOR)
U TERRAIN ANALYSIS
SATELLITE ORBITS
The dose rate of cosmic ray radiation received by a biological target in the stratosphere and at altitudes of satellite orbits
p0233 A79-42623
SATELLITE SOLAR POWER STATIONS
Health maintenance and health surveillance considerations for an SPS space construction base community
[AAS PAPER 78-176] p0099 A79-21273
SATELLITE TEMPERATURE
Importance of temperature control for HEFLEX, a biological experiment for Spacelab 1 --- plant gravitational physiology study
p0230 A79-41716
SATELLITE TRACKING
Wildlife monitoring program plan
[NASA-TM-78578] p0190 N79-23626
SATELLITE-BORNE INSTRUMENTS
Instrumentation for controlling and monitoring environmental control and life support systems
[ASME PAPER 78-ENAS-40] p0009 A79-12587
SATELLITES
NT BIOSATELLITES
NT COSMOS SATELLITES
NT COSMOS 782 SATELLITE
NT COSMOS 936 SATELLITE
NT INTERCOSMOS SATELLITES
NT ORBITAL SPACE STATIONS
NT ORBITAL WORKSHOPS
SATURATION
Chromatic border distinctness - Not an index of hue or saturation differences
p0139 A79-28332
SCALING LAWS
The measurement and scaling of workload in complex performance
[FAA-AM-78-34] p0125 N79-17558
SCANNING
NT RADAR SCANNING
SCATTERING
NT ACOUSTIC SCATTERING
NT BACKSCATTERING
NT LIGHT SCATTERING
NT RAYLEIGH SCATTERING
NT X RAY SCATTERING
SCATTERING FUNCTIONS
Accuracy of RGD approximation for computing light

scattering properties of diffusing and motile bacteria --- Rayleigh-Gans-Debye
p0233 A79-42448

SCENE ANALYSIS
Visual motion perception by intelligent systems
p0300 A79-52691

A theoretical and experimental analysis of the outside world perception process
p0091 N79-15625

SCENEDESMUS
Effects of electromagnetic field induction on development of the green algae, scenedesmus quadricauda (Turbpin) Breb. and composition of free amino acids in its biomass and medium
p0075 N79-14740

SCHEDULING
NT PREDICTION ANALYSIS TECHNIQUES
Recurrent training/supernumerary system
p0041 A79-13283

SCHEMATICS
U CIRCUIT DIAGRAMS
SCHOOLS
Responses of teachers to aircraft noise
p0103 A79-23881

SCIENTISTS
Paul Bert
[NASA-TM-75599] p0055 N79-13687
SCOPOLAMINE
U HYOSCINE
SCORING
Development of an objective grading system along with procedures and aids for its effective implementation in flight
[AD-A071106] p0318 N79-33846
SCRIBING
U SCORING
SCRUBBERS
Spacelab scrubber analysis and test support
[NASA-CR-161309] p0318 N79-33849
SEA GRASSES
Photosynthethic carbon reduction by seagrasses exposed to ultraviolet B radiation
[NASA-CR-160144] p0175 N79-21742
SEA WATER
Experimental approach to the chemical evolution in the primeval sea. I - Formation of amino acids and amino acid polymers in modified sea mediums
p0203 A79-37935

Experimental approach to the chemical evolution in the primeval sea. II - Formation of protocell-like structures 'marigranules' in a modified sea medium
p0204 A79-37964

Membranous evolution in the primitive cell
p0206 A79-37977

Polymers produced by heating an amino acid mixture in sea water enriched with transition elements
p0254 A79-46461

SEASAT PROGRAM
Aerospace highlights and potential medical applications --- in manned space flight
p0293 A79-51027

SEATS
NT EJECTION SEATS
Effects of deceleration and rate of deceleration on live seated human subjects
[PB-284653/3] p0057 N79-13702
The use of mathematical modeling in crashworthy helicopter seating systems
p0287 N79-31923

SECRETIONS
NT ADRENOCORTICOTROPIN (ACTH)
NT HORMONES
NT INSULIN
NT PITUITARY HORMONES
NT SWEAT
The influence of SHF electromagnetic fields on the secretory function of the stomach
p0173 N79-20740

SECULAR PERTURBATION
U LONG TERM EFFECTS
SEDIMENTS
Bacteria in a North Carolina salt marsh. Standing crop and importance in the decomposition of Spartina alterniflora
[PB-288816/2] p0153 N79-19668
SEGREGATION
U SEPARATION

SEISMOCARDIOGRAPHY
Possibility of quantitative evaluation of the heart's mechanical activity from seismocardiosignals
p0276 A79-50658

SELECTION
NT PERSONNEL SELECTION
NT PILOT SELECTION
Visual information processing
p0076 N79-14747

Magnitude estimation as a hearing aid selection procedure
p0246 N79-27838

SELENIUM
Effects of heavy metals especially selenium, vanadium and zirconium on movement, growth and survival of certain animal aquatic life
[PB-292563/4] p0197 N79-25706
SELF DEPLOYING SPACE STATIONS
U SPACE STATIONS
SELF REGULATING
U AUTOMATIC CONTROL
SELF STIMULATION
Effect of psychophysiological self-regulation on emotional stability of aviation cadets in flight and on effectiveness of assimilation of flight training program
p0074 N79-14735

SEMICIRCULAR CANALS
Results of tests of the equilibrium organ of candidates for payload expert for the first Spacelab mission
[DGLR PAPER 78-134] p0042 A79-14084
Biped stability considerations with vestibular models
p0066 A79-18287

SEMICONDUCTOR DEVICES
NT LIGHT EMITTING DIODES
SEMICONDUCTOR DIODES
NT LIGHT EMITTING DIODES
SENSE ORGANS
NT CHEMORECEPTORS
NT COCHLEA
NT CORNEA
NT EAR
NT EYE (ANATOMY)
NT FOVEA
NT GRAVIRECEPTORS
NT LABYRINTH
NT MIDDLE EAR
NT OCULOMOTOR NERVES
NT OTOLITH ORGANS
NT PHOTORECEPTORS
NT PROPRIOCEPTORS
NT PUPILS
NT RETINA
NT SEMICIRCULAR CANALS
NT THERMORECEPTORS
NT VESTIBULES
SENSES
U SENSORY PERCEPTION
SENSIBILITY
U SENSITIVITY
SENSING
U DETECTION
SENSITIVITY
NT LIGHT ADAPTATION
NT PHOTOSENSITIVITY
NT RADIATION TOLERANCE
NT SPECTRAL SENSITIVITY
Effects of stimulus onset and image motion on contrast sensitivity
p0231 A79-42231

The internal model: A study of the relative contribution of proprioception and visual information to failure detection in dynamic systems --- sensitivity of operators versus monitors to failures
p0087 N79-15596

SENSORIMOTOR PERFORMANCE
NT PSYCHOMOTOR PERFORMANCE
A model for sensorimotor control and learning
p0005 A79-12122

Human Factors Society, Annual Meeting, 21st, San Francisco, Calif., October 17-20, 1977, Proceedings
p0035 A79-13181

Perceptual delay - A consequence of metacontrast and apparent motion

p0035 A79-13183
Effect of alcohol and marijuana on eye movements p0101 A79-23469
Correlation of choice reaction time performance with biorhythmic criticality and cycle phase p0102 A79-23471
Comparative evaluation of the effectiveness of visual and aural tracking of a sinusoidal signal p0159 A79-28736
The effects of carbon monoxide on dual-task performance p0161 A79-29716
Eye movements and visual perception --- Russian book p0267 A79-47429
Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time p0297 A79-52025
Directional errors of movements and their correction in a discrete tracking task --- pilot reaction time and sensorimotor performance p0086 N79-15589
A comparison of motor submodels in the optimal control model p0087 N79-15597
Vestibular influences on other sensory and motor processes --- human performance in flight simulation studies p0094 N79-15893
A theoretical and experimental analysis of the outside world perception process [NLR-MP-78020-U] p0309 N79-32835
SENSORY DEPRIVATION
The visual cortex of normal and deprived monkeys p0295 A79-51174
SENSORY DISCRIMINATION
NT BRIGHTNESS DISCRIMINATION
NT TACTILE DISCRIMINATION
NT VISUAL DISCRIMINATION
Nonparametric measures of sensory efficiency for sustained monitoring tasks p0161 A79-29719
SENSORY FEEDBACK
Forms of oculomotor activity under conditions of positive visual feedback p0276 A79-50657
Sensorial aspects of helicopter operations p0152 N79-19644
SENSORY PERCEPTION
NT AUDITORY PERCEPTION
NT CONSCIOUSNESS
NT CRITICAL FLICKER FUSION
NT KINESTHESIA
NT PAIN
NT PROPRIOCEPTION
NT SPACE PERCEPTION
NT TACTILE DISCRIMINATION
NT TASTE
NT VERTICAL PERCEPTION
NT VIBRATION PERCEPTION
NT VISUAL DISCRIMINATION
NT VISUAL PERCEPTION
The responses of frogs to vestibular and visual stimulation in weightlessness p0006 A79-12513
Changes in apparent body orientation and sensory localization induced by vibration of postural muscles - Vibratory myesthetic illusions p0163 A79-30653
Sensory illusions - The ophthalmologist's point of view p0255 A79-46595
Sensory illusions of vestibular origin p0255 A79-46596
The physiologist's view of sensory illusions p0255 A79-46597
Development of techniques to enhance man/machine communication [NASA-CR-157886] p0032 N79-11730
Sensory mechanism modeling [AD-A069439] p0262 N79-29796
SENSORY STIMULATION
Evoked potential correlates of display image quality p0068 A79-18998
Coma recovery p0094 N79-15891
Vestibular influences on other sensory and motor processes --- human performance in flight simulation studies p0094 N79-15893
Multi-channel stimulation of peripheral nerve trunks p0176 N79-21753
A study of the mechanism of thigmomorphogenesis in plants, with special reference to the role of ethylene and its significance to research with plants in space [NASA-CR-158506] p0190 N79-23625
SENTENCES
NT WORDS (LANGUAGE)
SEPARATION
A method for separating biological cells [NASA-CASE-MFS-23883-1] p0175 N79-21743
SEROTONIN
Effects of fenfluramine administration on activity of the pituitary-adrenal system in the rat p0005 A79-12474
Synaptosomal uptake of hypothalamic monoamines and recovery of pituitary-adrenal activity following medial forebrain bundle lesions in rats p0275 A79-50232
SERUMS
Effects of magnesium, calcium, and serum on reversion of stable L-forms --- of soil bacterium p0131 A79-26140
Blood lipid changes in hypoxic rats p0074 N79-14731
Electrophoresis pattern of serum from mice exposed to different concentrations of sulfur dioxide p0147 N79-19027
Obtaining growth hormone from calf blood [NASA-TM-75326] p0283 N79-31895
SERVICE MODULES
Computer aided control of a mechanical arm p0275 A79-50334
SERVICES
NT MEDICAL SERVICES
NT METEOROLOGICAL SERVICES
SERVOCONTROL
Helicopter commands at the touch of a hand [AHS 79-13] p0270 A79-49066
SERVOMECHANISMS
The proto-type wrist joint assembly TACPAW (Triple Axis Common Pivot Arm Wrist), phase 2 [NASA-CR-150885] p0093 N79-15635
SERVOSTABILITY CONTROL
U SERVOCONTROL
SET THEORY
NT EQUIVALENCE
SEWAGE TREATMENT
Mechanism of plant virus inactivation in soil injected with municipal wastewater and treatment plant sludges [PB-287012/9] p0107 N79-16513
SEX FACTOR
Comparison of circadian rhythms in male and female humans p0004 A79-11947
Comparison of hormone and electrolyte circadian rhythms in male and female humans p0004 A79-11948
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight [IAF PAPER 79-80] p0301 A79-53288
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/ [IAF PAPER 79-87] p0302 A79-53290
A comparison of the physiological responses in young men and women to heat and cold stress [AD-A061024] p0155 N79-19679
Selective attention: The influences of subject sex and degree of prior habituation on performance of an attention task with distraction p0260 N79-28876
SEX GLANDS
NT PROSTATE GLAND
NT TESTES
SFERICS
U ATMOSPHERICS
SHANNON INFORMATION THEORY
U INFORMATION THEORY
SHAPES
NT LINE SHAPE
SHEAR PROPERTIES
NT SHEAR STRENGTH
SHEAR STRENGTH
Improved measurements of shear modulus and pleural membrane tension of the lung

p0236 A79-43702
SHIELDING
 NT RADIATION SHIELDING
SHIPS
 NT AIRCRAFT CARRIERS
SHOCK (PHYSIOLOGY)
   Effect of electroconvulsive shock on monoaminergic receptor binding sites in rat brain
   p0162 A79-29925
   Isolation of a shock-induced circulating cardiodepressant substance
   p0257 A79-46967
SHOCK RESISTANCE
   Models and Analogues for the Evaluation of Human Biodynamic Response, Performance and Protection --- conferences, human tolerance of acceleration, vibration, and shock
   [AGARD-CP-253] p0284 N79-31901
   Reference parameters for shock inputs and shock tolerance limits
   p0284 N79-31905
SHOCK SPECTRA
   Reference parameters for shock inputs and shock tolerance limits
   p0284 N79-31905
SHOCK WAVES
 NT SONIC BOOMS
   The effects of strong shock waves on mortality rates and percentages of pulmonary lesions in rats as a function of the number of exposures
   [NASA-TM-75598] p0053 N79-13676
   The biodynamic response of the human body and its application to standards
   p0288 N79-31929
SHORT WAVE RADIATION
 NT MICROWAVE EMISSION
 NT MICROWAVES
 NT MILLIMETER WAVES
SHUTTLE ORBITERS
 U SPACE SHUTTLE ORBITERS
SIBERIA
   Medical science in Siberia: Oxygen exchange in the Far North
   [NASA-TM-75391] p0211 N79-24630
SICKNESSES
 NT ALTITUDE SICKNESS
 NT DECOMPRESSION SICKNESS
SIDE-LOOKING RADAR
 NT RADAR IMAGERY
   The behavior of observers in detecting unbriefed targets at different aircraft speeds with side-looking radar
   [AD-A060908] p0085 N79-15586
SIGHT
 U VISUAL PERCEPTION
SIGNAL ANALYSIS
 NT CEPSTRAL ANALYSIS
   Auditory analysis of complex sound: Electrophysiological investigations --- Russian book
   p0167 A79-31899
   Homomorphic analysis and modeling of ECG signals
   p0210 A79-39973
SIGNAL DETECTION
   Factors that affect display size criteria in a cockpit display system
   p0063 A79-18212
   Nonparametric model for the detection of signals observed by a human operator on a CRT screen on a noise background --- cathode-ray tube
   p0159 A79-28565
   Nonparametric measures of sensory efficiency for sustained monitoring tasks
   p0161 A79-29719
   Predicting aircraft detectability
   p0208 A79-38358
   The human as a detector of changes in variance and bandwidth
   p0117 N79-17496
   The use of artificial signals during SONAR-watch
   [IZF-1978-25] p0309 N79-32837
SIGNAL PROCESSING
   The relationship between classical centers of the auditory tract and certain 'nonspecific' brain structures in the organization of the auditory function in animals
   p0083 A79-14370
   Signal processing in ultrasound --- for diagnostic medicine
   p0294 A79-51039
SIGNAL TO NOISE RATIOS
   Factors that affect display size criteria in a cockpit display system
   p0063 A79-18212
   Nonparametric model for the detection of signals observed by a human operator on a CRT screen on a noise background --- cathode-ray tube
   p0159 A79-28565
SIGNAL TRANSMISSION
 NT BIOTELEMETRY
 NT DATA TRANSMISSION
 NT RADIO TELEMETRY
 NT RADIO TRANSMISSION
 NT TELEMETRY
   An extension of the quickened display for manual control
   p0086 N79-15591
SIGNS AND SYMPTOMS
 NT BRADYCARDIA
 NT VERTIGO
   Sustained operations and sleep deprivation - Effects on indices of stress
   p0009 A79-12859
   Characteristics of serious carbon monoxide poisoning
   p0167 A79-32100
   Hyperventilation in aircrew - A review
   p0235 A79-43212
   New inventory for the assessment of symptom occurrence and severity at high altitude
   p0273 A79-49991
   An illness-injury severity index
   p0050 N79-12688
SILICATES
 NT KAOLINITE
 NT MONTMORILLONITE
SILICON COMPOUNDS
 NT KAOLINITE
 NT MONTMORILLONITE
SILTS
 U SEDIMENTS
SIMULATED ALTITUDE
 U ALTITUDE SIMULATION
SIMULATION
 NT ACOUSTIC SIMULATION
 NT ALTITUDE SIMULATION
 NT ANALOG SIMULATION
 NT COMPUTERIZED SIMULATION
 NT CONTROL SIMULATION
 NT DIGITAL SIMULATION
 NT ENVIRONMENT SIMULATION
 NT FLIGHT SIMULATION
 NT LANDING SIMULATION
 NT SPACE ENVIRONMENT SIMULATION
 NT WEIGHTLESSNESS SIMULATION
   Visual simulation and image realism; Proceedings of the Seminar, San Diego, Calif., August 30, 31, 1978
   p0137 A79-28156
   Study report on combining diagnostic and therapeutic considerations with subsystem and whole-body simulation
   [NASA-CR-160231] p0213 N79-24684
   The development of a whole-body algorithm
   [NASA-CR-160214] p0218 N79-25730
SIMULATOR TRAINING
 U TRAINING SIMULATORS
SIMULATORS
 NT COCKPIT SIMULATORS
 NT CONTROL SIMULATION
 NT FLIGHT SIMULATORS
 NT MOTION SIMULATORS
 NT TARGET SIMULATORS
 NT TRAINING SIMULATORS
 NT VIBRATION SIMULATORS
   Closed loop models for analyzing the effects of simulator characteristics --- digital simulation of human operators
   p0087 N79-15598
   Manned simulations of the SRMS in SIMFAC
   p0089 N79-15611
   The driving simulator developed by the Institute for Perception TNO. A validation study in straight road driving
   [IZF-1978-16-PR-1] p0145 N79-18588
   The use of biostereometry in helicopter cockpit design --- using a simulator and analytic geometry
   p0150 N79-19629

Visual performance modeling in the human operator simulator
p0317 N79-33840

SINE WAVES
Comparative evaluation of the effectiveness of visual and aural tracking of a sinusoidal signal
p0159 A79-28736
Motion and vision. I - Stabilized images of stationary gratings
p0278 A79-50986

SINGLE CRYSTALS
The growth of single crystals from proteins in gravity-free space
[AIAA PAPER 79-0311] p0069 A79-19665

SINUSES
NT PARANASAL SINUSES
Experiment K-002: Results of histological examination of inguinal lymph nodes, supplementary report --- COSMOS 782 satellite
p0021 N79-11662

SINUSOIDS
U SINE WAVES

SITTING POSITION
Seating, console and workplace design - Seated operator reach profiles
p0036 A79-13188
Seating, console, and workplace design - Integration of literature and accommodation model
p0036 A79-13189
Plasma volume and electrolyte shifts with heavy exercise in sitting and supine positions
p0161 A79-29336
Limb blood flow - Rest and heavy exercise in sitting and supine positions in man
p0235 A79-43208
Possibilities of preventing adverse reactions in simulating the acute period of adaptation to weightlessness
p0244 N79-27825
The effect of a reclined sitting position on psychomotor performance during exposure to high, sustained +Gsub z acceleration
[FPRC-1362] p0248 N79-27856
The effect of acceleration and seat back angle on performance of a reaction time task
[FPRC-1364] p0248 N79-27857
The influence of seat back angle on acceleration tolerance
[FPRC-1365] p0248 N79-27858
A lower body negative pressure box for +Gz simulation in the upright seated position
[AD-A069326] p0259 N79-28868
The response of a realistic computer model for sitting humans to different types of shocks
p0288 N79-31927
Some human responses to repeated +G sub z pulses
p0288 N79-31928
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
p0311 N79-33797
Vertical orientation of man during 5-day antiorthostatic hypokinesia (-4, -8 and -12 deg head down position)
p0313 N79-33810

SIZE DETERMINATION
The common occurrence of errors of perceived distance
p0100 A79-22775

SKELETON
U MUSCULOSKELETAL SYSTEM

SKILLS
U ABILITIES

SKIN (ANATOMY)
Neurophysiology of thermal reception
p0083 A79-14374
Human skin wettedness and evaporative efficiency of sweating
p0162 A79-29726
Control of skin blood flow during exercise - Thermal and nonthermal factors
p0185 A79-33807
Application of similarity transformation to unsteady state heat migration problems in human skin and subcutaneous tissues
p0233 A79-42932
Noninvasive estimation of bilirubin and hemoglobin oxygen saturation in the skin by reflection spectrophotometry
p0054 N79-13684
Percutaneous absorption of toxic agents. Part 2: The nerve bases and some other toxic organophosphates. A survey of the literature.
[PML-1978-9] p0123 N79-17542
Official method for determining ocular irritation
[BLL-RTS-11221] p0142 N79-18571
The dangerous relation between sunburn and skin cancer
[BLL-RTS-11310] p0142 N79-18573
Solar radiation, light protection and tanning of human skin
[BLL-RTS-11580] p0142 N79-18574
Thermal conduction effects in human skin. 1: Experimental data acquisition
[AD-A068479] p0259 N79-28871
Thermal conduction effects in human skin. 3: Influence of epidermal thickness and exposure time
[AD-A068481] p0259 N79-28872
Uncommon hypersensitivity to contacting cold water and cold air with propagated reflex-like erythema development
[BLL-RTS-11648] p0279 N79-30917

SKIN TEMPERATURE (BIOLOGY)
Measurement of skin temperatures of active subjects by wireless telemetry
p0011 A79-12872
Modeling heat transfer through human skin subjected to high external temperatures
p0102 A79-23782
Skin temperature changes in paradoxical sleep in man in the cold
p0201 A79-37706
Regional heat loss in resting man during immersion in 25.2 C water
p0202 A79-37709
The effect of thermal stimulation of the skin on activity of lateral crescent interneurons of lumbar segments
p0208 A79-38147
Separation of the effects of raised skin and core temperature on performance of a pursuit rotor task
p0234 A79-43204
Temperature changes during exercise measured by thermography
p0235 A79-43209
Thermal conduction effects in human skin
p0265 A79-47329
An improved method for inducing hypothermia and rewarming
p0267 A79-47339
Effect of rate of change in skin temperature on local sweating rate
p0268 A79-47853
Role of skin temperature in the control of sweating
p0277 A79-50907
Influence of skin temperature on sweating and aerobic performance during severe work
p0305 A79-54268

SKYLAB PROGRAM
User's guide for the Skylab integrated medical data analysis system
[NASA-CR-160189] p0220 N79-25780
Skylab medical data evaluation program (SMEDEP)
[NASA-CR-160279] p0259 N79-28869

SKYLAB 3
Construction in space - Toward a fresh definition of the man/machine relation
p0187 A79-34985

SL 3
U SKYLAB 3

SLANT PERCEPTION
U SPACE PERCEPTION

SLEDS
NT ROCKET PROPELLED SLEDS
Space Sled - A multipurpose apparatus for vestibular research aboard Spacelab
[DGLR PAPER 78-132] p0042 A79-14083

SLEEP
NT HYPNOSIS
Skin temperature changes in paradoxical sleep in man in the cold
p0201 A79-37706
The influence of intermittent aircraft noise on sleep. I
p0255 A79-46599
Electrophysiological investigation of sleep during work-shift regime and production-induced emotional stress

p0276 A79-50655

Effects of prolonged unidirectional shift of sleeping-waking cycle on physiological functions, mental productivity and sleep of man
p0109 N79-16526

Effects of sleep at altered ambient temperatures on electrophysiological sleep and thermoregulatory mechanisms in human subjects and in the ground squirrel (Citellus lateralis)
p0216 N79-25709

A nonlinear mapping approach to discrimination of sleep stages from the human electroencephalogram
p0316 N79-33817

SLEEP DEPRIVATION

Sustained operations and sleep deprivation - Effects on indices of stress
p0009 A79-12859

Effect of paradoxical sleep deprivation on the acquisition of sound discrimination
p0167 A79-31988

Effects of partial sleep deprivation on psychological performance and behaviour
p0200 A79-37130

Changes in the circadian rhythm of performance and mood in healthy young men exposed to prolonged, heavy physical work, sleep deprivation, and caloric deficit
p0238 A79-43202

Arousal from sleep by emergency alarms: Implications from the scientific literature
[PB-284044/5] p0051 N79-12700

Minuteman missile crew fatigue and 24-hour alerts
[AD-A056561] p0056 N79-13696

Task complexity and 24-hr performance patterns in morning and evening active subjects
[FOA-C-52001-H6] p0122 N79-17537

SLEEVES

Prosthesis coupling
[NASA-CASE-KSC-11069-1] p0240 N79-26772

SMOKE

A literature review-problem definition studies on selected toxic chemicals. Volume 2: Occupational health and safety aspects of phosphorus smoke compounds
[AD-A056019] p0025 N79-11685

A literature review-problem definition studies on selected toxic chemicals. Volume 8: Environmental aspects of diesel fuel and fog oils SGF number 1 and SGF number 2 and smoke screens generated from them
[AD-A056021] p0025 N79-11688

The optical properties of smoke-protective devices
[FAA-AM-78-41] p0242 N79-26784

SODIUM

NT SODIUM ISOTOPES

NT SODIUM 22

Thresholds for Na/+/ and Ca/++/ effects on thermoregulation
p0045 A79-14778

Effect of sodium and calcium ingestion on thermoregulation during exercise in man
p0163 A79-30624

Gating effects in Halobacterium halobium membrane transport
p0268 A79-47849

Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
p0297 A79-52023

Mechanism of effects of microwaves on erythrocyte permeability for potassium and sodium ions
p0075 N79-14743

SODIUM CHLORIDES

The use of Na-22 as a tracer for long-term bone mineral turnover studies.
p0265 A79-47327

SODIUM COMPOUNDS

NT SODIUM CHLORIDES

SODIUM ISOTOPES

NT SODIUM 22

Kinetic measurements of bone mineral metabolism: The use of Na-22 as a tracer for long-term bone mineral turnover studies
[NASA-CR-151868] p0111 N79-16544

SODIUM 22

The use of Na-22 as a tracer for long-term bone mineral turnover studies.
p0265 A79-47327

SOFTWARE (COMPUTERS)

U COMPUTER PROGRAMS

SOIL MOISTURE

Meteorological limits on the growth and development of screwworm populations
[NASA-CR-151873] p0107 N79-16512

SOIL SCIENCE

Minute tubular forms in soil
p0297 A79-51698

Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates
p0297 A79-51701

SOILS

NT LUNAR SOIL

Chemical fingerprints of life in terrestrial soils and their possible use for the detection of life on Mars and other planets
p0136 A79-27929

Enhancing biological production of ammonia from atmospheric nitrogen and soil nitrate
[PB-296515/2] p0083 N79-15571

Mechanism of plant virus inactivation in soil injected with municipal wastewater and treatment plant sludges
[PB-287012/9] p0107 N79-16513

Gel-electrophoresis studies for the taxonomic characterization of soil microorganisms
[NRC/CNR-TT-1928] p0120 N79-17521

SOLAR COLLECTORS

Health and safety hazards associated with solar concentration systems
p0200 A79-36628

SOLAR RADIATION

NT SUNLIGHT

Solar-driven chemical energy source for a Martian biota
p0254 A79-46464

The dangerous relation between sunburn and skin cancer
[BLL-RTS-11310] p0142 N79-18573

Solar radiation, light protection and tanning of human skin
[BLL-RTS-11580] p0142 N79-18574

Atmospheric neutrons
[NASA-CR-3126] p0211 N79-24631

SOLAR TERRESTRIAL INTERACTIONS

A review of recent concepts of the problem of the origin of life
p0221 A79-36041

SOLID PROPELLANTS

Development of a solid propellant inflation technique for the subcompact car passenger restraint system, phase 1
[PB-290328/4] p0178 N79-21775

SOLID ROTATION

U ROTATING BODIES

SOLID STATE

Modeling and analysis of man-machine interface information
[AD-A063515] p0178 N79-21772

SOLUTIONS

NT AQUEOUS SOLUTIONS

NT GAS MIXTURES

SONAR

The use of artificial signals during SONAR-watch
[IZF-1978-25] p0309 N79-32837

SONIC BOOMS

Startle reactions to simulated sonic booms - Influence of habituation, boom level and background noise
p0097 A79-20502

Aircraft sonic boom: Biological effects. A bibliography with abstracts
[NTIS/PS-79/0190/3] p0214 N79-24650

SORBENTS

NT ABSORBENTS

SORPTION

NT ADSORPTION

NT CHEMISORPTION

SORTIE CAN

U SPACELAB

SORTIE LAB

U SPACELAB

SOUND

U ACOUSTICS

SOUND GENERATORS

Lung mechanics: Dynamic response, acoustic generation, and flow limitation
p0017 N79-10727

SOUND MEASUREMENT
U ACOUSTIC MEASUREMENTS
SOUND PERCEPTION
U AUDITORY PERCEPTION
SOUND WAVES
NT AIRCRAFT NOISE
NT NOISE (SOUND)
NT SONIC BOOMS
Guidelines for designing machines and devices for acoustic vibrations from the point of view of the physiological and psychological properties of the human organism
p0236 A79-43608
The effect of ultrasound on botulin toxin
[AD-A059544] p0142 N79-18566
SOVIET SPACECRAFT
NT COSMOS SATELLITES
NT COSMOS 782 SATELLITE
NT COSMOS 936 SATELLITE
NT INTERCOSMOS SATELLITES
NT SALYUT SPACE STATION
SOVIET UNION
U U.S.S.R.
SOYBEANS
Physiological effects of a high soybean protein diet in man
p0240 N79-26777
SOYUZ SPACECRAFT
Man in space and on earth
[NASA-TM-75602] p0122 N79-17533
Salyut-6--Soyuz-29: Our commentary, the crew and the station
[NASA-TM-75393] p0174 N79-20745
SPACE BASES
NT SPACE COLONIES
ECLSS definition for a low cost space construction base --- Environmental Control Life Support Systems
[ASME PAPER 78-ENAS-15] p0007 A79-12564
SPACE BIOLOGY
U EXOBIOLOGY
SPACE COLONIES
Developing closed life support systems for large space habitats
[AAS PAPER 78-145] p0099 A79-21260
Waste treatment options for use in closed systems --- in space colonies
[AIAA PAPER 79-1409] p0187 A79-34843
SPACE ENVIRONMENT
U AEROSPACE ENVIRONMENTS
SPACE ENVIRONMENT SIMULATION
NT WEIGHTLESSNESS SIMULATION
Life sciences experiments mission development test program
[ASME PAPER 78-ENAS-36] p0008 A79-12583
Experiences of a payload specialist involved with the simulated Spacelab Mission ASSESS II
[DGLR PAPER 78-183] p0070 A79-20024
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/
[IAF PAPER 79-87] p0302 A79-53290
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] p0302 A79-53291
SPACE ERECTABLE STRUCTURES
Manual alignment of structural components in space
[AIAA PAPER 79-0535] p0129 A79-25855
SPACE EXPLORATION
NT VIKING MARS PROGRAM
Development opportunities in the space environment
p0095 N79-15897
SPACE FLIGHT
NT MANNED SPACE FLIGHT
NT VIKING MARS PROGRAM
Serendipitous solution to the problem of culturing Arabidopsis plants in sealed containers for spaceflights of long duration
p0229 A79-41704
Vestibular Function Research (VFR) experiment. Phase B: Design definition study
[NASA-CR-152207] p0024 N79-11683
The cosmonaut in flight
[NASA-TT-F-17438] p0032 N79-11729
Effects of hypodynamic simulations on the skeletal system of monkeys
p0146 N79-19021
Human factors in Space vehicles and space stations
p0189 N79-22135
A prioritized set of physiological measurements for future spaceflight experiments
[NASA-CR-160202] p0217 N79-25719
The application of systems analysis and mathematical models to the study of erythropoiesis during space flight
[NASA-CR-160218] p0219 N79-25739
Space biology and aerospace medicine, v. 13, no. 3, 1979
[JPRS-73784] p0243 N79-27817
The combined effect of space flight factors and radiation on rat skeletal muscles
p0244 N79-27821
Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite
p0244 N79-27822
Tissular metabolism in mixed type fibers of rat skeletal muscles after flight aboard Cosmos-690 biosatellite
p0244 N79-27823
Immunological reactivity of rats flown aboard Cosmos-605 and Cosmos-690 biosatellites
p0244 N79-27824
Possibilities of preventing adverse reactions in simulating the acute period of adaptation to weightlessness
p0244 N79-27825
Morphological distinctions of the rat thyroid and parathyroid following long-term space flights
p0246 N79-27835
SPACE FLIGHT FEEDING
Food packages for Space Shuttle
[ASME PAPER 78-ENAS-13] p0007 A79-12562
Caloric and exercise requirements of space flight - Biostereometric results from Skylab
p0128 A79-24637
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] p0302 A79-53294
Prospects of using Japanese quail in biological life support systems
p0109 N79-16531
SPACE FLIGHT STRESS
Prolonged weightlessness and calcium loss in man
[IAF PAPER 78-48] p0002 A79-11219
On the man's adaptation to the operator's work under stressful conditions of space flight
[IAF PAPER 78-A-56] p0003 A79-11345
Space medicine - A prognosis for future research
[IAF PAPER 78-ST-17] p0003 A79-11364
Laryngeal problems in space travel
p0011 A79-12870
Results of tests of the equilibrium organ of candidates for payload expert for the first Spacelab mission
[DGLR PAPER 78-134] p0042 A79-14084
Special test for astronaut selection - Tests of tolerance in the centrifuge and in flight
p0047 A79-15491
Continuous metabolic and cardiovascular measurements on a monkey subject during a simulated 6-day Spacelab mission
p0229 A79-41713
Influence of orbital flight conditions on formation of genitals in Muscari racemosum and Anethum graveolens
p0230 A79-41718
Erythropoietic effects of space flight
p0231 A79-42193
Ultrasonic investigations of the soleus muscle after space flight on the Biosputnik 936
p0274 A79-49992
Determination of muscle mass changes in legs from K-40 measurements
p0274 A79-49997
Effect of microwave radiation on the resistance of rats to transverse acceleration loading
p0275 A79-50496
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
p0299 A79-52475
Psychological training - One of the most important factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] p0303 A79-53426
Space biology and aerospace medicine, vol. 12, no. 5, 1978
[JPRS-72115] p0013 N79-10698

Recovery of hemopoiesis in rats exposed to
  radiation during space flight
  p0014 N79-10701
Radiation lesion to liver DNA of rats exposed to
  radiation during flight aboard the Kosmos-690
  biosatellite
  p0014 N79-10702
Histological and histochemical studies of the
  liver of rats flown aboard Kosmos-690 biosatellite
  p0014 N79-10703
State of spermatogenesis in rats flown aboard
  Kosmos-690 biosatellite
  p0014 N79-10704
Rat behavior in maze after flight aboard
  Kosmos-690 biosatellite
  p0014 N79-10705
Analysis of distribution of sequences of R-R
  intervals in astronauts: Generalized coordinate
  method
  p0015 N79-10707
Effect of space flight on cell-mediated immunity
  --- COSMOS 782 satellite
  p0021 N79-11661
Histological studies on tibial bone of rats in the
  1975 COSMOS-782 flight. Part 1: Endochondral
  osteogenesis; medullary bone turnover
  p0022 N79-11665
Histological studies on tibial bone of rats in the
  1975 COSMOS-782 flight. Part 2:
  Microradiographic study of cortical bone
  p0022 N79-11666
Effect of weightlessness and centrifugation (LXG)
  on erythrocyte survival in rats subjected to
  prolonged space flight
  p0023 N79-11674
COSMOS 936, experiment K204: The effects of space
  flight on some liver enzymes concerned with
  carbohydrate and lipid metabolism in the rat
  p0023 N79-11675
Quantitative analysis of selected bone parameters
  p0023 N79-11676
Cosmic ray effects on the eyes of stationary and
  centrifuged rats flown on COSMOS 936, experiment
  K-207
  p0024 N79-11678
COSMOS 936, experiment K-208: Spaceflight effects
  on muscle fibers
  p0024 N79-11679
Space biology and aerospace medicine, vol. 12, no. 6
  [JPRS-72487] p0072 N79-14716
Principal results of experiment with mammals
  onboard the Kosmos-782 biosatellite
  p0073 N79-14726
DNA content of animal organs during space flight
  on Kosmos-690 satellite
  p0073 N79-14728
Space biology and aerospace medicine, volume 13,
  no. 1, 1979
  [JPRS-72826] p0107 N79-16514
Effect of 49-day space flight on parameters of
  immunological reactivity and protein composition
  of blood in the crew of Salyut-5
  p0107 N79-16515
Effects of space flight on course of radiation
  lesions in rat lymphoid organs
  p0107 N79-16516
Morphological study of adrenals of rats irradiated
  during flight aboard Kosmos-690 satellite
  p0108 N79-16517
Changes in metabolism of soleus muscle tissue in
  rats following the flight aboard the Kosmos-690
  biosatellite
  p0108 N79-16518
Changes in amount and composition of phospholipids
  in rat skeletal muscle microsomal fraction under
  the influence of a flight aboard the Kosmos-690
  biosatellite
  p0108 N79-16519
Antiorthostatic hypokinesia as an approximate
  model of weightlessness
  p0108 N79-16520
Bioelectrical activity of the brain during 49-day
  antiorthostatic hypokinesia in individuals with
  early signs of vegetovascular dysfunction
  p0108 N79-16521
Changes in properties of rat femur as a result of
  crural exarticulation and hypokinesia
  p0108 N79-16522
Blood clotting factors of the vascular wall and
  myocardium of hypokinetic rabbits
  p0108 N79-16523
Effect of hypokinesia on animal resistance to
  chemical agents
  p0109 N79-16524
Effects of prolonged unidirectional shift of
  sleeping-waking cycle on physiological
  functions, mental productivity and sleep of man
  p0109 N79-16526
Effects of space flight factors on electrolyte
  composition of rat skeletal muscles
  p0109 N79-16530
Effects of LBNP on catecholamines and adrenal cortex
  p0110 N79-16532
Rehabilitation measures used to restore physical
  fitness of man after long-term restriction of
  movement
  p0110 N79-16534
Problems of human adaption to spaceflight
  p0157 N79-19985
Space biology and aerospace medicine, no. 2, 1979
  [JPRS-73377] p0190 N79-23627
Biochemical study of proteins of gastric and
  intestinal mucosa of rats flown aboard the
  Kosmos-605 biosatellite --- effects of space
  flight stress
  p0192 N79-23631
Increased hemoglobin and content of rat blood
  serum as a result of decreased resistance of
  erythrocyte membranes to hyperbaric oxygenation,
  and the protective effect of urea
  p0193 N79-23637
Effect of combination of hypoxia and hypercapnia
  on survival of Japanese quail
  p0194 N79-23641
Space Biology and Aerospace Medicine, no. 4, 1979
  [JPRS-74330] p0310 N79-33789
Studies of venous circulation in the crew of the
  Salyut-5 orbital station
  p0310 N79-33791
Effects on lipid metabolism in man of some factors
  that simulate space flight conditions
  p0311 N79-33794
Intensity of DNA synthesis in animal organs after
  flight aboard the Cosmos-782 biosatellite
  p0311 N79-33796

SPACE FLIGHT TRAINING
  From the laboratory to the Spacelab - Training
    program for Spacelab payload experts
    [DGLR PAPER 78-182] p0069 A79-20023
  Consciousness alteration in space
    [AIAA PAPER 79-1430] p0187 A79-34853
  Neurophysiological bases of vestibular conditioning
    p0013 N79-10699

SPACE INDUSTRIALIZATION
  Developing closed life support systems for large
    space habitats
    [AAS PAPER 78-145] p0099 A79-21260

SPACE LABORATORIES
 NT MANNED ORBITAL LABORATORIES
  Experiment Chlorella 1 on board of Salyut 6
    [IAF PAPER 78-53] p0003 A79-11223

SPACE MAINTENANCE
  Test evaluation of space station ECLSS maintenance
    concepts --- Environmental Control and Life
    Support System
    [ASME PAPER 78-ENAS-43] p0009 A79-12589
  Health maintenance and health surveillance
    considerations for an SPS space construction
    base community
    [AAS PAPER 78-176] p0099 A79-21273

SPACE MANUFACTURING
  Construction in space - Toward a fresh definition
    of the man/machine relation
    p0187 A79-34985

SPACE MISSIONS
  Life sciences experiments mission development test
    program
    [ASME PAPER 78-ENAS-36] p0008 A79-12583
  Overview of the use of robots in space missions
    [DGLR PAPER 78-154] p0042 A79-14099
  Concept definition for an extended duration
    orbiter ECLSS
    [NASA-CR-160164] p0197 N79-23666

SPACE PERCEPTION
  The effects of ambient illumination, aircraft
    velocity and feedback on absolute distance
    judgments during simulated night

nap-of-the-earth flight
p0038 A79-13204
Depth perception and manual control
p0038 A79-13207
Significance of motor activity for spatial hearing
p0043 A79-14372
Perception of graphic displays of space
p0062 A79-18205
The importance of providing stereoscopic vision in training for nap-of-the-earth /NOE/ flight
p0062 A79-18206
Eye movements and symmetry - Foundations for a quantitative analysis of eye movements as they depend on the structure of the perception field --- German thesis
p0098 A79-20756
The common occurrence of errors of perceived distance
p0100 A79-22775
Digital color image compression in a perceptual space
p0136 A79-28013
Perception of depth - Processing of simple positional disparity as a function of viewing distance
p0139 A79-28197
Axiomatic summary and deductions from Hering's principles of visual direction
p0228 A79-41421
A comparison of oculomotor and motion parallax cues of egocentric distance
p0305 A79-54253

SPACE PROBES
NT VIKING MARS PROGRAM
NT VIKING SPACECRAFT

SPACE PROCESSING
Spacelab and beyond - Bioscience problems in the use of space
[DGLR PAPER 78-129] p0041 A79-14081
The growth of single crystals from proteins in gravity-free space
[AIAA PAPER 79-0311] p0069 A79-19665

SPACE PROGRAMS
NT U.S.S.R. SPACE PROGRAM

SPACE RADIATION
U EXTRATERRESTRIAL RADIATION

SPACE RATIONS
Food packages for Space Shuttle
[ASME PAPER 78-ENAS-13] p0007 A79-12562

SPACE SCIENCES
U AEROSPACE SCIENCES

SPACE SHUTTLE ORBITERS
Animal life support transporters for Shuttle/Spacelab
[ASME PAPER 78-ENAS-10] p0006 A79-12559
Extended duration orbiter life support system options
[ASME PAPER 78-ENAS-31] p0008 A79-12580
Extended duration Orbiter life support definition
[ASME PAPER 78-ENAS-42] p0009 A79-12588
Prevention and treatment of space sickness in Shuttle-Orbiter missions
p0128 A79-24639
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] p0302 A79-53294
Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions
[IAF PAPER 79-99] p0303 A79-53297
Multi-axis hand controller for the shuttle remote manipulator system
p0117 N79-17503
Advanced life support equipment for nitrogen tetroxide environments
p0169 N79-20432
Concept definition for an extended duration orbiter ECLSS
[NASA-CR-160164] p0197 N79-23666

SPACE SHUTTLE PAYLOADS
NT SPACEBORNE EXPERIMENTS
NT SPACELAB
Life sciences in the Shuttle era
[ASME PAPER 78-ENAS-34] p0008 A79-12582
Life support systems for biological specimens in the Shuttle/Spacelab
[ASME PAPER 78-ENAS-38] p0009 A79-12585
Development of space biology experiments for the Space Shuttle - A student's perspective
[AAS PAPER 78-134] p0099 A79-21252

SPACE SHUTTLES
Food packages for Space Shuttle
[ASME PAPER 78-ENAS-13] p0007 A79-12562
Microbial Check Valve for Shuttle
[ASME PAPER 78-ENAS-27] p0008 A79-12576
Manned maneuvering unit: User's guide
[NASA-CR-151864] p0113 N79-16553
Simple models for the shuttle remote manipulator system
[NASA-CR-151881] p0113 N79-16554
Human factors in Space vehicles and space stations
p0189 N79-22135
Biomedical application in space, pilot program in the southern California region
[NASA-CR-160171] p0195 N79-23653
A system for sterilizing objects --- such as water systems on the space shuttle using ethylene oxide
[NASA-CASE-KSC-11085-1] p0318 N79-33848

SPACE STATIONS
NT LONG DURATION EXPOSURE FACILITY
NT ORBITAL SPACE STATIONS
NT ORBITAL WORKSHOPS
NT SALYUT SPACE STATION
NT SKYLAB 3
Test evaluation of space station ECLSS maintenance concepts --- Environmental Control and Life Support System
[ASME PAPER 78-ENAS-43] p0009 A79-12589
Human factors in Space vehicles and space stations
p0189 N79-22135

SPACE SUITS
Evolution of space suit technology
[IAF PAPER 79-92] p0302 A79-53293
Concentration of trace contaminants during gas chromatography and chromato-mass spectrometry in biomedical research
p0109 N79-16528
Spacesuit mobility knee joints
[NASA-CASE-ARC-11058-2] p0214 N79-24651
Probability of caisson disease while wearing a space suit when exiting from a spacecraft with an atmosphere close to that of earth
p0244 N79-27826

SPACE SYSTEMS ENGINEERING
U AEROSPACE ENGINEERING

SPACE TRANSPORTATION
NT SPACE TRANSPORTATION SYSTEM

SPACE TRANSPORTATION SYSTEM
NT SPACE SHUTTLE ORBITERS
NT SPACE SHUTTLES
Food packages for Space Shuttle
[ASME PAPER 78-ENAS-13] p0007 A79-12562
Challenges to life support system's future
[ASME PAPER 78-ENAS-28] p0008 A79-12577
Life sciences in the Shuttle era
[ASME PAPER 78-ENAS-34] p0008 A79-12582
Support system considerations for STS biological investigations
[ASME PAPER 78-ENAS-37] p0008 A79-12584
Vestibular Function Research (VFR) experiment. Phase B: Design definition study
[NASA-CR-152207] p0024 N79-11683

SPACE VEHICLE CHECKOUT PROGRAM
The Spacelab flight unit environmental control/life support system
[ASME PAPER 78-ENAS-14] p0007 A79-12563

SPACE VEHICLE CONTROL
U SPACECRAFT CONTROL

SPACEBORNE ASTRONOMY
Advanced teleoperators --- remote manipulation system
p0187 A79-34982

SPACEBORNE EXPERIMENTS
Experiment Chlorella 1 on board of Salyut 6
[IAF PAPER 78-53] p0003 A79-11223
Biological specimen holding facilities for Spacelab experiments
[IAF PAPER 78-56] p0003 A79-11224
Two primate biological facility module in Spacelab
[IAF PAPER 78-70] p0003 A79-11229
An apparatus for studying electroretinographic responses under conditions of space flight
p0006 A79-12517
Radiobiological investigations in Cosmos 782 space flight /Biobloc SP1 experiment/
p0006 A79-12518
Biological study of tobacco seeds flown in the joint Apollo-Soyuz test-project

p0006 A79-12519
Vestibular Function Research aboard Spacelab
[ASME PAPER 78-ENAS-25] p0007 A79-12574
Life sciences experiments in the first Spacelab mission
[ASME PAPER 78-ENAS-26] p0008 A79-12575
Life sciences in the Shuttle era
[ASME PAPER 78-ENAS-34] p0008 A79-12582
Support system considerations for STS biological investigations
[ASME PAPER 78-ENAS-37] p0008 A79-12584
Life support systems for biological specimens in the Shuttle/Spacelab
[ASME PAPER 78-ENAS-38] p0009 A79-12585
Aggregation of red cells and blood viscosity as models of materials experimentation in the space environment
[AIAA PAPER 79-0310] p0069 A79-19664
Experiences of a payload specialist involved with the simulated Spacelab Mission ASSESS II
[DGLR PAPER 78-183] p0070 A79-20024
Development of space biology experiments for the Space Shuttle - A student's perspective
[AAS PAPER 78-134] p0099 A79-21252
The European life sciences experiments onboard the first Spacelab mission
p0100 A79-22254
Some comments on interpretations of Viking biological experiments
p0255 A79-46465
US experiments flown on the Soviet Satellite COSMOS 782
[NASA-TM-78525] p0020 N79-11651
US experiments flown on COSMOS 782
p0020 N79-11652
Experiment K-002: Results of histological examination of inguinal lymph nodes, supplementary report --- COSMOS 782 satellite
p0021 N79-11662
Effects of space flight on plasma and glandular concentrations of pituitary hormones --- COSMOS 782 satellite
p0021 N79-11664
Mineralization in teeth and jaws, as judged radiographically, in rats of the COSMOS-782 experiment
p0022 N79-11667
US experiments flown on the Soviet satellite COSMOS 936
[NASA-TM-78526] p0023 N79-11671
The Cosmos 936 mission
p0023 N79-11672
BIOSPEX: Biological space experiments, a compendium of life sciences experiments carried on US spacecraft
[NASA-TM-58217] p0261 N79-29784

SPACECRAFT CABIN ATMOSPHERES
The Spacelab flight unit environmental control/life support system
[ASME PAPER 78-ENAS-14] p0007 A79-12563
Medical characteristics of the Spacelab life support system
[DGLR PAPER 78-130] p0041 A79-14082
Characteristics of bacterial aerosol in airtight rooms occupied by humans
p0016 N79-10715
Investigation of composition of trace contaminants in the air environment of the Soyuz-22 spacecraft
p0072 N79-14720
Flight prototype CO2 and humidity control system
[NASA-CR-160224] p0222 N79-25760

SPACECRAFT COMPONENTS
NT SERVICE MODULES
NT SPACECRAFT MODULES
Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components
[NASA-CR-158627] p0197 N79-25705

SPACECRAFT CONTAMINATION
Public health considerations associated with a Mars surface sample return mission
p0005 A79-12510
Planetary protection guidelines for Outer Planet missions
p0005 A79-12511
Microbial Check Valve for Shuttle
[ASME PAPER 78-ENAS-27] p0008 A79-12576
Thermal resistance of naturally occurring airborne bacterial spores --- Viking spacecraft dry heat decontamination simulation
p0131 A79-26147
Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components
[NASA-CR-158627] p0197 N79-25705
Spacelab scrubber analysis and test support
[NASA-CR-161309] p0318 N79-33849

SPACECRAFT CONTROL
Operator performance and localized muscle fatigue in a simulated space vehicle control
p0214 N79-24653

SPACECRAFT DESIGN
ECLSS definition for a low cost space construction base --- Environmental Control Life Support Systems
[ASME PAPER 78-ENAS-15] p0007 A79-12564
Support system considerations for STS biological investigations
[ASME PAPER 78-ENAS-37] p0008 A79-12584
Engineering-psychological study of information imaging systems --- manual control of spaceship docking
p0099 A79-21404
Man and machine design for space flight
p0300 A79-52696
Anthropometric source book. Volume 1: Anthropometry for designers
[NASA-RP-1024] p0032 N79-11734

SPACECRAFT ENVIRONMENTS
Some advances in astronaut radiation dosimetry
[IAF PAPER 78-67] p0003 A79-11228
A thermoelectric integrated membrane evaporation system
[ASME PAPER 78-ENAS-19] p0007 A79-12568
Extended duration Orbiter life support definition
[ASME PAPER 78-ENAS-42] p0009 A79-12588
Spacelab and beyond - Bioscience problems in the use of space
[DGLR PAPER 78-129] p0041 A79-14081
Waste treatment options for use in closed systems --- in space colonies
[AIAA PAPER 79-1409] p0187 A79-34843
US experiments flown on the Soviet Satellite COSMOS 782
[NASA-TM-78525] p0020 N79-11651
US experiments flown on COSMOS 782
p0020 N79-11652
Effects of space flight on plasma and glandular concentrations of pituitary hormones --- COSMOS 782 satellite
p0021 N79-11664
A prioritized set of physiological measurements for future spaceflight experiments
[NASA-CR-160202] p0217 N79-25719
Space biology and aerospace medicine, v. 13, no. 3, 1979
[JPRS-73784] p0243 N79-27817
The combined effect of space flight factors and radiation on rat skeletal muscles
p0244 N79-27821
Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite
p0244 N79-27822
Tissular metabolism in mixed type fibers of rat skeletal muscles after flight aboard Cosmos-690 biosatellite
p0244 N79-27823
Immunological reactivity of rats flown aboard Cosmos-605 and Cosmos-690 biosatellites
p0244 N79-27824
Technology advancement of an oxygen generation subsystem
[NASA-CR-152257] p0261 N79-28883

SPACECRAFT MODULES
Two primate biological facility module in Spacelab
[IAF PAPER 78-70] p0003 A79-11229
Computer aided control of a mechanical arm
p0275 A79-50334

SPACECRAFT ORBITAL ASSEMBLY
U ORBITAL ASSEMBLY

SPACECRAFT ORBITS
NT SATELLITE ORBITS

SPACECRAFT PRELAUNCH TESTS
U SPACE VEHICLE CHECKOUT PROGRAM

SPACECRAFT STERILIZATION
A system for sterilizing objects --- such as water systems on the space shuttle using ethylene oxide
[NASA-CASE-KSC-11085-1] p0318 N79-33848

SPACECRAFT TRACKING
NT SATELLITE TRACKING
SPACECREWS
On the man's adaptation to the operator's work under stressful conditions of space flight
[IAF PAPER 78-A-56] p0003 A79-11345
From the laboratory to the Spacelab - Training program for Spacelab payload experts
[DGLR PAPER 78-182] p0069 A79-20023
Experiences of a payload specialist involved with the simulated Spacelab Mission ASSESS II
[DGLR PAPER 78-183] p0070 A79-20024
Spacelab's payload specialists, their selection and duties on-board
p0226 A79-40720
Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions
[IAF PAPER 79-99] p0303 A79-53297
Considerations associated with the introduction of female crewmembers in spacecraft and space stations
[IAF PAPER 79-A-22] p0303 A79-53424
Communication problems of international crews
[IAF PAPER 79-A-23] p0303 A79-53425
Spacecraft utensil/hand cleansing fixture
[NASA-CR-151845] p0032 N79-11731
Spacecraft utensil/hand cleansing fixture, addendum
[NASA-CR-151846] p0032 N79-11732
Dynamics of Cosmonauts' blood biochemistry during space missions
p0072 N79-14717
Studies of hemodynamics and phase structure of cardiac cycle in the crew of Salyut-4
p0072 N79-14718
Investigation of composition of trace contaminants in the air environment of the Soyuz-22 spacecraft
p0072 N79-14720
Salyut-6--Soyuz-29: Our commentary, the crew and the station
[NASA-TM-75393] p0174 N79-20745
Studies of microbial flora and immunity of Salyut-3 crew
p0192 N79-23629
Systems identification and application systems development for monitoring the physiological and health status of crewmen in space
[NASA-CR-160235] p0212 N79-24642
Fluid-electrolyte metabolism in the crew of Salyut-4
p0311 N79-33792
SPACELAB
Biological specimen holding facilities for Spacelab experiments
[IAF PAPER 78-56] p0003 A79-11224
Spacelab environmental control/life support system /ECLS/ for life science experiments
[IAF PAPER 78-59] p0003 A79-11225
Two primate biological facility module in Spacelab
[IAF PAPER 78-70] p0003 A79-11229
Animal life support transporters for Shuttle/Spacelab
[ASME PAPER 78-ENAS-10] p0006 A79-12559
The Spacelab flight unit environmental control/life support system
[ASME PAPER 78-ENAS-14] p0007 A79-12563
Vestibular Function Research aboard Spacelab
[ASME PAPER 78-ENAS-25] p0007 A79-12574
Life support systems for biological specimens in the Shuttle/Spacelab
[ASME PAPER 78-ENAS-38] p0009 A79-12585
Spacelab and beyond - Bioscience problems in the use of space
[DGLR PAPER 78-129] p0041 A79-14081
Medical characteristics of the Spacelab life support system
[DGLR PAPER 78-130] p0041 A79-14082
Anthropology in Spacelab - Control and display system in Spacelab
[DGLR PAPER 78-151] p0042 A79-14096
Man/terminal interaction evaluation of computer operating system command and control service concepts --- in Spacelab
p0064 A79-18224
Aggregation of red cells and blood viscosity as models of materials experimentation in the space environment
[AIAA PAPER 79-0310] p0069 A79-19664
The growth of single crystals from proteins in gravity-free space
[AIAA PAPER 79-0311] p0069 A79-19665
From the laboratory to the Spacelab - Training program for Spacelab payload experts
[DGLR PAPER 78-182] p0069 A79-20023
Continuous metabolic and cardiovascular measurements on a monkey subject during a simulated 6-day Spacelab mission
p0229 A79-41713
Importance of temperature control for HEFLEX, a biological experiment for Spacelab 1 --- plant gravitational physiology study
p0230 A79-41716
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] p0302 A79-53291
Thoughts about man-machine interrelations in space flights applied to Spacelab missions
[IAF PAPER 79-95] p0302 A79-53295
Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions
[IAF PAPER 79-99] p0303 A79-53297
Biomedical application in space, pilot program in the southern California region
[NASA-CR-160171] p0195 N79-23653
Psychological selection of Spacelab payload specialists: The evaluation of German applicants
[DLR-FB-78-29] p0281 N79-30936
Spacelab scrubber analysis and test support
[NASA-CR-161309] p0318 N79-33849
SPACELAB PAYLOADS
The European life sciences experiments onboard the first Spacelab mission
[ASME PAPER 78-ENAS-24] p0007 A79-12573
Life sciences experiments in the first Spacelab mission
[ASME PAPER 78-ENAS-26] p0008 A79-12575
Life sciences in the Shuttle era
[ASME PAPER 78-ENAS-34] p0008 A79-12582
Life sciences experiments mission development test program
[ASME PAPER 78-ENAS-36] p0008 A79-12583
Space Sled - A multipurpose apparatus for vestibular research aboard Spacelab
[DGLR PAPER 78-132] p0042 A79-14083
Results of tests of the equilibrium organ of candidates for payload expert for the first Spacelab mission
[DGLR PAPER 78-134] p0042 A79-14084
Experiences of a payload specialist involved with the simulated Spacelab Mission ASSESS II
[DGLR PAPER 78-183] p0070 A79-20024
The European life sciences experiments onboard the first Spacelab mission
p0100 A79-22254
Spacelab's payload specialists, their selection and duties on-board
p0226 A79-40720
SPACELAB SIMULATION FLIGHTS
U ASSESS PROGRAM
SPATIAL FILTERING
Experiments in texture perception
[AD-A059630] p0086 N79-15587
SPATIAL ORIENTATION
U ATTITUDE (INCLINATION)
SPECIFICATIONS
Design specification for the whole-body algorithm
[NASA-CR-160226] p0212 N79-24641
SPECTRA
NT ABSORPTION SPECTRA
NT INFRARED SPECTRA
NT NEUTRON SPECTRA
NT RADIATION SPECTRA
NT SHOCK SPECTRA
NT VIBRATIONAL SPECTRA
SPECTRAL ABSORPTION
U ABSORPTION SPECTRA
SPECTRAL ANALYSIS
U SPECTRUM ANALYSIS
SPECTRAL BANDS
NT ABSORPTION SPECTRA
SPECTRAL SENSITIVITY
Detection of coloured stimuli by independent linear systems
p0231 A79-42229
SPECTROPHOTOMETRY
Polyglutaraldehyde - A new reagent for coupling proteins to microspheres and for labeling cell-surface receptors

p0274 A79-50230
Noninvasive estimation of bilirubin and hemoglobin oxygen saturation in the skin by reflection spectrophotometry
p0054 N79-13684
SPECTROSCOPIC ANALYSIS
Study of model membrane fusion using photon correlation spectroscopy --- lipid bilayer phase transition in cell membranes
p0147 N79-19591
SPECTROSCOPY
NT ABSORPTION SPECTROSCOPY
NT MASS SPECTROSCOPY
NT RAMAN SPECTROSCOPY
NT SPECTROPHOTOMETRY
NT SPECTROSCOPIC ANALYSIS
NT ULTRASONIC SPECTROSCOPY
Development and application of resistive pulse spectroscopy: Studies on the size, form and deformability of red blood cells
[LBL-8640] p0280 N79-30924
SPECTRUM ANALYSIS
NT CEPSTRAL ANALYSIS
Iodine imaging using spectral analysis --- radiography for visualization of small blood vessels
p0294 A79-51034
Analysis of visible spectra and thermodynamic parameters in hemeprotein systems
p0144 N79-18579
SPEECH
NT WORDS (LANGUAGE)
Voice communication in artificial atmospheres --- Russian book
p0048 A79-16500
Relationship between the reproduction tactics and the major indices of speech retention-reproduction processes
p0254 A79-46276
Speech quality measurement
[AD-A056272] p0033 N79-11745
SPEECH DISCRIMINATION
U SPEECH RECOGNITION
SPEECH RECOGNITION
Effects of phase manipulation on speech intelligibility through communication headsets --- light aircraft radio communication
p0164 A79-30654
Automatic recognition of spoken words using a functional model of the auditory system
p0235 A79-43464
Human factors. Speech communication
[PS-5/78] p0113 N79-16555
Speech as a pilot input medium
p0119 N79-17519
A preliminary investigation of aural input/output systems for in-flight information retrieval
[AD-A063174] p0178 N79-21770
SPEED INDICATORS
NT HOT-FILM ANEMOMETERS
SPERMATOGENESIS
State of spermatogenesis in rats flown aboard Kosmos-690 biosatellite
p0014 N79-10704
Spermatogenesis in dogs during many years of chronic exposure to gamma radiation and in the aftereffect period
p0073 N79-14727
SPHEROIDS
NT PROLATE SPHEROIDS
SPHYGMOGRAPHY
Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements
p0294 A79-51037
SPINAL CORD
NT SPINE
Dynamic response of vertebral elements related to USAF injury
[AD-A059489] p0071 N79-14713
Tolerance of the neck to indirect impact
[AD-A066971] N79-25749
Simulation of head and neck response to -G sub x and +G sub z impacts
p0285 N79-31908
A three-dimensional mathematical analogue of the spine structure: A comprehensive approach
p0285 N79-31909
A three dimensional discrete element dynamic model of the spine, head and torso
p0285 N79-31910
Analytical modelling of load-deflection behavior of intervertebral discs subjected to axial compression
[AD-A071019] p0316 N79-33830
SPINE
Incidence of spinal disability amongst IAF pilots - Follow up of 38 cases
p0201 A79-37133
Vertebral fractures in Gnat ejections
p0201 A79-37134
Spinal injury pattern due to ejections
p0272 A79-49734
Radiological diagnosis of spinal injuries and deformities
p0272 A79-49735
Assessment of spinal disabilities in relation to flying
p0272 A79-49736
Radiological examination of the Rachis and fitness for employment as a helicopter pilot
p0151 N79-19634
Spine immobilization method and apparatus --- rigid bladder
[NASA-CASE-ARC-11167-1] p0279 N79-30921
The use of spinal analogue to compare human tolerance of repeated shocks with tolerance of vibration, part 1
p0288 N79-31926
SPIROMETERS
Selection of astronaut candidates - Contribution of the exercise ECG and spirography
p0047 A79-15489
SPORES
Thermal resistance of naturally occurring airborne bacterial spores --- Viking spacecraft dry heat decontamination simulation
p0131 A79-26147
SPRAYED PROTECTIVE COATINGS
U PROTECTIVE COATINGS
SPRAYING
Risks from various products used in paint spraying
[BLL-RTS-11499] p0142 N79-18569
SPRINGS (ELASTIC)
Influences of joystick spring resistance on the execution of simple and complex positioning movements
p0119 N79-17517
SPRINGS (WATER)
Amino acids in southern Kamchatka hot springs
p0182 A79-33122
STABILITY
NT AERODYNAMIC STABILITY
NT AIRCRAFT STABILITY
NT DYNAMIC STABILITY
NT FLOW STABILITY
NT HOVERING STABILITY
NT MOTION STABILITY
NT STORAGE STABILITY
NT SYSTEMS STABILITY
NT THERMAL STABILITY
STABILITY AUGMENTATION
An evaluation of perceptual-motor workload during a helicopter hover maneuver
[AD-A058016] p0052 N79-12709
STABILIZATION
Quality of retinal image stabilization during small natural and artificial body rotations in man
p0225 A79-40187
Motion and vision. I - Stabilized images of stationary gratings
p0278 A79-50986
STANDARDIZATION
Review of unfolding methods used in the US and their standardization for dosimetry
[BNWL-SA-6503] p0307 N79-32828
STANDARDS
Protection standards for microwave and radiofrequency radiations
p0300 A79-52878
Standardized examination methods in ergometry
p0029 N79-11710
MM/1, a man - machine interface: A contribution towards a standard
[NPL-CSU-2/78] p0197 N79-23669

Impact tests on crash helmets for motor cyclists
[AD-A065966] p0197 N79-24655
The biodynamic response of the human body and its application to standards
p0288 N79-31929
STARFIGHTER AIRCRAFT
U F-104 AIRCRAFT
STARLIFTER AIRCRAFT
U C-141 AIRCRAFT
STARS
NT MAIN SEQUENCE STARS
STATIC PRESSURE
NT HYDROSTATIC PRESSURE
STATICS
NT HYDROSTATICS
STATIONS
NT ORBITAL SPACE STATIONS
NT ORBITAL WORKSHOPS
NT SALYUT SPACE STATION
NT SPACE STATIONS
A human body and crew station modelling system for motion studies
p0287 N79-31922
STATISTICAL ANALYSIS
NT ANALYSIS OF VARIANCE
NT FACTOR ANALYSIS
NT MULTIVARIATE STATISTICAL ANALYSIS
NT NONPARAMETRIC STATISTICS
NT NORMAL DENSITY FUNCTIONS
NT PEARSON DISTRIBUTIONS
NT REGRESSION ANALYSIS
NT STATISTICAL TESTS
Experimental designs for investigating complex human operator/machine systems
p0040 A79-13225
Estimating percentiles of nonnormal anthropometric populations - Final report
p0065 A79-18226
Statistical studies of animal response data from USP toxicity screening test method
p0066 A79-18305
Are evolutionary rates really variable --- in vertebrate protein chemistry
p0232 A79-42273
Statistical considerations in man-machine designs
p0033 N79-11743
The distribution of cadmium and other metals in human tissues
[PB-285200/2] p0057 N79-13703
Determination of a generalized output index of a biological experiment after multiple tests
p0076 N79-14744
A computer system for statistical analysis of EEG transients
p0216 N79-25707
STATISTICAL DISTRIBUTIONS
NT PEARSON DISTRIBUTIONS
Estimating percentiles of nonnormal anthropometric populations
[AD-A061151] p0122 N79-17535
STATISTICAL TESTS
A comparison of three models for determining test fairness
[AD-A066586] N79-25751
STEADY STATE
User's instructions for the 41-node thermoregulatory model (steady state version)
[NASA-CR-160220] p0212 N79-24638
STEERING
Vehicle Steering control: A model of learning
p0089 N79-15606
Steering behaviour and manual control actions. Part 1: An evaluation of the literature and a research plan
[IZF-1978-3] p0146 N79-18594
A two level model of human steering behavior in a motor vehicle
[PB-27] p0197 N79-24657
STELLAR DOPPLER SHIFT
U DOPPLER EFFECT
U EXTRATERRESTRIAL RADIATION
STELLAR MASS
Habitable zones about main sequence stars
p0136 A79-27930
STEREOCHEMISTRY
Mirror symmetry breaking in biochemical evolution
p0254 A79-46462
STEREOGRAPHY
U STEREOPHOTOGRAPHY
STEREOPHOTOGRAPHY
The robot's eyes - Stereo vision system for automated scene analysis
p0004 A79-12006
Analysis of body form using biostereometrics
[NASA-CR-160173] p0195 N79-23654
STEREOSCOPIC PHOTOGRAPHY
U STEREOPHOTOGRAPHY
STEREOSCOPIC VISION
The importance of providing stereoscopic vision in training for nap-of-the-earth /NOE/ flight
p0062 A79-18206
The visual perception of motion in depth
p0210 A79-39087
The relationship between the apparent vertical and the vertical horopter --- visual perception of luminous line
p0225 A79-40186
Texture contours can facilitate stereopsis by initiating vergence eye movements
p0270 A79-48816
Stereopsis in monkeys using random dot stereograms - The effect of viewing duration
p0271 A79-49481
Stereo 3-D perception for a robot
p0019 N79-10740
STEREOSCOPY
NT STEREOPHOTOGRAPHY
STEREOTELEVISION
A binocular stereoscopic display system for echocardiography
p0130 A79-26072
STERILIZATION
NT SPACECRAFT STERILIZATION
STERILIZATION EFFECTS
NT CHEMICAL EFFECTS
NT DECONTAMINATION
NT THERMAL DEGRADATION
The Department of the Army's food irradiation program: Is it worth continuing
[PB-286399/1] p0094 N79-15644
STEROIDS
NT ALDOSTERONE
NT CHOLESTEROL
NT CORTICOSTEROIDS
Comparison of plasma and urinary steroids in men with type A and type B behavior patterns
p0028 N79-11704
STIFF STRUCTURES
U RIGID STRUCTURES
STIFFENING
Spine immobilization method and apparatus --- rigid bladder
[NASA-CASE-ARC-11167-1] p0279 N79-30921
STIMULANT
NT NORADRENALINE
NT NOREPINEPHRINE
STIMULATED EMISSION DEVICES
NT LASERS
NT PULSED LASERS
STIMULATION
NT AUDITORY STIMULI
NT SENSORY STIMULATION
Carbohydrate metabolism of the stimulated diaphragm muscle
p0050 N79-12689
Selective attention: The influences of subject sex and degree of prior habituation on performance of an attention task with distraction
p0260 N79-28876
STOCHASTIC PROCESSES
NT RANDOM PROCESSES
Discrimination of density and clustering on four versions of a stochastic display --- human performance of pattern recognition
p0036 A79-13192
Are evolutionary rates really variable --- in vertebrate protein chemistry
p0232 A79-42273
Investigation on the effect of mechanical properties of control elements on human control performance under stochastic roll vibrations
[BMVG-FBWT-78-11] p0146 N79-18593
A stochastic model of muscle fatigue in frequent strenuous work cycles
p0261 N79-29789
STOICHIOMETRY
Coupling of aspartate and serine transport to the transmembrane electrochemical gradient for

sodium ions in Halobacterium halobium - Translocation stoichiometries and apparent cooperativity
p0002 A79-10425

STOMACH
Indomethacin-antihistamine combination for gastric ulceration control
[NASA-CASE-ARC-11118-2] p0077 N79-14755
The influence of SHF electromagnetic fields on the secretory function of the stomach
p0173 N79-20740

STORAGE STABILITY
Gas diffusion liquid storage bag and method of use for storing blood
[NASA-CASE-NPO-13930-1] p0076 N79-14749
Maximizing storage stability of foods to be used for resupply in a controlled ecological life supply system: Evaluation of research
[NASA-CR-158846] p0260 N79-28880

STORAGE TANKS
A system for sterilizing objects --- such as water systems on the space shuttle using ethylene oxide
[NASA-CASE-KSC-11085-1] p0318 N79-33848

STRAIN GAGES
In-vivo bone strain telemetry in monkeys /M. nemestrina/
p0002 A79-10608
Single frequency RF powered ECG telemetry system
p0131 A79-26074

STRATA
NT SUBSTRATES

STRATOSPHERE RADIATION
The dose rate of cosmic ray radiation received by a biological target in the stratosphere and at altitudes of satellite orbits
p0233 A79-42623

STRATOTANKER AIRCRAFT
U C-135 AIRCRAFT

STRENGTH OF MATERIALS
U MECHANICAL PROPERTIES

STRESS (PHYSIOLOGY)
NT ACCELERATION STRESSES (PHYSIOLOGY)
NT CENTRIFUGING STRESS
Heat transfer and temperature distribution in the human body
p0041 A79-13612
Effect of water and electrolyte replacement during exercise in the heat on biochemical indices of stress and performance
p0127 A79-24629
Functional changes in the cardiovascular system of machine-tool operators under physical and neurologically stressful loads
p0160 A79-29270
Conjoint effect of physical stress and noise stress on information processing performance and cardiac response
p0161 A79-29715
Cardiac response to whole-body heating
p0165 A79-30661
Energetic aspects of adaptation --- Russian book on metabolic responses to stress
p0167 A79-31906
Predicting coronary artery disease with treadmill stress testing Changes in R-wave amplitude compared with ST segment depression
p0186 A79-34284
Pathophysiology of overloads: Bibliography of Soviet publications --- Russian book
p0200 A79-36385
Predictive accuracy of Q-X/Q-T ratio, Q-Tc interval, S-T depression and R wave amplitude during stress testing --- heart pathology
p0225 A79-40464
Response of women mountaineers to maximal exercise during hypoxia
p0234 A79-43201
Inhibition of the pituitary-adrenal response to stress during deprivation-induced feeding
p0235 A79-43605
Comparative study of hypoxia and other non-invasive stress tests for evaluation of ischaemic heart disease
p0272 A79-49731
Electrophysiological investigation of sleep during work-shift regime and production-induced emotional stress
p0276 A79-50655
Medical qualification procedures for hazardous-duty aeromedical research
p0026 N79-11695
Gas exchange under environmental stress
[AD-A058242] p0056 N79-13697
Fighter index of thermal stress: Development of interim guidance for hot-weather USAF operations
[AD-A053471] p0056 N79-13699
Stress in air traffic controllers: A restudy of 32 controllers 5 to 9 years later
[FAA-AM-78-40] p0144 N79-18581
Criteria for maximum tolerable heat stress. A proposal
[IZF-1978-13] p0144 N79-18583
Stress factors on pilot performance. A bibliography with abstracts
[NTIS/PS-78/1289/4] p0145 N79-18589
Human exposure to mechanical vibration at lying posture in the ambulance helicopter UH-1D
p0149 N79-19617
Implementation of a divisional aviation program to decrease flight crew fatigue
p0150 N79-19624
Fighter index of thermal stress: Relation to weather conditions at ATC and TAC bases
[AD-A062713] p0174 N79-20748
Effects of fatigue on human behavior and performance. A bibliography with abstracts
[NTIS/PS-79/0071/5] p0177 N79-21762
Cardiac adaptation to endurance training: Determined by echocardiography and electrocardiography
p0194 N79-23648
Stress and fatigue in the driving environment --- physiological and psychological effects of heat and noise experienced inside automobiles
p0211 N79-24629
Design specification for the whole-body algorithm
[NASA-CR-160226] p0212 N79-24641
Stress and simulation in pilot training
[AD-A066670] p0222 N79-25757
Effects of vibration on the human organism
p0249 N79-27862
Stress management: A comparison of educational, aerobic and autosuggestive approaches
p0260 N79-28875
Stress factors on pilot performance. Citations from the International Aerospace Abstracts data base
[NTIS/PS-79/0506/0] p0260 N79-28878
Medical and operational factors of accidents in advanced fighter aircraft
p0290 N79-31944
The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress
[AD-A069952] p0318 N79-33845

STRESS (PSYCHOLOGY)
Mental work and emotions --- Russian book
p0002 A79-10847
Sustained operations and sleep deprivation - Effects on indices of stress
p0009 A79-12859
Functional changes in the cardiovascular system of machine-tool operators under physical and neurologically stressful loads
p0160 A79-29270
Conjoint effect of physical stress and noise stress on information processing performance and cardiac response
p0161 A79-29715
Saccadic velocity characteristics - Intrinsic variability and fatigue
p0165 A79-30663
Cardiac changes during behavioral stress in dogs
p0200 A79-36575
Psychosocial aspects of syncope and vertigo in aircrew
p0027 N79-11701
Life stress, organizational stress, and job satisfaction
[AD-A055153] p0057 N79-13706
Methodology to assess psychological stress and its impact in the air combat environment
[AD-A053474] p0057 N79-13707
Effects of fatigue on human behavior and performance. A bibliography with abstracts

[NTIS/PS-79/0071/5] p0177 N79-21762
Stress management: A comparison of educational, aerobic and autosuggestive approaches
p0260 N79-28875
Stress factors on pilot performance. Citations from the International Aerospace Abstracts data base
[NTIS/PS-79/0506/0] p0260 N79-28878
Between incident and accident
p0292 N79-31953

STRESS ANALYSIS
Computer design synthesis of a below knee-Syme prosthesis
p0251 A79-44300

STRESS CALCULATIONS
U STRESS ANALYSIS

STRESS-STRAIN RELATIONSHIPS
Dynamic response of vertebral elements related to USAF injury
[AD-A059489] p0071 N79-14713

STRESSES
NT AXIAL STRESS
NT COMBINED STRESS
NT TENSILE STRESS
NT THERMAL STRESSES
NT VIBRATIONAL STRESS

STROBOSCOPES
Factors controlling the competing sensations produced by a bistable stroboscopic motion display
p0104 A79-24067
Perception of continuity in stroboscopic motion - A temporal frequency analysis
p0186 A79-34375
Form information is necessary for the perception of motion
p0232 A79-42235

STRONTIUM
Strontium metabolism in the rebuilding of skeletal tissue
[NASA-CR-160195] p0216 N79-25713

STRUCTURAL BASINS
NT LAKE CHAMPLAIN BASIN (NY-VT)

STRUCTURAL DESIGN
A method motion simulator design based on modeling characteristics of the human operator
p0091 N79-15623
The design and construction of a miniature dosimeter for the study of the effects of air cavities in radiation therapy
p0176 N79-21757
Application of a structured decision process for proper inclusion of human resources in the design of a power unit support stand
[AD-A069978] p0309 N79-32840

STRUCTURAL MEMBERS
NT MEMBRANE STRUCTURES

STRUCTURAL VIBRATION
NT FLUTTER

STS
U SPACE TRANSPORTATION SYSTEM

SUBGRAVITY
U REDUCED GRAVITY

SUBLAYERS
U SUBSTRATES

SUBMERGED BODIES
NT DIVING (UNDERWATER)
Minimum sea surface temperatures and associated survival times
[AD-A070162] p0315 N79-33824

SUBMERGING
Fluid shifts during initial phase of immersion diuresis in man
p0185 A79-33804
Regional heat loss in resting man during immersion in 25.2 C water
p0202 A79-37709
Comparison of physiological effects of head-down tilting and immersion on the human body
p0298 A79-52279
Survival and protection of aircrew in the event of accidental immersion in cold water
[AGARD-AG-211(ENG)] p0196 N79-23661

SUBROUTINES
Evaluation of exercise-respiratory system modifications and preliminary respiratory-circulatory system integration scheme
[NASA-CR-160221] p0212 N79-24639
Evaluation of exercise-respiratory system modifications and integration schemes for physiological systems
[NASA-CR-160223] p0219 N79-25733

SUBSTANCES
U MATERIALS

SUBSTRATES
Evolution of enzyme function - The coupled oscillator theory
p0205 A79-37970

SUBTROPICAL REGIONS
U TEMPERATE REGIONS

SUBZERO TEMPERATURE
Bimodal relationship of human tremor and shivering on introduction to cold exposure
p0298 A79-52278

SUGARS
NT GLUCOSE
NT HEXOSES
NT INOSITOLS

SUITABILITY
Ergonomics laboratory studies pilots' stability for command --- psychophysiological characteristics
p0121 N79-17529

SUITS
NT PRESSURE SUITS
NT SPACE SUITS
Improved airline-type supplied-air plastic suit
[DPSPU-78-30-12] p0282 N79-30943

SULFATES
NT BARITE
Sulfate-reducing bacteria and biochemical evolution
p0205 A79-37967
Citric acid enhancement of copper sulfate toxicity to blue-green algae and other nuisance organisms
[PB-289490/5] p0170 N79-20718
Citric acid enhancement of copper sulfate toxicity to the blue-green algae ""aphanizomenon flos-aquae'' and ""microcystis aeruginosa''
[PB-291637/7] p0189 N79-22751

SULFIDES
NT HYDROGEN SULFIDE

SULFUR COMPOUNDS
NT BARITE
NT HYDROGEN SULFIDE
NT ORGANIC SULFUR COMPOUNDS
NT SULFATES
NT SULFUR DIOXIDES
NT SULFUR OXIDES
NT SULFURIC ACID

SULFUR DIOXIDES
The impact of sulfur dioxide on vegetation: A sulfur dioxide-ozone response model
[PB-283604/7] p0049 N79-12686

SULFUR OXIDES
NT SULFUR DIOXIDES
Electrophoresis pattern of serum from mice exposed to different concentrations of sulfur dioxide
p0147 N79-19027

SULFURIC ACID
The effects of H2SO4 on men and H2SO4 and O3 on laboratory animals
p0141 N79-18354

SUNGLASSES
The want and feasibility to temper sunlight for the eyes
[IZF-1977-21] p0122 N79-17538
Sunglasses for drivers?
[IZF-1977-24] p0122 N79-17539

SUNLIGHT
Visual performance assessment through clear and sunscreen-treated windows
[AD-A059750] p0080 N79-14775
The want and feasibility to temper sunlight for the eyes
[IZF-1977-21] p0122 N79-17538

SUPERHIGH FREQUENCIES
Investigation of the activity of some enzymatic systems in response to a super-high frequency electromagnetic field
p0074 N79-14737

SUPERSONIC AIRCRAFT
NT F-4 AIRCRAFT
NT F-15 AIRCRAFT
NT F-16 AIRCRAFT
NT F-104 AIRCRAFT
NT F-111 AIRCRAFT
NT JAGUAR AIRCRAFT
Measurements of pilot workload during low altitude and high speed maneuvers of F-1 supersonic jet

fighter
p0209 A79-38821

SUPINE POSITION
Plasma volume and electrolyte shifts with heavy exercise in sitting and supine positions
p0161 A79-29336
Limb blood flow - Rest and heavy exercise in sitting and supine positions in man
p0235 A79-43208
Changes in human renal function in passive head-up and head-down positions
p0072 N79-14722
The effect of a reclined sitting position on psychomotor performance during exposure to high, sustained +Gsub z acceleration
[FPRC-1362] p0248 N79-27856
The effect of acceleration and seat back angle on performance of a reaction time task
[FPRC-1364] p0248 N79-27857
The influence of seat back angle on acceleration tolerance
[FPRC-1365] p0248 N79-27858

SUPPLYING
Energy supply and demand in California
p0242 N79-27603

SUPPORT SYSTEMS
NT CLOSED ECOLOGICAL SYSTEMS
NT EMERGENCY LIFE SUSTAINING SYSTEMS
NT LIFE SUPPORT SYSTEMS
NT PORTABLE LIFE SUPPORT SYSTEMS

SUPPRESSION
U RETARDING

SURFACE COOLING
An improved method for inducing hypothermia and rewarming
p0267 A79-47339

SURFACE VEHICLES
NT AIRCRAFT CARRIERS
NT AUTOMOBILES
NT BOATS
NT MOTOR VEHICLES
NT ROCKET PROPELLED SLEDS
NT SLEDS
NT TRACTORS
NT TRANSPORTER
NT TRUCKS
NT WALKING MACHINES
Reduced mental capacity and behavior of a rider of a bicycle simulator under alcohol stress or under dual task load
p0116 N79-17489
A two level model of human steering behavior in a motor vehicle
[PB-27] p0197 N79-24657

SURFACTANTS
Adaptation to chronic hyperoxia in the rat - A study of pulmonary surfactant, tissue levels of superoxide dismutases and histology
p0256 A79-46603

SURGEONS
NT FLIGHT SURGEONS

SURGERY
NT LABYRINTHECTOMY
Equipment for surgical interventions and childbirth in weightlessness
[IAF PAPER 79-97] p0302 A79-53296
The role of computer technology mathematical models in treatment of patients following heart surgery
p0170 N79-20721

SURVEILLANCE RADAR
Evolution of the man-machine interface in surveillance radar systems
p0001 A79-10322

SURVEYING
U SURVEYS

SURVEYS
A comparison of the job attitudes and interest patterns of air traffic and airway facility personnel
[AD-A067826] p0281 N79-30933

SURVIVAL
Head acceleration and psychomotor performance --- related to crash accident survival rates
p0135 A79-27559
The effect of 17alpha-ethynylestradiol on the radiation sensitivity of mice
p0141 N79-18557
Tentative estimation of the injuries likely to occur during the crash of a SA 341 Gazelle helicopter, from a study on mannequins
p0287 N79-31925
Minimum sea surface temperatures and associated survival times
[AD-A070162] p0315 N79-33824

SURVIVAL EQUIPMENT
An overview of helicopter mission specific survival equipment
p0183 A79-33625
Current trends in UK military aircrew survival equipment
p0183 A79-33633
Cold water survival suits for aircrew
p0298 A79-52282
Cold water survival suits for aircrew
[ARL/SYS-NOTE-56] p0261 N79-28882

SWAMPS
U MARSHLANDS

SWEAT
Sweating responses during heat acclimation and moderate conditioning
p0185 A79-33803
Effect of rate of change in skin temperature on local sweating rate
p0268 A79-47853
The effects of active and passive heat acclimatization procedures on the cardiovascular, thermoregulatory, and sweat rate responses to work in the heat in male humans
p0195 N79-23651

SWEATING
U PERSPIRATION

SWIMMING
Thermoregulation in swimmers and runners
p0227 A79-41186

SWITCHES
NT SWITCHING CIRCUITS

SWITCHING CIRCUITS
Control logic design criteria for multifunction switching devices --- in aircraft
p0064 A79-18223

SWITCHING ELEMENTS
U SWITCHING CIRCUITS

SYMMETRICAL BODIES
NT BODIES OF REVOLUTION

SYMPATHETIC NERVOUS SYSTEM
The role of the neurohormone system of the hypothalamus in physiology and pathology --- Russian book
p0251 A79-43835

SYMPATHOMIMETICS
U ADRENERGICS

SYMPTOMOLOGY
Vertebral pains in helicopter pilots --- symptomology and radiology
p0153 N79-19656

SYMPTOMS
U SIGNS AND SYMPTOMS

SYNAPSES
Stereological ultrastructural analysis of the axonal endings in the neuromuscular junction of rats after a flight on biosputnik 782
p0101 A79-23468

SYNCHRONIZERS
Devices for synchronizing a digital measuring apparatus with biological signals
p0160 A79-29271

SYNCOPE
NT BLACKOUT (PHYSIOLOGY)

SYNDROMES
U SIGNS AND SYMPTOMS

SYNTAX
NT WORDS (LANGUAGE)

SYNTHETIC APERTURE RADAR
Synthetic aperture radar operator tactical target acquisition research
p0037 A79-13202

SYNTHETIC FUELS
Mutagenic components of alternate energy sources
[CONF-780636-8] p0280 N79-30923

SYNTHETIC RESINS
NT ACRYLIC RESINS

SYNTHETIC RUBBERS
NT ELASTOMERS

SYSTEM EFFECTIVENESS
Target acquisition in realistic terrain
p0037 A79-13203

Simulator Training Requirements and Effectiveness Study /STRES/ p0063 A79-18216
Recent studies of simulation training effectiveness [SAE PAPER 781006] p0130 A79-25888
The impact of a Learn-Forget-Learn (LFL) curve and learning curves on a system effectiveness model [AD-A061622] p0124 N79-17550

SYSTEM FAILURES
The effects of participatory mode and task workload on the detection of dynamic system failures p0098 A79-21156
The effects of participatory mode and task workload on the detection of dynamic system failures p0116 N79-17487

SYSTEMS ANALYSIS
Modeling and analysis using SAINT - A combined discrete/continuous network simulation language --- Systems Analysis of Integrated Network of Tasks for RPV p0004 A79-11480
Control theory and biosystems: Analysis of homeostatic properties --- Russian book p0186 A79-34506
Some properties of conservative systems --- walking robot model p0221 A79-35942
The conception of the systems analytic approach to planning and organization of medical scientific research p0078 N79-14764
The systems analytic approach to the problem of classification of scientific medical research p0078 N79-14766
Use of the systems analytic approach for organization and coordination of complex biomedical research p0079 N79-14767
Earth orbital teleoperator systems evaluation [NASA-CR-150912] p0112 N79-16552
The application of sensitivity analysis to models of large scale physiological systems [NASA-CR-160228] p0213 N79-24645
User's instructions for the Guyton circulatory dynamics model using the Univac 1110 batch and demand processing (with graphic capabilities) [NASA-CR-160215] p0218 N79-25731
The application of systems analysis and mathematical models to the study of erythropoiesis during space flight [NASA-CR-160218] p0219 N79-25739
Flight prototype CO2 and humidity control system [NASA-CR-160224] p0222 N79-25760
Analytical methods for biotechnological design of man machine systems: Work on system ergonomy [FB-28] p0242 N79-26787
The systemic principles of building a man-machine control staff --- functional analysis p0249 N79-27861
Development and utilization of internal models in dynamic systems: A comparison of monitors and operators as failure detectors [AD-A069730] p0282 N79-30942
SAINT: A combined simulation language for modeling man-machine systems p0317 N79-33842

SYSTEMS COMPATIBILITY
Piloted aircraft simulation - Advantages, disadvantages, and practical problems [SAE PAPER 780548] p0001 A79-10407
System operability - Concept and measurement in test and evaluation --- man system compatibility indices in F-18 aircraft example p0062 A79-18204

SYSTEMS DESIGN
U SYSTEMS ENGINEERING

SYSTEMS ENGINEERING
NT COMPUTER SYSTEMS DESIGN
Systems integration in the development of controlled ecological life support systems [AIAA PAPER 79-1406] p0187 A79-34842
Pilot-optimal augmentation synthesis p0088 N79-15603
Optimisation of pilot capability and avionic system design [AGARD-AR-118] p0113 N79-16560
Optimisation of pilot capability and avionic system design, introduction p0113 N79-16561
Systems design p0114 N79-16563
A wide aperture focussed ultrasound system for detection of breast carcinoma by ultrasonic attenuation p0142 N79-18577
Human factors evaluations of today's helicopters as an aid to future systems design p0150 N79-19627
Application of a structured decision process for proper inclusion of human resources in the design of a power unit support stand [AD-A069978] p0309 N79-32840

SYSTEMS MANAGEMENT
A model of the human supervisor p0117 N79-17495

SYSTEMS STABILITY
Biped stability considerations with vestibular models p0066 A79-18287
Study report on guidelines and test procedures for investigating stability of nonlinear cardiovascular control system models [NASA-CR-160229] p0219 N79-25734

SYSTOLE
Systolic time intervals during combined hand cooling and head-up tilt p0135 A79-27554
Measuring systolic time intervals at rest and under stress by external methods. Advantages in the evaluation of fliers p0030 N79-11717

T

TACTILE DISCRIMINATION
Evaluation of kinesthetic-tactual displays using a critical tracking task p0119 N79-17516

TAGGING
U MARKING

TALKING
NT WORDS (LANGUAGE)

TANKER AIRCRAFT
Visual system for the Boom Operator Part Task Trainer --- KC-135 aerial refueling task simulator p0137 A79-28162

TANKS (CONTAINERS)
NT STORAGE TANKS

TARE (DATA REDUCTION)
U DATA REDUCTION

TARGET ACQUISITION
Synthetic aperture radar operator tactical target acquisition research p0037 A79-13202
Target acquisition in realistic terrain p0037 A79-13203
Observer performance using a video display --- in simulated air to ground target acquisition tasks p0039 A79-13217
Effects of target motion and image on AAA tracking --- Anti-Aircraft Artillery p0046 A79-14969
Target-terrain classification and detection performance --- to assess aerial photos for tanks p0065 A79-18225
Line criteria in target acquisition with television --- visibility of target image on TV screen p0068 A79-18997
Visual target acquisition and ocular scanning performance p0069 A79-19000
Real-time reconnaissance systems simulator p0139 A79-28175
The role of perceived motion in smooth pursuit eye movements p0225 A79-40184
The effect of expectations on slow oculomotor control. I - Periodic target steps. II - Single target displacements p0225 A79-40185
The relative effects of multiple factors on target acquisition --- by combat pilots p0267 A79-47765
A behavioral model of target acquisition in realistic terrain

[AD-A056760] p0019 N79-10742
Effects of uncertainty on manual tracking performance --- visual tasks
p0086 N79-15592
Prediction, evaluation, and specification of flying qualities by means of step target tracking
p0088 N79-15604
Head aiming/tracking accuracy in a helicopter environment
p0153 N79-19651
The relationship between Air Combat Maneuvering Range (ACMR) output measures and initial visual acquisition performance
[AD-A062134] p0173 N79-20744
A study of pilot/observed interaction in aligning a helicopter with a target
[DLR-FB-79-04] p0283 N79-30945

TARGET RECOGNITION
Target-terrain classification and detection performance --- to assess aerial photos for tanks
p0065 A79-18225
Peripheral acuity and photointerpretation performance
p0068 A79-18996
Dynamics of an image viewed through a rotating mirror
p0221 A79-36365
Effects of stimulus onset and image motion on contrast sensitivity
p0231 A79-42231
The effect of increased monitoring load on vigilance performance using a simulated radar display
p0236 A79-43674
Pursuit after-nystagmus
p0271 A79-49484
Mutual repulsion between moving visual targets
p0275 A79-50473
Latency of peripheral saccades
p0278 A79-50987
Target redundancy in visual search - Do repetitions of the target within the display impair processing
p0299 A79-52540
The behavior of observers in detecting unbriefed targets at different aircraft speeds with side-looking radar
[AD-A060908] p0085 N79-15586
Evaluation of four target-identification training techniques
[AD-A061175] p0123 N79-17548
A review of individual performance in air-to-ground target detection and identification studies
[AD-A061580] p0124 N79-17551
Estimation of aircraft target motion using pattern recognition orientation measurements
p0177 N79-21764

TARGET SIMULATORS
Visual search for complex targets
p0208 A79-38357
Predicting aircraft detectability
p0208 A79-38358

TARGETS
The relationship between Air Combat Maneuvering Range (ACMR) output measures and initial visual acquisition performance
[AD-A062134] p0173 N79-20744

TASK COMPLEXITY
Development and transfer of timesharing skills --- for human multiple task performance
p0035 A79-13184
The application of computer aided evaluative techniques to system test and evaluation --- of fighter aircraft pilot performance
p0036 A79-13190
Tracking in two dimensions as a function of dimension priorities and tracking difficulty
p0036 A79-13193
The event related cortical potential as an index of task workload
p0038 A79-13208
Response surface methodology as a manipulator of complex task difficulty --- for computer generated aircraft area navigation control-display systems evaluation
p0039 A79-13211
Task taxonomy - Two ignored issues --- criteria for task evaluation with respect to empirical data
p0039 A79-13212
Task functional demands as factors in dual-task performance
p0039 A79-13214
The man-computer division of tasks in the case of the control of complex technical systems --- applied to aircraft
p0061 A79-17683
An algorithm to ascertain critical regions of human tracking ability
p0163 A79-30218
Measurement and scaling of workload in complex performance
p0164 A79-30659
A preliminary study of the air traffic controller's 'picture'
p0221 A79-36227
Visual search for complex targets
p0208 A79-38357
Pilot workload in the aircraft of the future
p0226 A79-40646
Pilot workload during final approach in congested airspace
p0269 A79-48014
Modeling the human as a controller in a multitask environment
p0087 N79-15595
Prospects of a mathematical theory of human behavior in complex man-machine systems tasks --- time sharing computer analogy of automobile driving
p0088 N79-15599
Petri nets as a modeling tool for discrete concurrent tasks of the human operator --- describing sequential and parallel demands on human operators
p0088 N79-15600
A model for dynamic allocation of human attention among multiple tasks
p0092 N79-15627
A model of human event detection in multiple process monitoring situations
p0092 N79-15632
A quasi-linear control theory analysis of timesharing skills
p0115 N79-17479
Two measures of performance in a peg-in-hole manipulation task with force feedback
p0118 N79-17506
Task complexity and 24-hr performance patterns in morning and evening active subjects
[FOA-C-52001-H6] p0122 N79-17537
Time-sharing ability in complex performance: An expanded replication
[FAA-AM-78-33] p0145 N79-18591
Simulated EVA operation of a remote connector assembly test report
[NASA-CR-161167] p0156 N79-19687
Study of modeling and evaluation of remote manipulation tasks with force feedback
[NASA-CR-158721] p0242 N79-26785
Analytical methods for biotechnological design of man machine systems: Work on system ergonomy
[FB-28] p0242 N79-26787
Some human responses to repeated +G sub z pulses
p0288 N79-31928
Performance and workload analysis of inflight helicopter missions
[NLR-MP-77013-U] p0308 N79-32834

TASKS
NT AUDITORY TASKS
NT VISUAL TASKS
Effect of induced cyclic changes of deep body temperature on task performances
p0202 A79-37708
A study of the available evidence on duration effects on comfort and task proficiency under vibration
p0254 A79-46399
Study of crew task loading on the C-141A aircraft
[AD-A057346] p0034 N79-11746
ARPA authoring system
[AD-A064723] p0190 N79-22762

TASTE
Current conceptions of the mechanism of the effect of chemical stimulus on taste receptors
p0043 A79-14375

TAXONOMY
Task taxonomy - Two ignored issues --- criteria

for task evaluation with respect to empirical data
p0039 A79-13212
Gel-electrophoresis studies for the taxonomic
characterization of soil microorganisms
[NBC/CNR-TT-1924] p0120 N79-17521
TCV PROGRAM
U TERMINAL CONFIGURED VEHICLE PROGRAM
TEACHING
U EDUCATION
TEACHING MACHINES
Development of techniques to enhance man/machine
communication
[NASA-CR-157886] p0032 N79-11730
TEAMS
Team performance - A model for research
p0065 A79-18227
TECHNIQUES
U METHODOLOGY
TECHNOLOGICAL FORECASTING
NT DELPHI METHOD (FORECASTING)
Challenges to life support system's future
[ASME PAPER 78-ENAS-28] p0008 A79-12577
Very-large-scale integration - What it means for
technical systems and humans
p0181 A79-32640
Oral/nasal breathing systems in the year 2000
p0183 A79-33621
Pilot workload in the aircraft of the future
p0226 A79-40646
TECHNOLOGIES
NT BIOTECHNOLOGY
NT MILITARY TECHNOLOGY
TECHNOLOGY ASSESSMENT
Very-large-scale integration - What it means for
technical systems and humans
p0181 A79-32640
Synthetic training and evaluation - Some current
issues
p0275 A79-50550
Current status of cardiovascular imaging by
transmission computed tomography
p0294 A79-51032
Evolution of space suit technology
[IAF PAPER 79-92] p0302 A79-53293
A technology assessment of vegetable substitutes
for animal protein in human food. Volume 1:
The study
[PB-284681/4] p0059 N79-13719
A technology assessment of vegetable substitutes
for animal protein in human food. Volume 2:
Appendices
[PB-284682/2] p0059 N79-13720
Assessing the efficacy and safety of medical
technologies
[PB-286929/5] p0085 N79-15580
Translations on USSR science and technology:
Biomedical and behavioral sciences, no. 50
[JPRS-72462] p0170 N79-20720
Space biology and aerospace medicine, v. 13, no.
3, 1979
[JPRS-73784] p0243 N79-27817
TECHNOLOGY TRANSFER
NT AEROSPACE TECHNOLOGY TRANSFER
The Department of the Army's food irradiation
program: Is it worth continuing
[PB-286399/1] p0094 N79-15644
Regional program for acquisition of medical
experiments
[NASA-CR-160121] p0155 N79-19677
TECHNOLOGY UTILIZATION
Overview of the use of robots in space missions
[DGLR PAPER 78-154] p0042 A79-14099
TEETH
Mineralization in teeth and jaws, as judged
radiographically, in rats of the COSMOS-782
experiment
p0022 N79-11667
TELECHIRICS
U REMOTE HANDLING
TELECOMMUNICATION
NT AIRCRAFT COMMUNICATION
NT BIOTELEMETRY
NT COLOR TELEVISION
NT COMMUNICATION
NT RADIO TELEMETRY
NT STEREOTELEVISION
NT TELEMETRY
NT VOICE COMMUNICATION

Telemedicine: An expanding new science on land
and sea
p0146 N79-19020
Telehealth handbook: A guide to
telecommunications technology for rural health
care
[PB-292557/6] p0241 N79-26770
TELEMETERS
U TELEMETRY
TELEMETRY
NT BIOTELEMETRY
NT RADIO TELEMETRY
Aircraft flight simulation of spacelab experiment
using an implanted telemetry system to obtain
cardiovascular data from the monkey
p0147 N79-19022
TELEOPERATORS
Adaptive supervisory control of remote manipulation
p0046 A79-14987
Advanced teleoperators --- remote manipulation
system
p0187 A79-34982
Construction in space - Toward a fresh definition
of the man/machine relation
p0187 A79-34985
Computer augmented manual control of remote
manipulators
p0269 A79-48019
Human/computer control of undersea teleoperators
p0089 N79-15612
Earth orbital teleoperator systems evaluation
[NASA-CR-150912] p0112 N79-16552
TELESCOPES
An interface evaluation of the XM-29 protective
mask and the AH-1S telescopic sight unit
[AD-A064203] p0190 N79-22764
TELETYPEWRITERS
Modeling and analysis of man-machine interface
information
[AD-A063515] p0178 N79-21772
TELEVISION CAMERAS
The robot's eyes - Stereo vision system for
automated scene analysis
p0004 A79-12006
TELEVISION EQUIPMENT
NT TELEVISION CAMERAS
TELEVISION SYSTEMS
NT COLOR TELEVISION
NT STEREOTELEVISION
A visual simulator with transformation of the
perspective in the raster of television pictures
--- German book on pilot training systems
p0069 A79-19375
Telemedicine: An expanding new science on land
and sea
p0146 N79-19020
TELLEGEN THEORY
U NETWORK ANALYSIS
TEMPERATE REGIONS
Deconditioning-induced exercise responses as
influenced by heat acclimation
p0273 A79-49985
TEMPERATURE
NT AMBIENT TEMPERATURE
NT ATMOSPHERIC TEMPERATURE
NT BODY TEMPERATURE
NT LOW TEMPERATURE
NT SATELLITE TEMPERATURE
NT SKIN TEMPERATURE (BIOLOGY)
NT SUBZERO TEMPERATURE
NT WATER TEMPERATURE
TEMPERATURE CONTROL
Physiological requirements for design of
environmental control systems - Control of heat
stress in high-performance aircraft
[ASME PAPER 78-ENAS-22] p0007 A79-12571
Simulation and control of a human temperature
regulation system
p0041 A79-13613
Importance of temperature control for HEPLEX, a
biological experiment for Spacelab 1 --- plant
gravitational physiology study
p0230 A79-41716
TEMPERATURE DIFFERENCES
U TEMPERATURE GRADIENTS
TEMPERATURE DISTRIBUTION
The local and time-dependent temperature field in
the body of a homeothermic organism in case of
sudden changes of quantity and local

distribution of internal heat production
p0120 A79-24699
Apparatus for supplying conditioned air at a substantially constant temperature and humidity
[NASA-CASE-GSC-12191-1] p0156 N79-19688

TEMPERATURE EFFECTS
A composite view of task performance in hot environments
p0036 A79-13186
Temperature effect of muscular work in the white rat during hypoxia
p0097 A79-20654
Discrimination, temperature, and time of day --- human performance variances
p0161 A79-29718
Characteristics of EEG changes in rabbits in response to local cooling or heating of the central thermosensory area
p0221 A79-36097
Thermal activation of the visual transduction mechanism in retinal rods
p0230 A79-41746
Separation of the effects of raised skin and core temperature on performance of a pursuit rotor task
p0234 A79-43204
Relationship between thermogenic drinking and plasma renin activity in the rat
p0235 A79-43211
Tracking-task performance during heat stress simulating cockpit conditions in high-performance aircraft
p0236 A79-43675
Temperature effects on shape and function of human granulocytes
[AD-A063750] p0189 N79-22757
Effects of sleep at altered ambient temperatures on electrophysiological sleep and thermoregulatory mechanisms in human subjects and in the ground squirrel (Citellus lateralis)
p0216 N79-25709

TEMPERATURE FIELDS
U TEMPERATURE DISTRIBUTION

TEMPERATURE GRADIENTS
Effect of cockpit temperature gradients on the validity of single-point measurements
p0234 A79-43203

TEMPERATURE INDICATORS
U INDICATING INSTRUMENTS
U TEMPERATURE MEASURING INSTRUMENTS

TEMPERATURE INSTRUMENTS
U TEMPERATURE MEASURING INSTRUMENTS

TEMPERATURE INVERSIONS
NT CENTRIFUGING STRESS

TEMPERATURE MEASUREMENT
Core temperature measurement in man
p0010 A79-12862
Measurement of skin temperatures of active subjects by wireless telemetry
p0011 A79-12872
Effect of cockpit temperature gradients on the validity of single-point measurements
p0234 A79-43203
Pattern of heat loss from a subject wearing CF temperate-climate combat clothing
[AD-A057746] p0093 N79-15636

TEMPERATURE MEASURING INSTRUMENTS
Temperature changes during exercise measured by thermography
p0235 A79-43209
Microwave thermography: Physical principles and diagnostic applications
p0083 N79-15567

TENSILE STRESS
Investigation of blood subjected to volume tension
p0275 A79-50261

TERMINAL CONFIGURED VEHICLE PROGRAM
Advanced transport operation effects on pilot scan patterns
p0295 A79-51098
Evaluation of display and control concepts for a terminal configured vehicle in final approach in a windshear environment
p0090 N79-15616

TERMINAL GUIDANCE
Adaptive control of a robotic manipulator
p0046 A79-15001
Terminal guidance sensor system
[NASA-CASE-NPO-14521-1] p0174 N79-20746

TERMINOLOGY
Anthropometry
p0032 N79-11737

TERNARY SYSTEMS (DIGITAL)
U DIGITAL SYSTEMS

TERRAIN
Adaptive locomotion of a multilegged robot over rough terrain
p0163 A79-30217

TERRAIN ANALYSIS
Target acquisition in realistic terrain
p0037 A79-13203
Target-terrain classification and detection performance --- to assess aerial photos for tanks
p0065 A79-18225

TERRAIN FOLLOWING AIRCRAFT
Visual workload of the copilot/navigator during terrain flight
p0038 A79-13206
Visual workload of the copilot/navigator during terrain flight
p0209 A79-38364

TERRESTRIAL PLANETS
NT EARTH (PLANET)
NT MARS (PLANET)

TEST BEDS
U TEST EQUIPMENT

TEST CHAMBERS
NT HYPERBARIC CHAMBERS
NT PHYTOTRONS
NT PRESSURE CHAMBERS
Biological specimen holding facilities for Spacelab experiments
[IAF PAPER 78-56] p0003 A79-11224
The influence of hyperbaric environment in combination with workload and confinement on human information processing
[DLR-FB-78-12] p0280 N79-30926
Direct exposure of monolayers of mammalian cells to airborne pollutants in a unique culture system
[AD-A069822] p0283 N79-31897

TEST EQUIPMENT
Instrumentation and techniques for the measurement of muscular strength and endurance in the human body
[AD-A061023] p0155 N79-19681
A subhuman primate restraint system
[AD-A069697] p0279 N79-30915

TEST FACILITIES
NT MISSILE RANGES
NT TEST RANGES
NT TEST STANDS
The role of physical examinations and education in prospective medicine
p0026 N79-11694

TEST RANGES
NT MISSILE RANGES
Air Combat Maneuvering Range /ACMR/ - Has operational performance measurement entered a Golden Age
p0064 A79-18221

TEST STANDS
The dynamic oxygen-regulator test stand
[AD-A060978] p0125 N79-17560

TEST VEHICLES
Man, dummy, test vehicle: A comparison of test results for escape systems with the 3 different test methods
p0287 N79-31924

TESTERS
U TEST EQUIPMENT

TESTES
Effects of intermittent magnetic field on activity of carbohydrate metabolism enzymes and oxygen uptake in testicular tissue
p0075 N79-14738

TESTING
U TESTS

TESTING MACHINES
U TEST EQUIPMENT

TESTS
Report of the Workshop on Biological Screening Tests
[PB-294303/3] p0279 N79-30916

TEXTURES
Texture contours can facilitate stereopsis by initiating vergence eye movements
p0270 A79-48816
Experiments in texture perception
[AD-A059630] p0086 N79-15587

TFX AIRCRAFT
U F-111 AIRCRAFT
THEOREMS
NT BAYES THEOREM
THERAPY
NT CHEMOTHERAPY
NT PSYCHOTHERAPY
NT RADIATION THERAPY
Hyperthermia in the treatment of cancer: A review of the radiobiological basis p0017 N79-10729
Temperature uniformity in hyperthermal tumor therapy p0018 N79-10730
A microangiographic study of the effect of hyperthermia on the rabbit bladder p0018 N79-10732
Isokinetic exercise: A review of the literature [NASA-CR-151841] p0051 N79-12695
The child in coma p0094 N79-15890
Coma recovery p0094 N79-15891
Vision p0095 N79-15894
Rehabilitation measures used to restore physical fitness of man after long-term restriction of movement p0110 N79-16534
Effects of vibration on the human organism p0249 N79-27862
THERMAL COMFORT
Thermal bounds to the time of stay of human beings in enclosures p0231 A79-41770
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations p0266 A79-47334
Bimodal relationship of human tremor and shivering on introduction to cold exposure p0298 A79-52278
THERMAL CONDUCTIVITY
Thermal conduction effects in human skin p0265 A79-47329
Evaluation of British and Canadian conductive rubber heating elements for handwear: Preliminary report [AD-A052826] p0093 N79-15637
Thermal conduction effects in human skin. 1: Experimental data acquisition [AD-A068479] p0259 N79-28871
Thermal conduction effects in human skin. 3: Influence of epidermal thickness and exposure time [AD-A068481] p0259 N79-28872
THERMAL CURRENTS
U CONVECTIVE FLOW
THERMAL CYCLING TESTS
Thermal resistance of naturally occurring airborne bacterial spores --- Viking spacecraft dry heat decontamination simulation p0131 A79-26147
Effect of induced cyclic changes of deep body temperature on task performances p0202 A79-37708
Effect on performance of cycling deep body temperature between 37.0 and 37.6 C p0274 A79-49993
THERMAL DECOMPOSITION
NT PYROLYSIS
THERMAL DEGRADATION
Effect of fiber and dye degradation products /FDP/ on burn wound healing p0298 A79-52277
THERMAL EFFECTS
U TEMPERATURE EFFECTS
THERMAL ENVIRONMENTS
Thermal bounds to the time of stay of human beings in enclosures p0231 A79-41770
THERMAL INSULATION
Mathematical models of skin burns induced by simulated postcrash fires as aids in thermal protective clothing design and selection [AD-A066946] p0223 N79-25766
THERMAL MAPPING
Pattern of heat loss from a subject wearing CF temperate-climate combat clothing [AD-A057746] p0093 N79-15636
THERMAL POLLUTION
Results of benthic studies at Calvert Cliffs [PB-294261/3] p0261 N79-29788
THERMAL PROTECTION
Heat transfer principles in personal protection applications p0043 A79-14405
Development of integrated tubing fabric for liquid conditioning undergarments p0044 A79-14415
Bioassay of thermal protection afforded by candidate flight suit fabrics p0298 A79-52280
Biomedical constraints on thermal protective flight clothing design: A bioengineering analysis p0153 N79-19662
THERMAL RADIATION
Thermally induced retina injury due to high doses of optical radiation p0278 A79-50974
THERMAL RESISTANCE
Thermal resistance of naturally occurring airborne bacterial spores --- Viking spacecraft dry heat decontamination simulation p0131 A79-26147
Development of the CWU-48/P high temperature resistant aramid knit flyer's coverall [AD-A059128] p0059 N79-13716
THERMAL RESOURCES
NT GEOTHERMAL RESOURCES
THERMAL STABILITY
Structure-stability relationship of thermophile tRNA - A model for biological adaptation and limit of life at high temperature p0206 A79-37976
Temperature uniformity in hyperthermal tumor therapy p0018 N79-10730
THERMAL STRESSES
Computer simulation of thermoregulatory responses to heat stress - A future work design and training tool p0037 A79-13196
Cardiac response to whole-body heating p0165 A79-30661
Analysis of climatic data and cockpit thermal conditions at a fighter base in North West India p0201 A79-37135
The effect of thermal stimulation of the skin on activity of lateral crescent interneurons of lumbar segments p0208 A79-38147
A comparison of the physiological responses in young men and women to heat and cold stress [AD-A061024] p0155 N79-19679
Fighter index of thermal stress: Relation to weather conditions at ATC and TAC bases [AD-A062713] p0174 N79-20748
THERMALIZATION (ENERGY ABSORPTION)
Classical theory of microwave interactions with biological systems p0082 N79-15556
THERMODYNAMIC EQUILIBRIUM
Equations on biotransport mechanisms p0304 A79-53535
THERMODYNAMIC PROPERTIES
NT THERMAL CONDUCTIVITY
NT THERMAL STABILITY
THERMODYNAMICS
Thermodynamic studies on the oxygenation and subunit association of human hemoglobin p0142 N79-18576
Analysis of visible spectra and thermodynamic parameters in hemeprotein systems p0144 N79-18579
THERMOELECTRIC GENERATORS
A thermoelectric integrated membrane evaporation system [ASME PAPER 78-ENAS-19] p0007 A79-12568
THERMOGRAMS
U TEMPERATURE MEASURING INSTRUMENTS
THERMOMECHANICS
U THERMODYNAMICS
THERMOMETRY
U TEMPERATURE MEASUREMENT
THERMOPHILES
Temperature-dependent morphological changes in membranes of Bacillus stearothermophilus p0005 A79-12475
Structure-stability relationship of thermophile tRNA - A model for biological adaptation and limit of life at high temperature

p0206 A79-37976

THERMOPHILIC PLANTS
NT BLUE GREEN ALGAE
THERMOPHYSICAL PROPERTIES
NT THERMAL CONDUCTIVITY
NT THERMAL STABILITY
THERMOPHYSICS
U THERMODYNAMICS
THERMORECEPTORS
Neurophysiology of thermal reception p0043 A79-14374

THERMOREGULATION
Computer simulation of thermoregulatory responses to heat stress - A future work design and training tool p0037 A79-13196
Heat transfer and temperature distribution in the human body p0041 A79-13612
Simulation and control of a human temperature regulation system p0041 A79-13613
Thresholds for Na/+/ and Ca/++/ effects on thermoregulation p0045 A79-14774
Regulation and efficiency of sweating in man /Mathematical modeling/ p0097 A79-20622
Temperature effect of muscular work in the white rat during hypoxia p0097 A79-20654
Thermal sweat rate response to an acute short exposure at a simulated altitude of 4,600 m p0102 A79-23474
The effects of different levels of heat production induced by diathermy and eccentric work on thermoregulation during exercise at a given skin temperature p0128 A79-24698
The local and time-dependent temperature field in the body of a homeothermic organism in case of sudden changes of quantity and local distribution of internal heat production p0128 A79-24699
Thermoregulation in Macaca mulatta - A thermal balance study p0133 A79-27101
Model of human heat exchange and identification of its parameters Physiological studies and mathematical modeling p0159 A79-28739
Studies on thermoregulation in the rat p0162 A79-30019
Effect of sodium and calcium ingestion on thermoregulation during exercise in man p0163 A79-30624
Effect of the blockade of hypothalamic adrenergic structures on thermoregulatory reactions p0167 A79-31950
Control of skin blood flow during exercise - Thermal and nonthermal factors p0185 A79-33807
Characteristics of EEG changes in rabbits in response to local cooling or heating of the central thermosensory area p0221 A79-36097
Skin temperature changes in paradoxical sleep in man in the cold p0201 A79-37706
Thermoregulation in unrestrained rats during and after exposure to 1.5-4 G p0227 A79-41185
Thermoregulation in swimmers and runners p0227 A79-41186
Hyperthermia and exercise --- plasma fluid and electrolyte effects on human thermoregulation p0252 A79-44775
Role of skin temperature in the control of sweating p0277 A79-50907
Bimodal relationship of human tremor and shivering on introduction to cold exposure p0298 A79-52278
Bio-heat transfer processes, for human thermoregulatory and circulatory characteristics measurements p0304 A79-53536
Influence of skin temperature on sweating and aerobic performance during severe work p0305 A79-54268
Nonshivering thermogenesis in normal and dystrophic muscle p0054 N79-13680
Crawford and Lavoisier on the method of development and place of formation of body heat [BLL-RTS-11228] p0142 N79-18568
The effects of active and passive heat acclimatization procedures on the cardiovascular, thermoregulatory, and sweat rate responses to work in the heat in male humans p0195 N79-23651
Investigations about the quantitative changes of carbon dioxide production in humans. Report 2: Carbon dioxide production during fever and its relationship with heat production [NASA-TM-75452] p0211 N79-24632
Transient thermoregulatory model with graphics output [NASA-CR-160217] p0212 N79-24637
User's instructions for the 41-node thermoregulatory model (steady state version) [NASA-CR-160220] p0212 N79-24638
The application of sensitivity analysis to models of large scale physiological systems [NASA-CR-160228] p0213 N79-24645
Effects of sleep at altered ambient temperatures on electrophysiological sleep and thermoregulatory mechanisms in human subjects and in the ground squirrel (Citellus lateralis) p0216 N79-25709
User's instructions for the cardiovascular Walters model [NASA-CR-160204] p0217 N79-25721
Modifications to the steady-state 41-node thermoregulatory model including validation of the respiratory and diffusional water loss equations [NASA-CR-160219] p0219 N79-25738
The application of MINIQUASI to thermal program boundary and initial value problems [NASA-CR-160227] p0222 N79-25759
THERMOSTABILITY
U THERMAL STABILITY
THERMOTROPISM
U TEMPERATURE EFFECTS
THORAX
Review of chest deflection measurement techniques and transducers [PB-283654/2] p0051 N79-12702
THREE DIMENSIONAL MOTION
Computation of rigid-body rotation in three-dimensional space from body-fixed linear acceleration measurements [ASME PAPER 78-WA/BIO-5] p0069 A79-19759
The interpretation of visual motion --- Book p0186 A79-34424
A spherical representation of a human body for visualizing movement p0301 A79-53096

THRESHOLDS (PERCEPTION)
Apparent saturation of blue-sensitive cones occurs at a color-opponent stage p0002 A79-10474
Intrinsic noise, threshold sensitivity, and adaptation of the retina p0043 A79-14373
The equivalent background and retinal eccentricity p0104 A79-24066
Omnidirectional increase in threshold for image shifts during saccadic eye movements p0139 A79-28198
Experimental investigation of the visual system using one-dimensional Walsh gratings p0160 A79-29249
Visual contrast sensitivity functions obtained with colored and achromatic gratings p0181 A79-32628
Detection of coloured stimuli by independent linear systems p0231 A79-42229
Evidence for the equivalent-background hypothesis in cones --- for dark adaptation thresholds p0232 A79-42233
Light adaptation in a normal and a rod monochromat - Psychophysical and VEP increment threshold comparisons p0232 A79-42234
Temporary threshold shift from transportation noise p0254 A79-46286

Using color substitution pupil response to expose chromatic mechanisms
p0265 A79-47116
Direction-selective adaptation with very slow motion
p0265 A79-47118
Effect of adaptation level on certain visual functions in man
p0296 A79-51328
Upper-velocity threshold for detection of movement
p0299 A79-52541
Arousal from sleep by emergency alarms: Implications from the scientific literature
[PB-284044/5] p0051 N79-12700
Vestibular models and thresholds of motion perception. Result of tests in a flight simulator
[VTH-LR-265] p0146 N79-18595
Predicting individual listener confusions in the classification of complex, steady-state sounds
[AD-A066704] p0222 N79-25755
Human Factors Aspects of Aircraft Accidents and Incidents
[AGARD-CP-254] p0290 N79-31942

THROMBOSIS
Effects of dietary fats on atherosclerosis and thrombosis
p0240 N79-26776

THYMIDINE
The effect of infection with herpes simplex viruses types 1 and 2 on cell DNA synthesis and thymidine kinase activities in cultured human cells
p0141 N79-18558

THYMUS GLAND
3'5'-cyclic AMP content in rat tissues during hypoxic adaptation and gamma irradiation
p0069 A79-19426

THYROID GLAND
Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle
p0296 A79-51111
Morphological distinctions of the rat thyroid and parathyroid following long-term space flights
p0246 N79-27835

TIBIA
In-vivo bone strain telemetry in monkeys /M. nemestrina/
p0002 A79-10608
Histological studies on tibial bone of rats in the 1975 COSMOS-782 flight. Part 2: Microradiographic study of cortical bone
p0022 N79-11666

TILT
U ATTITUDE (INCLINATION)

TILTING
U ATTITUDE (INCLINATION)

TIME
NT REACTION TIME
Concept definition for an extended duration orbiter ECLSS
[NASA-CR-160164] p0197 N79-23666

TIME DELAY
U TIME LAG

TIME DEPENDENCE
A composite view of task performance in hot environments
p0036 A79-13186
Discrimination, temperature, and time of day --- human performance variances
p0161 A79-29718
A study of the available evidence on duration effects on comfort and task proficiency under vibration
p0254 A79-46399

TIME DISCRIMINATION
Carbon monoxide and human time discrimination - Failure to replicate Beard-Wertheim experiments
p0102 A79-23472

TIME FUNCTIONS
Discrete time modeling of heavy transport plane pilot behavior
p0118 N79-17508

TIME LAG
Perceptual delay - A consequence of metacontrast and apparent motion
p0035 A79-13183
A comparison of control modes for time-delayed remote manipulation
p0163 A79-30223

Influence of light adaptation on dark adaptation time for pattern recognition tasks
[FB-31] p0316 N79-33835

TIME MEASUREMENT
Time estimation as a technique to measure workload --- of aircraft pilot in flight simulation
p0062 A79-18203
Spatial summation in human vision - Simple reaction time measurements
p0265 A79-47115
Pilot workload during final approach in congested airspace
p0269 A79-48014
Time estimation as a secondary task to measure workload: Summary of research
p0093 N79-15634

TIME RESPONSE
The problem of optimally fast response as solved by the nerve cell
p0166 A79-31179
Visual search for complex targets
p0208 A79-38357
Regression models of search time for color-coded information displays
p0209 A79-38359

TIME SERIES ANALYSIS
Simulation study on time series of heart responses
p0037 A79-13197
Study of modeling and evaluation of remote manipulation tasks with force feedback
[NASA-CR-158721] p0242 N79-26785

TIME SHARING
Development and transfer of timesharing skills --- for human multiple task performance
p0035 A79-13184
Tracking in two dimensions as a function of dimension priorities and tracking difficulty
p0036 A79-13193
Time-sharing is not a unitary ability
[AD-A056632] p0019 N79-10739
Prospects of a mathematical theory of human behavior in complex man-machine systems tasks --- time sharing computer analogy of automobile driving
p0088 N79-15599
A quasi-linear control theory analysis of timesharing skills
p0115 N79-17479
Time-sharing ability in complex performance: An expanded replication
[FAA-AM-78-33] p0145 N79-18591

TIMING
U TIME MEASUREMENT

TISSUES (BIOLOGY)
Electromagnetic power absorption in cylindrical tissue models excited by a loop antenna
p0136 A79-27959
Tissue gas and blood analyses of human subjects breathing 80% argon and 20% oxygen
p0164 A79-30655
Biological effects of electromagnetic fields
p0184 A79-33711
The effect of hyperoxia on the oxygen tension of blood and cerebral tissue
p0208 A79-38146
Moving phase transitions in laser-irradiated biological tissue
p0228 A79-41478
Application of similarity transformation to unsteady state heat migration problems in human skin and subcutaneous tissues
p0233 A79-42932
Determination of cerebral and neck subcutaneous tissue PO2 with 3 and 4 +Gz in M. mulatta
p0234 A79-43205
System for and method of freezing biological tissue
[NASA-CASE-GSC-12173-1] p0013 N79-10694
Response of crown gall tissue to the space environment: Residual carbohydrates in supporting tissue --- COSMOS 782
p0020 N79-11653
Responses of crown gall tissue to the space environment: Tumor development and anatomy --- cosmos 782
p0020 N79-11654
Responses of crown gall tissue to the space environment: Glutamine synthetase activity --- cosmos 782
p0020 N79-11655

Responses to crown gall tissue to the space environment: Isozyme patterns --- cosmos 782
p0020 N79-11656
Diffraction-based characterization of biological tissue with ultrasound --- acoustic scattering from liver tissue
p0054 N79-13683
Effects of intermittent magnetic field on activity of carbohydrate metabolism enzymes and oxygen uptake in testicular tissue
p0075 N79-14738
Coupling apparatus for ultrasonic medical diagnostic system
[NASA-CASE-NPO-13935-1] p0077 N79-14751
Microwave and RF dosimetry
p0083 N79-15561
Electric field measurements within biological media
p0083 N79-15562
Raman and infrared investigations of the nature of intracellular water
[AD-A061254] p0120 N79-17522
Mathematical studies of oxygen transport to tissue
p0170 N79-20723
Electrical parameter values of some human tissues in the radiofrequency radiation range
[AD-A064202] p0189 N79-22754
Tissular blood clotting factors of vascular walls and myocardium during hypokinesia
p0194 N79-23644
Application of pattern recognition to ultrasonic tissue characterization
p0194 N79-23647
An investigation of the pulse-scatter imaging technique for medical ultrasonic imaging and tissue characterization
p0211 N79-24628
Strontium metabolism in the rebuilding of skeletal tissue
[NASA-CR-160195] p0216 N79-25713
Multifunctional transducer
[NASA-CASE-NPO-14329-1] p0219 N79-25737
Dose-effect relationships for ultrasound irradiation of brain tissue
p0242 N79-27812
Preparation of guinea pig macrophage for electrophoretic experiments in space
[NASA-CR-158777] p0243 N79-27814
Tissular metabolism in mixed type fibers of rat skeletal muscles after flight aboard Cosmos-690 biosatellite
p0244 N79-27823
Apparatus and method of inserting a microelectrode in body tissue or the like using vibration means
[NASA-CASE-NPO-13910-1] p0246 N79-27836
Ultrasonic tissue characterization II
[PB-296356/9] p0316 N79-33836

TOCOPHEROL
Effects of exercise, vitamin E, and ozone on pulmonary function and lipid peroxidation
p0067 A79-18965

TOLERANCES (MECHANICS)
NT IMPACT TOLERANCES

TOLERANCES (PHYSIOLOGY)
NT ACCELERATION TOLERANCE
NT ALTITUDE TOLERANCE
NT COLD TOLERANCE
NT HEAT TOLERANCE
NT HUMAN TOLERANCES
NT RADIATION TOLERANCE
Survival and protection of aircrew in the event of accidental immersion in cold water
[AGARD-AG-211(ENG)] p0196 N79-23661
Animal endurance to recurrent impact accelerations
p0246 N79-27833

TOMOGRAPHY
Digital enhancement of computerized axial tomograms
p0004 A79-11544
High-speed computerized tomography
p0004 A79-12030
A binocular stereoscopic display system for echocardiography
p0130 A79-26072
Computerized positron emission tomography /PET/ for the assessment of myocardial integrity
p0293 A79-51031
Current status of cardiovascular imaging by transmission computed tomography
p0294 A79-51032
Computed axial tomography (CAT)
[ISS-R-78/4] p0262 N79-29791

TONOMETRY
U INTRAOCULAR PRESSURE
U PRESSURE MEASUREMENTS

TONUS
U MUSCULAR TONUS

TOPOGRAPHY
NT TERRAIN

TORQUE
Passive resistive torques about long bone axes of major human joints
p0298 A79-52283
A quasi-linear control theory analysis of timesharing skills
p0120 N79-17520

TOUCH
NT TACTILE DISCRIMINATION

TOWED TARGETS
U TARGETS

TOXIC DISEASES
NT CARBON MONOXIDE POISONING

TOXIC HAZARDS
A literature review-problem definition studies on selected toxic chemicals. Volume 1: Occupational health and safety aspects of diesel fuel and white smoke generated from it
[AD-A056018] p0025 N79-11686
A preliminary toxicological study of silastic 386 foam elastomer: catalyst
[LA-7366-MS] p0071 N79-14714
Effect of hypokinesia on animal resistance to chemical agents
p0109 N79-16524
Percutaneous absorption of toxic agents. Part 2: The nerve bases and some other toxic organophosphates. A survey of the literature.
[PML-1978-9] p0123 N79-17542
In-flight toxicology of fixed and rotary wing aircraft crew stations
p0149 N79-19619
Report of the Workshop on Biological Screening Tests
[PB-294303/3] p0279 N79-30916
Mutagenic components of alternate energy sources
[CONF-780636-8] p0280 N79-30923

TOXICITY
NT CARBON MONOXIDE POISONING
Statistical studies of animal response data from USP toxicity screening test method
p0066 A79-18305
Mechanisms of the effect of oxygen toxicity on the energy metabolism
p0160 A79-29275
Morphological and biochemical effects of oxygen toxicity
[AD-A056778] p0018 N79-10734
A literature review-problem definition studies on selected toxic chemicals. Volume 2: Occupational health and safety aspects of phosphorus smoke compounds
[AD-A056019] p0025 N79-11685
Zinc
[PB-285130/1] p0057 N79-13704
Risks from various products used in paint spraying
[BLL-RTS-11499] p0142 N79-18569
Allergy to lanolin
[BLL-RTS-11185] p0142 N79-18570
Citric acid enhancement of copper sulfate toxicity to blue-green algae and other nuisance organisms
[PB-289490/5] p0170 N79-20718
Methods for measuring the acute toxicity of effluents to aquatic organisms
[PB-289605/8] p0170 N79-20719
Orenburg symposium on mycotoxins
p0175 N79-21749
Effects of heavy metals especially selenium, vanadium and zirconium on movement, growth and survival of certain animal aquatic life
[PB-292563/4] p0197 N79-25706
Acute toxicity of a number of chemicals of interest to the Air Force
[AD-A067313] p0220 N79-25742
Toxicity of oxygen mixed with helium
p0245 N79-27829
Toxicity of high density jet fuel components
[AD-A068596] p0259 N79-28870
Report of the Workshop on Biological Screening Tests
[PB-294303/3] p0279 N79-30916

Mechanisms of oxygen toxicity at the cellular level [AD-A070026] p0307 N79-32823

Development of electrophysiological indices of neurological toxicity for organophosphate pesticides and depressant drugs [AD-A070299] p0314 N79-33821

TOXICITY AND SAFETY HAZARD

A literature review-problem definition studies on selected toxic chemicals. Volume 5: Occupational health and safety and environmental aspects of zinc chloride [AD-A056020] p0025 N79-11687

A literature review-problem definition studies on selected toxic chemicals. Volume 8: Environmental aspects of diesel fuel and fog oils SGF number 1 and SGF number 2 and smoke screens generated from them [AD-A056021] p0025 N79-11688

TOXICOLOGY

Renal damage in mice following exposure to the pyrolysis products of polytetrafluoroethylene p0066 A79-18306

Two-week studies of survivors from exposures to pyrolysis gases p0066 A79-18307

Weight control and restraint of laboratory rats p0133 A79-26584

Characteristics of serious carbon monoxide poisoning p0167 A79-32100

The toxicology of ozone. A bibliography with abstracts [NTIS/PS-78/1120/1] p0057 N79-13705

Proceedings of the first and second USA-USSR Symposia on the Effects of Pollutants upon aquatic ecosystems. Volume 1: USA Symposium. Volume 2: USSR Symposium [PB-287219/0] p0112 N79-16546

The effects of H_2SO_4 on men and H_2SO_4 and O_3 on laboratory animals p0141 N79-18354

In-flight toxicology of fixed and rotary wing aircraft crew stations p0149 N79-19619

Health effects associated with diesel exhaust emissions, literature review and evaluation [PB-289817/9] p0171 N79-20727

Effects of oxides on nitrogen, Carbon monoxide and photochemical oxidants on the ECG during exercise and on cardiopulmonary function [PB-291595/7] p0177 N79-21763

Citric acid enhancement of copper sulfate toxicity to the blue-green algae ""aphanizomenon flos-aquae'' and ""microcystis aeruginosa'' [PB-291637/7] p0189 N79-22751

Evaluation of toxic effects of organic contaminants in recycled water [PB-291379/6] p0190 N79-22760

Report of the Workshop on Biological Screening Tests [PB-294303/3] p0279 N79-30916

TOXINS AND ANTITOXINS

NT ENDOTOXINS

The effect of ultrasound on botulin toxin [AD-A059544] p0142 N79-18566

TRACE CONTAMINANTS

Concentration of trace contaminants during gas chromatography and chromato-mass spectrometry in biomedical research p0109 N79-16528

Trace contaminant studies of HSC adsorbent [NASA-CR-160148] p0177 N79-21769

TRACHEA

Particle deposition due to turbulent diffusion in the upper respiratory system p0270 A79-48251

TRACKING (POSITION)

NT COMPENSATORY TRACKING
NT OPTICAL TRACKING
NT PURSUIT TRACKING
NT RADAR TRACKING
NT RADIO TRACKING
NT SATELLITE TRACKING
NT WILDLIFE RADIOLOCATION

Effects of vibration on humans - Performance decrements and limits p0035 A79-13185

Effects of target motion and image on AAA tracking --- Anti-Aircraft Artillery p0046 A79-14969

Secondary visual workload capability with primary visual and kinesthetic-tactual displays p0064 A79-18220

Comparative evaluation of the effectiveness of visual and aural tracking of a sinusoidal signal p0159 A79-28736

A comparison of kinesthetic-tactual and visual displays via a critical tracking task --- for aircraft control p0162 A79-29720

An algorithm to ascertain critical regions of human tracking ability p0163 A79-30218

A rationale for human operator pulsive control behavior p0186 A79-34520

Test of the 10 bits/sec channel-capacity hypothesis for human tracking p0253 A79-45771

Adaptive estimation schemes for minimizing uncertainty in manual control tasks p0269 A79-48013

Psychological aspects of the human-operator's activity while tracking [RAE-LIB-TRANS-1979] p0079 N79-14768

Directional errors of movements and their correction in a discrete tracking task --- pilot reaction time and sensorimotor performance p0086 N79-15589

Effects of uncertainty on manual tracking performance --- visual tasks p0086 N79-15592

Modeling the effects of high-G stress on pilots in a tracking task p0087 N79-15593

AAA gunnermodel based on observer theory --- predicting a gunner's tracking response p0087 N79-15594

Two dimensional eye tracking: Sampling rate of forcing function p0090 N79-15617

Head tracking at large angles from the straight ahead position p0090 N79-15618

The effects of closed loop tracking on a subjective tilt threshold in the roll axis p0090 N79-15620

Use of the tilt cue in a simulated heading tracking task p0091 N79-15621

Roll tracking effects of G-vector tilt and various types of motion washout p0091 N79-15622

Linear modelling of attentional resource allocation p0091 N79-15626

Parameter estimation in a human operator describing function model for a two-dimensional tracking task p0115 N79-17481

Error rate information in attention allocation pilot models p0115 N79-17483

The facilitating effects of uncertainty in long-term manual control p0115 N79-17485

Multi-attribute subjective evaluations of manual tracking tasks vs. objective performance of the human operator p0116 N79-17486

Prediction of pilot reserve attention capacity during air-to-air target tracking p0116 N79-17488

A relationship between eye movement patterns and performance in a precognitive tracking task p0116 N79-17490

The effect of a visual/motion display mismatch in a single axis compensatory tracking task p0118 N79-17511

A model for the pilot's use of motion cues in roll-axis tracking tasks p0118 N79-17512

Evaluation of kinesthetic-tactual displays using a critical tracking task p0119 N79-17516

Influence of motion wash-out filters on pilot tracking performance [NLR-MP-78005-U] p0124 N79-17554

Head aiming/tracking accuracy in a helicopter environment

p0153 N79-19651

TRACKING STUDIES
U TRACKING (POSITION)

TRACTORS
Sunglasses for drivers?
[IZF-1977-24] p0122 N79-17539

TRAFFIC
NT AIR TRAFFIC

TRAFFIC CONTROL
NT AIR TRAFFIC CONTROL
A decision model applied to alcohol effects on driver signal light behavior
p0092 N79-15630

TRAINERS
U TRAINING DEVICES

TRAINING
U EDUCATION

TRAINING AIRCRAFT
NT JAGUAR AIRCRAFT

TRAINING DEVICES
NT TEACHING MACHINES
Transfer of a computer-assisted instrument procedures trainer to flight
p0039 A79-13216
Life cycle costing of simulated vs actual equipment for intermediate maintenance training --- for F-16 avionics
p0064 A79-18217
Cost analysis of pilot training systems
[SAE PAPER 781005] p0130 A79-25887
Recent studies of simulation training effectiveness
[SAE PAPER 781006] p0130 A79-25888
Recent developments and plans for pilot training devices
[SAE PAPER 781007] p0130 A79-25889
Psychologists vs engineers --- flight simulators training requirements
p0132 A79-26499
Application of computer animation for dynamic display in complex energy systems --- for human operator performance improvement
p0186 A79-34172
The relationship between flight simulator motion and training requirements
p0267 A79-47766
Retention and transfer of training on a procedural task interaction of training strategy and cognitive style
[AD-A058966] p0052 N79-12704

TRAINING EVALUATION
Air Combat Maneuvering Range /ACMR/ - Has operational performance measurement entered a Golden Age
p0064 A79-18221
Cross-validation of regression equations to predict performance in a pursuit tracking task
p0064 A79-18222
Naval aviation training - Perspective and prospects
[SAE PAPER 781004] p0130 A79-25886
Recent studies of simulation training effectiveness
[SAE PAPER 781006] p0130 A79-25888
Army Aviation Training - Research now and then
[SAE PAPER 781008] p0130 A79-25890
Universal airborne approach to pilot performance assessment
[SAE PAPER 781009] p0130 A79-25891
Training effectiveness versus simulation realism
p0138 A79-28166
Transfer of landing skill after training with supplementary visual cues
p0138 A79-28167
The evaluation of a complex computer-based flight procedures trainer
p0161 A79-29717
A7 training effectiveness through performance analysis --- carrier landing instruction
[AD-A056230] p0031 N79-11728

TRAINING SIMULATORS
NT COCKPIT SIMULATORS
NT FLIGHT SIMULATORS
Models for automated motor skills training --- computer controlled adaptive instruction
p0035 A79-13182
Development and transfer of timesharing skills --- for human multiple task performance
p0035 A79-13184
Computer simulation of thermoregulatory responses to heat stress - A future work design and training tool
p0037 A79-13196
Pilot performance during flight simulation with peripherally presented visual signals
p0063 A79-18213
Simulator Training Requirements and Effectiveness Study /STRES/
p0063 A79-18216
Life cycle costing of simulated vs actual equipment for intermediate maintenance training --- for F-16 avionics
p0064 A79-18217
A 25-inch precision color display for simulator visual systems
p0137 A79-28164
Application of Fresnel lenses to virtual image display --- for training simulators
p0139 A79-28173
Development of a performance criterion for air traffic personnel research through air traffic control simulation
[AD-A058082] p0031 N79-11727

TRAJECTORY ANALYSIS
The trajectories of saccadic eye movements
p0065 A79-18250

TRAJECTORY CONTROL
NT TRAJECTORY OPTIMIZATION

TRAJECTORY OPTIMIZATION
An adaptive controller which displays human operator limitations for a fighter type aircraft
p0177 N79-21767

TRANSDUCERS
NT ELECTRONIC TRANSDUCERS
NT IMAGE TRANSDUCERS
NT ULTRASONIC WAVE TRANSDUCERS
In-vivo bone strain telemetry in monkeys /M. nemestrina/
p0002 A79-10608
Single frequency RF powered ECG telemetry system
p0131 A79-26074
A study of noninvasive blood pressure measurement techniques
p0294 A79-51036
Review of chest deflection measurement techniques and transducers
[PB-283654/2] p0051 N79-12702
Multifunctional transducer
[NASA-CASE-NPO-14329-1] p0219 N79-25737

TRANSFER OF TRAINING
Transfer of landing skill after training with supplementary visual cues
p0138 A79-28167

TRANSFORMATIONS (MATHEMATICS)
NT FAST FOURIER TRANSFORMATIONS
Application of similarity transformation to unsteady state heat migration problems in human skin and subcutaneous tissues
p0233 A79-42932

TRANSFORMS
U TRANSFORMATIONS (MATHEMATICS)

TRANSIENT HEATING
Application of similarity transformation to unsteady state heat migration problems in human skin and subcutaneous tissues
p0233 A79-42932

TRANSIENT RESPONSE
Retinal site of transient tritanopia
p0256 A79-46623
The application of integral performance criteria to the analysis of discrete maneuvers in a driving simulator
[RS-GMR-2394] p0115 N79-17484
User's instructions for the Grodins' respiratory control model using the UNIVAC 1110 remote batch and demand processing
[NASA-CR-160225] p0212 N79-24635
Transient thermoregulatory model with graphics output
[NASA-CR-160217] p0212 N79-24637
Transient intraventricular conduction defects observed during experimental impact in human subjects
p0285 N79-31907

TRANSITION METALS
NT CADMIUM
NT CHROMIUM ISOTOPES
NT IRON
NT PALLADIUM
NT PLATINUM
NT VANADIUM

NT ZINC
NT ZIRCONIUM
Prebiotic coordination chemistry: The potential role of transition-metal complexes in the chemical evolution
[NASA-TM-75381] p0169 N79-20715
TRANSLATIONAL MOTION
NT THREE DIMENSIONAL MOTION
Multibody dynamics including translation between the bodies, with application to head-neck systems
[AD-A062114] p0174 N79-20747
TRANSMISSION
NT CONDUCTIVE HEAT TRANSFER
NT DATA TRANSMISSION
NT ELECTRIC POWER TRANSMISSION
NT HEAT TRANSFER
NT LIGHT SCATTERING
NT LIGHT TRANSMISSION
NT RADIO TRANSMISSION
NT SIGNAL TRANSMISSION
TRANSMISSION CIRCUITS
The use of hybrid integrated circuit techniques in biotelemetry applications
p0131 A79-26145
TRANSONIC AIRCRAFT
U SUPERSONIC AIRCRAFT
TRANSPORT AIRCRAFT
NT C-135 AIRCRAFT
NT C-141 AIRCRAFT
NT TANKER AIRCRAFT
Discrete time modeling of heavy transport plane pilot behavior
p0118 N79-17508
TRANSPORT COEFFICIENTS
U TRANSPORT PROPERTIES
TRANSPORT PROPERTIES
NT GASEOUS DIFFUSION
NT THERMAL CONDUCTIVITY
NT VISCOSITY
Coupling of aspartate and serine transport to the transmembrane electrochemical gradient for sodium ions in Halobacterium halobium - Translocation stoichiometries and apparent cooperativity
p0002 A79-10425
Gating effects in Halobacterium halobium membrane transport
p0268 A79-47849
Equations on biotransport mechanisms
p0304 A79-53535
Mass transport in arteries
p0247 N79-27848
TRANSPORT THEORY
Mathematical studies of oxygen transport to tissue
p0170 N79-20723
TRANSPORTATION
NT SPACE TRANSPORTATION SYSTEM
NT URBAN TRANSPORTATION
TRANSPORTER
Animal life support transporters for Shuttle/Spacelab
[ASME PAPER 78-ENAS-10] p0006 A79-12559
TRANSURANIUM ELEMENTS
NT AMERICIUM 241
TREADMILLS
Predicting coronary artery disease with treadmill stress testing Changes in R-wave amplitude compared with ST segment depression
p0186 A79-34284
The evolutionary pattern of exercise-induced ST segment depression
p0251 A79-44166
Cardiovascular, metabolic, and respiratory responses of sedentary females to equal metabolic workloads on the bicycle ergometer and treadmill
p0024 N79-11681
TREMORS
Tremometry as a method of evaluating the functional state of the nervous system of a pilot
p0300 A79-53065
TRENDS
Age trends in the cardiovascular dynamics of aircrewmen
p0136 A79-27560
TRITIUM
Evaluation of the risks involved in the application of tritium gas and measures which have to be taken
[MBL-1978-6] p0122 N79-17541
TROPISM
NT GEOTROPISM
TRUCKS
Evaluation of the amount of exposure to vibrations transmitted to the whole body case of vibrations due to a loader mounted on catapillar tracks, a fork-lift truck and a hydraulic excavator
[RAE-LIB-TRANS-1930] p0080 N79-14773
A methodology for conducting human factors evaluations of vehicles in operational field tests
[AD-A061808] p0157 N79-19691
TRYPTAMINES
NT SEROTONIN
TRYPTOPHAN
Low tryptophan diet decreases brain serotonin and alters response to apomorphine
p0226 A79-40672
TUMORS
NT CANCER
Temperature uniformity in hyperthermal tumor therapy
p0018 N79-10730
The effect of hyperthermia on the radiation response of crypt cells in mouse jejunum
p0018 N79-10731
A microangiographic study of the effect of hyperthermia on the rabbit bladder
p0018 N79-10732
Responses of crown gall tissue to the space environment: Tumor development and anatomy --- cosmos 782
p0020 N79-11654
Responses of crown gall tissue to the space environment: Glutamine synthetase activity --- cosmos 782
p0020 N79-11655
Responses to crown gall tissue to the space environment: Isozyme patterns --- cosmos 782
p0020 N79-11656
Preparation of guinea pig macrophage for electrophoretic experiments in space
[NASA-CR-158777] p0243 N79-27814
Toxicity of high density jet fuel components
[AD-A068596] p0259 N79-28870
TURBOFAN AIRCRAFT
NT A-7 AIRCRAFT
NT C-141 AIRCRAFT
NT F-111 AIRCRAFT
TURBULENT DIFFUSION
Particle deposition due to turbulent diffusion in the upper respiratory system
p0270 A79-48251
TURBULENT FLOW
NT CAVITATION FLOW
TURNING FLIGHT
RNAV procedural turn anticipation techniques experiment no. 2, GAT-2A. Phase 3: 2 and 4 nmi offset tracking procedures
[AD-A060501] p0085 N79-15583
TWITCHING
Mechanical efficiency of fast- and slow-twitch muscle fibers in man during cycling
p0268 A79-47852
TYPEWRITERS
NT TELETYPEWRITERS

U

U TUBES
U MANOMETERS
U.S.S.R.
The cosmonaut in flight
[NASA-TT-F-17438] p0032 N79-11729
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 47
[JPRS-72134] p0071 N79-14708
Translations on USSR science and technology: Biomedical and behavioral sciences, No. 53. Effects of nonionizing electromagnetic radiation
[JPRS-72606] p0074 N79-14736
Translations on USSR science and technology. Biomedical and behavioral science, no. 54
[JPRS-72650] p0077 N79-14753
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 52 --- with emphasis on research management
[JPRS-72604] p0078 N79-14760
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 57

[JPRS-72808] p0121 N79-17526
Environment monitoring in the USSR and hygienic
practice --- anthropogenic effects
p0121 N79-17528
Translations on USSR science and technology:
Biomedical and behavioral sciences, no. 60
[JPRS-73135] p0175 N79-21745
Space biology and aerospace medicine, v. 13, no.
3, 1979
[JPRS-73784] p0243 N79-27817
Translations on USSR science and technology:
Biomedical and behavioral sciences, no. 81
[JPRS-73729] p0249 N79-27860
Methods for studying and criteria for evaluating
the biological effects of electric fields of
industrial frequency
[CONF-780541-1] p0307 N79-32827

U.S.S.R. SPACE PROGRAM
The joint US-USSR biological satellite program
p0182 A79-33050
Experiment K-002: Results of histological
examination of inguinal lymph nodes,
supplementary report --- COSMOS 782 satellite
p0021 N79-11662
US experiments flown on the Soviet satellite
COSMOS 936
[NASA-TM-78526] p0023 N79-11671
The Cosmos 936 mission
p0023 N79-11672
Light and color on a manned spacecraft
p0059 N79-13996
Space Biology and Aerospace Medicine, no. 4, 1979
[JPRS-74330] p0310 N79-33789

UH-1 HELICOPTER
Night vision goggles and in-flight evaluation of
the inside/outside refocusing problems in a
UH-1H helicopter
p0063 A79-18215
Night rescue operation procedure over sea with
bell UH-1D helicopters
p0148 N79-19609
An evaluation of the effects of a stability
augmentation system upon aviator
performance/workload during a MEDEVAC high hover
operation
p0148 N79-19612
Human exposure to mechanical vibration at lying
posture in the ambulance helicopter UH-1D
p0149 N79-19617
Backache in UH-1D helicopter crews
p0149 N79-19620
Aviator visual performance: A comparative study
of a helicopter simulator and the UH-1 helicopter
p0153 N79-19652

ULCERS
Absence of gastric ulceration in rats after flight
on the COSMOS 782
p0021 N79-11660
Indomethacin-antihistamine combination for gastric
ulceration control
[NASA-CASE-ARC-11118-2] p0077 N79-14755

ULTRAHIGH FREQUENCIES
The effect of microwave fields on muscle oxygen
pressure and temperature in animals previously
adapted to hypoxia
p0296 A79-51116

ULTRASONIC RADIATION
Effect of ultrasonic irradiation on mammalian
cells and chromosomes in vitro
p0134 A79-27239
The effect of ultrasound on botulin toxin
[AD-A059544] p0142 N79-18566
Biomedical ultrasonoscope
[NASA-CASE-ARC-10994-2] p0240 N79-26771
Dose-effect relationships for ultrasound
irradiation of brain tissue
p0242 N79-27812

ULTRASONIC SPECTROSCOPY
A continuous wave, frequency modulated, ultrasonic
device with auditory output for observing the
heart
p0045 A79-14602

ULTRASONIC TESTS
Detection of bubbles in decompression sickness
p0041 A79-13573
A sample volume tracking unit for pulsed Doppler
echocardiography
p0200 A79-36869
Ultrasonic investigations of the soleus muscle
after space flight on the Biosputnik 936
p0274 A79-49992
Signal processing in ultrasound --- for diagnostic
medicine
p0294 A79-51039
Quantitative flow estimation with transcutaneous
Doppler ultrasound
p0295 A79-51042
Noninvasive ultrasonic blood flow characterization
p0017 N79-10726
New developments in ultrasonic imaging of the
chest and other body organs
[UCRL-80340-REV-1] p0018 N79-10735
Development of high-resolution ultrasonic imaging
techniques for detection and clinical assessment
of cardiovascular disease
[PB-284686/3] p0052 N79-12703
Diffraction-based characterization of biological
tissue with ultrasound --- acoustic scattering
from liver tissue
p0054 N79-13683
Development and evaluation of instrument systems
for noninvasive detection, characterization and
quantification of atherosclerotic lesions
[PB-286851/1] p0085 N79-15582
A wide aperture focussed ultrasound system for
detection of breast carcinoma by ultrasonic
attenuation
p0142 N79-18577
Application of pattern recognition to ultrasonic
tissue characterization
p0194 N79-23647
An investigation of the pulse-scatter imaging
technique for medical ultrasonic imaging and
tissue characterization
p0211 N79-24628
Ultrasonic tissue characterization II
[PB-296356/9] p0316 N79-33836

ULTRASONIC WAVE TRANSDUCERS
Disorder in pulsatile flow - Biomedical
measurements with hot film, laser and ultrasound
anemometers
p0210 A79-39509
Coupling apparatus for ultrasonic medical
diagnostic system
[NASA-CASE-NPO-13935-1] p0077 N79-14751

ULTRASONIC WAVES
U ULTRASONIC RADIATION

ULTRASONICS
Analyses for noninvasive monitoring of arterial
blood pressure by /I/ phono
cuff-sphygmomanometry, for discrete measurements
and /II/ arterial ultrasonic imaging, for
continuous measurements
p0294 A79-51037
The advantages of ultrasonic echocardiography in
the cardiological evaluation of fliers
p0030 N79-11718
Suppression of the immune response by ultrasound
p0142 N79-18560

ULTRAVIOLET ABSORPTION
The effects of temperature, salinity, and other
factors on the growth and formation of
UV-absorbing substances by the fungus Aspergillus
p0005 A79-12512

ULTRAVIOLET LIGHT
U ULTRAVIOLET RADIATION

ULTRAVIOLET RADIATION
An ultraviolet light induced bacteriophage in
Beneckea gazogenes --- organism growth on
precambrian earth
p0254 A79-46463
Role of n-aminobenzoic acid in repairing UV and
gamma radiation damage
p0301 A79-53211
Wavelength dependence of ultraviolet-enhanced
reactivation and induction of mammalian viruses
[HEW-PUB-FDA-78-8059] p0084 N79-15575
Photosynthethic carbon reduction by seagrasses
exposed to ultraviolet B radiation
[NASA-CR-160144] p0175 N79-21742
Acceptable radiation levels in the ultraviolet
visible infrared regions
[IZF-1978-15] p0248 N79-27853

UNCONSCIOUSNESS
NT BLACKOUT (PHYSIOLOGY)
Incapacitation time for +Gz-induced loss of
consciousness

p0102 A79-23475
Pilot incapacity in flight
p0291 N79-31950
UNDERWATER VEHICLES
Display aids for remote control of untethered undersea vehicles
p0090 N79-15613
UNITED STATES OF AMERICA
NT ARKANSAS
NT CALIFORNIA
NT MISSOURI
NT NORTH CAROLINA
US experiments flown on the Soviet Satellite COSMOS 782
[NASA-TM-78525] p0020 N79-11651
US experiments flown on COSMOS 782
p0020 N79-11652
US experiments flown on the Soviet satellite COSMOS 936
[NASA-TM-78526] p0023 N79-11671
The Cosmos 936 mission
p0023 N79-11672
UNIVERSE
Chirality of compounds essential for the existence of life, and the possibility of its evolution in the universe
p0186 A79-38464
UNMANNED SPACECRAFT
NT BIOSATELLITES
UNSTEADY FLOW
Disorder in pulsatile flow - Biomedical measurements with hot film, laser and ultrasound anemometers
p0210 A79-39509
UNSTEADY STATE
Unsteady-state response of the vascular system to transient and sustained aerospace acceleration profiles
p0286 N79-31917
URBAN AREAS
U CITIES
URBAN TRANSPORTATION
Effects of deceleration and rate of deceleration on live seated human subjects
[PB-284653/3] p0057 N79-13702
UREAS
Increased hemoglobin and content of rat blood serum as a result of decreased resistance of erythrocyte membranes to hyperbaric oxygenation, and the protective effect of urea
p0193 N79-23637
URINALYSIS
Circadian rhythm of electrolyte uresis in healthy persons
p0257 A79-46681
Honest 1: Personality, heart rate, urinary catecholamine, and subjective fatigue measures related to night nap-of-the-earth flying
[AD-A054888] p0055 N79-13692
Determination of antimicrobial susceptibilities on infected urines without isolation
[NASA-CASE-GSC-12046-1] p0076 N79-14750
Four-man rated dual catalyst system for the recovery of water from urine
[NASA-CR-152227] p0112 N79-16550
Stress in air traffic controllers: A restudy of 32 controllers 5 to 9 years later
[FAA-AM-78-40] p0144 N79-18581
URINATION
Prosthetic urinary sphincter
[NASA-CASE-MFS-23717-1] p0077 N79-14756
URINE
Comparison of plasma and urinary steroids in men with type A and type B behavior patterns
p0028 N79-11704
Effects of different values of urine pH during long-term storage on microflora composition
p0194 N79-23643
Urine collection apparatus
[NASA-CASE-MSC-18381-1] p0195 N79-23657
Quality of water reclaimed from urine as related to pH of initial product
p0313 N79-33307
UROLOGY
Prosthetic urinary sphincter
[NASA-CASE-MFS-23717-1] p0077 N79-14756
USA (UNITED STATES)
U UNITED STATES OF AMERICA
USER MANUALS (COMPUTER PROGRAMS)
Human operator identification model and related computer programs
[NASA-CR-152237] p0112 N79-16551
User's instructions for the Grodins' respiratory control model using the UNIVAC 1110 remote batch and demand processing
[NASA-CR-160225] p0212 N79-24635
Transient thermoregulatory model with graphics output
[NASA-CR-160217] p0212 N79-24637
User's instructions for the 41-node thermoregulatory model (steady state version)
[NASA-CR-160220] p0212 N79-24638
User's instructions for the erythropoiesis regulatory model
[NASA-CR-160193] p0216 N79-25711
On a basic model of circulatory, fluid, and electrolyte regulation in the human system based upon the model of Guyton
[NASA-CR-160212] p0218 N79-25725
User's instructions for the whole-body algorithms
[NASA-CR-160233] p0219 N79-25735
User's guide for the Skylab integrated medical data analysis system
[NASA-CR-160189] p0220 N79-25740
UTILITY AIRCRAFT
NT UH-1 HELICOPTER
UTILIZATION
NT LASER APPLICATIONS
NT WASTE UTILIZATION
The utilisation of organic compounds by purple bacteria in the presence of light
[BLL-RTS-11213] p0141 N79-18556

V

V/STOL AIRCRAFT
NT HELICOPTERS
NT MILITARY HELICOPTERS
NT UH-1 HELICOPTER
NT VERTICAL TAKEOFF AIRCRAFT
VACUUM APPARATUS
New combined aspirator for sampling developed
p0170 N79-20722
VACUUM TUBE OSCILLATORS
NT CATHODE RAY TUBES
VACUUM TUBES
NT CATHODE RAY TUBES
VALIDATION
U PROVING
VALVES
NT ARTIFICIAL HEART VALVES
NT CONTROL VALVES
NT HEART VALVES
Water system microbial check valve development
[NASA-CR-151843] p0032 N79-11733
Engineering test and evaluation during high G. Volume 2: Anti-G valves
[AD-A059521] p0081 N79-14780
VANADIUM
Effects of heavy metals especially selenium, vanadium and zirconium on movement, growth and survival of certain animal aquatic life
[PB-292563/4] p0197 N79-25706
VANS
U TRUCKS
VAPORS
NT WATER VAPOR
A general model for the transfer of vapour through clothed skin from liquid on and in clothing
[AD-A071577] p0319 N79-33853
VARIANCE
The human as a detector of changes in variance and bandwidth
p0117 N79-17496
VARIANCE (STATISTICS)
NT ANALYSIS OF VARIANCE
NT MULTIVARIATE STATISTICAL ANALYSIS
NT REGRESSION ANALYSIS
VASCULAR SYSTEM
NT AORTA
NT ARTERIES
NT BLOOD VESSELS
NT CAPILLARIES (ANATOMY)
NT VEINS
Lung inflation and longitudinal distribution of pulmonary vascular resistance during hypoxia
p0277 A79-50905

Early cardiovascular adaptation to zero gravity simulated by head-down tilt [IAF PAPER 79-77] p0301 A79-53286

Blood clotting factors of the vascular wall and myocardium of hypokinetic rabbits p0108 N79-16523

Tissular blood clotting factors of vascular walls and myocardium during hypokinesia p0194 N79-23644

VASOCONSTRICTION

Regional coronary blood flow at rest and during high sustained +Gz in a miniature swine with subclinical, ischemic, coronary heart disease due to coronary stenosis p0010 A79-12865

Application of numerical methods to physiological flows --- Navier-stokes equation, prosthetic heart valves and vasoconstriction p0146 N79-18945

VASOCONSTRICTOR DRUGS

NT SEROTONIN

VASOMOTOR NERVOUS SYSTEM

U NERVOUS SYSTEM

VECTOR SPACES

NT MATRICES (MATHEMATICS)

VECTORCARDIOGRAPHY

Clinical importance of directional statistics for electrocardiographic differentiation of smoking habits p0098 A79-21246

The application of vectorcardiography to aerospace medicine p0256 A79-46602

VEGETABLES

Development capacity of artemia cysts and lettuce seeds flown in Cosmos 936 and directly exposed to cosmic rays p0127 A79-24632

A technology assessment of vegetable substitutes for animal protein in human food. Volume 1: The study [PB-284681/4] p0059 N79-13719

A technology assessment of vegetable substitutes for animal protein in human food. Volume 2: Appendices [PB-284682/2] p0059 N79-13720

VEGETATION GROWTH

NT CROP GROWTH

Experiment Chlorella 1 on board of Salyut 6 [IAF PAPER 78-53] p0003 A79-11223

Algal growth under multiple nutrient limiting conditions p0013 N79-10692

VEINS

Doppler detection of thresholds for decompression-induced venous gas emboli in the awake rat p0202 A79-37707

Studies of venous circulation in the crew of the Salyut-5 orbital station p0310 N79-33791

VELOCITY

NT AIRSPEED

NT ANGULAR VELOCITY

NT FLOW VELOCITY

VELOCITY DISTRIBUTION

Estimation of nerve-bundle conduction p0154 N79-19672

VELOCITY ERRORS

A numerical method of film analysis with differentiation --- curve fitting with harmonic analysis p0061 A79-17585

VELOCITY FIELDS

U VELOCITY DISTRIBUTION

VELOCITY MEASUREMENT

Velocity precision in smooth pursuit eye movements p0129 A79-25399

Techniques of measurement p0247 N79-27850

Ultrasonic doppler directional blood flow velocity meter [RAE-LIB-TRANS-1918] p0279 N79-30920

VELOCITY PROFILES

U VELOCITY DISTRIBUTION

VENTILATION

Exercise ventilation correlates positively with ventilatory chemoresponsiveness p0066 A79-18954

VERBAL COMMUNICATION

Elicited acoustic responses to meaningful and meaningless verbal stimuli p0276 A79-50654

Communication problems of international crews [IAF PAPER 79-A-23] p0303 A79-53425

Human performance in concurrent verbal and tracking tasks: A review of the literature [AD-A060493] p0085 N79-15585

VERIFICATION (PROVING)

U PROVING

VERTEBRAE

Vertebral fractures in Gnat ejections p0201 A79-37134

Dynamic response of vertebral elements related to USAF injury [AD-A059489] p0071 N79-14713

A failure criterion for human, vertebral, cancellous bone p0285 N79-31912

Analytical modelling of load-deflection behavior of intervertebral discs subjected to axial compression [AD-A071019] p0316 N79-33830

VERTEBRAL COLUMN

Functional anatomy of vertebral column with reference to load bearing areas p0272 A79-49732

Biodynamics of aviation stresses on the vertebral column p0272 A79-49733

Vertebral pains in helicopter pilots --- symptomology and radiology p0153 N79-19656

VERTEBRATES

NT CHICKENS

NT CHIMPANZEES

NT DOGS

NT FISHES

NT FROGS

NT GOATS

NT HUMAN BEINGS

NT MAMMALS

NT MICE

NT MONKEYS

NT PRIMATES

NT RABBITS

NT RATS

NT WHALES

VERTICAL MOTION

Effects of stimulus onset and image motion on contrast sensitivity p0231 A79-42231

Human discomfort response to noise combined with vertical vibration [NASA-TP-1374] p0190 N79-22761

VERTICAL PERCEPTION

Geotropism of hornet comb construction under persistent acceleration p0006 A79-12514

The relationship between the apparent vertical and the vertical horopter --- visual perception of luminous line p0225 A79-40186

Psychophysical assessment of angular vibration - Comparison of vertical and roll vibrations p0234 A79-43206

Vertical orientation of man during 5-day antiorthostatic hypokinesia (-4, -8 and -12 deg head down position) p0313 N79-33810

VERTICAL TAKEOFF AIRCRAFT

Analysis of a VTOL hover task with predictor displays using an optimal control model of the human operator p0088 N79-15605

VERTIGO

Psychosocial aspects of syncope and vertigo in aircrew p0027 N79-11701

VESTIBULAR NYSTAGMUS

Visual-vestibular interactions. I - Influence of peripheral vision on suppression of the vestibulo-ocular reflex and visual acuity p0135 A79-27552

Role of the visual system in the compensation of vestibular dysfunction p0162 A79-29971

best copy available

Nystagmographic characterization of responses to rotation of persons with different vestibular-vegetative stability
p0188 A79-35122
Characteristics of vestibular nystagmus in rats
p0016 N79-10714
Analysis of inert gas exchange in the middle ear
p0017 N79-10723
Modeling of visual-vestibular interaction and the fast components of nystagmus
p0050 N79-12692
Effect of restricted activity on vestibular function
p0312 N79-33802

VESTIBULAR TESTS
The responses of frogs to vestibular and visual stimulation in weightlessness
p0006 A79-12513
Vestibular Function Research aboard Spacelab
[ASME PAPER 78-ENAS-25] p0007 A79-12574
Motion sickness susceptibility - A retrospective comparison of laboratory tests
p0010 A79-12861
Space Sled - A multipurpose apparatus for vestibular research aboard Spacelab
[DGLR PAPER 78-132] p0042 A79-14083
Results of tests of the equilibrium organ of candidates for payload expert for the first Spacelab mission
[DGLR PAPER 78-134] p0042 A79-14084
Hemodynamic indices under orthostatic and vestibular effects
p0098 A79-20692
Effects of vestibular stimuli on the electrical activity of muscles
p0187 A79-35121
Quality of retinal image stabilization during small natural and artificial body rotations in man
p0225 A79-40187
A model for vestibular function in altered gravitational states
p0229 A79-41710
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight
[IAF PAPER 79-80] p0301 A79-53288
A method of evaluating the pupillary reaction to vestibular stimuli
p0016 N79-10717
Vestibular Function Research (VFR) experiment. Phase B: Design definition study
[NASA-CR-152207] p0024 N79-11683
Role of vestibular system in behavior of animals submitted to prolonged slow rotation
p0074 N79-14734

VESTIBULES
Sensory illusions of vestibular origin
p0255 A79-46596
The vestibule and flying --- pilot disorientation
p0255 A79-46598
Ultrastructural development of the vestibular system under conditions of simulated weightlessness
p0298 A79-52284
Ultrastructural development of the vestibular system of frog larvae in 0g simulation
[IAF PAPER 79-78] p0301 A79-53287
Neurophysiological bases of vestibular conditioning
p0013 N79-10699
Vestibular influences on other sensory and motor processes --- human performance in flight simulation studies
p0094 N79-15893

VIBRATION
NT FLUTTER
Evaluation of the amount of exposure to vibrations transmitted to the whole body case of vibrations due to a loader mounted on catapillar tracks, a fork-lift truck and a hydraulic excavator
[RAE-LIB-TRANS-1930] p0080 N79-14773
The influence of mechanical vibration and noise on the peripheral blood circulation at skin level
[RAE-LIB-TRANS-1980] p0084 N79-15578
Human exposure to mechanical vibration at lying posture in the ambulance helicopter UH-1D
p0149 N79-19617
Discomfort criteria for single-axis vibrations
[NASA-TP-1422] p0196 N79-23662
The effects of whole-body vibration on health
[AD-A068478] p0284 N79-31900
Models and Analogues for the Evaluation of Human Biodynamic Response, Performance and Protection --- conferences, human tolerance of acceleration, vibration, and shock
[AGARD-CP-253] p0284 N79-31901

VIBRATION EFFECTS
Effects of vibration on humans - Performance decrements and limits
p0035 A79-13185
Changes in apparent body orientation and sensory localization induced by vibration of postural muscles - Vibratory myesthetic illusions
p0163 A79-30653
A study of the available evidence on duration effects on comfort and task proficiency under vibration
p0254 A79-46399
The influence of low frequency vibration on pilot performance /as measured in a fixed base simulator/
p0299 A79-52326
Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance
p0299 A79-52327
The influence of mechanical vibration and noise on the peripheral blood circulation at skin level
[RAE-LIB-TRANS-1980] p0084 N79-15578
Investigation on the effect of mechanical properties of control elements on human control performance under stochastic roll vibrations
[BMVG-FBWT-78-11] p0146 N79-18593
A model for predicting human discomfort response to combined noise and vertical vibration
p0156 N79-19685
Human discomfort response to noise combined with vertical vibration
[NASA-TP-1374] p0190 N79-22761
Effects of vibration on the human organism
p0249 N79-27862
The effects of whole-body vibration on health
[AD-A068478] p0284 N79-31900
The use of spinal analogue to compare human tolerance of repeated shocks with tolerance of vibration, part 1
p0288 N79-31926
Progress in measuring and modeling the effects of low frequency vibration on performance
p0288 N79-31930
Significance of the vibration component to the deleterious effect of impact accelerations
p0312 N79-33801

VIBRATION MEASUREMENT
Progress in measuring and modeling the effects of low frequency vibration on performance
p0288 N79-31930

VIBRATION PERCEPTION
Intensity judgements of non-sinusoidal vibrations - Support for the ISO weighting method
p0010 A79-12868
Psychophysical assessment of angular vibration - Comparison of vertical and roll vibrations
p0234 A79-43206
Sensorial aspects of helicopter operations
p0152 N79-19644

VIBRATION SIMULATORS
Psychophysical assessment of angular vibration - Comparison of vertical and roll vibrations
p0234 A79-43206
The influence of low frequency vibration on pilot performance /as measured in a fixed base simulator/
p0299 A79-52326
Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance
p0299 A79-52327

VIBRATION TESTING MACHINES
U VIBRATION SIMULATORS

VIBRATION TESTS
Vibration, performance, and personality --- vibration effects on human performance and psychological factors
p0040 A79-13224
The influence of mechanical vibration and noise on the peripheral blood circulation at skin level
[RAE-LIB-TRANS-1980] p0084 N79-15578

VIBRATIONAL FREQUENCIES
U VIBRATIONAL SPECTRA

VIBRATIONAL SPECTRA
Intensity judgements of non-sinusoidal vibrations - Support for the ISO weighting method
p0010 A79-12868

VIBRATIONAL STRESS
Cardiac responses of dogs to nonsynchronous and heart synchronous whole-body vibration
p0162 A79-29728
Psychophysical assessment of angular vibration - Comparison of vertical and roll vibrations
p0234 A79-43206
Effects of vibration and noise on some indices of efficiency of MI-4 helicopter crews
p0015 N79-10711

VIBROCARDIOGRAPHY
U PHONOCARDIOGRAPHY

VIDEO DATA
The development of a digital video subtraction system for intravenous angiography
p0294 A79-51033
Display aids for remote control of untethered undersea vehicles
p0090 N79-15613

VIDEO EQUIPMENT
Saccadic eye movements and visual stability
p0035 A79-13075

VIKING LANDER SPACECRAFT
Biological implications of the Viking mission to Mars
p0045 A79-14595

VIKING MARS PROGRAM
The Viking biological investigations - Review and status
p0100 A79-22083
Some comments on interpretations of Viking biological experiments
p0255 A79-46465

VIKING SPACECRAFT
NT VIKING LANDER SPACECRAFT
Thermal resistance of naturally occurring airborne bacterial spores --- Viking spacecraft dry heat decontamination simulation
p0131 A79-26147

VIKING 1 SPACECRAFT
NT VIKING LANDER SPACECRAFT

VIKING 2 SPACECRAFT
NT VIKING LANDER SPACECRAFT

VIOLENCE
NT ATTACKING (ASSAULTING)

VIRUSES
NT BACTERIOPHAGES
Water system virus detection
[NASA-CASE-MSC-16098-1] p0013 N79-10693
Wavelength dependence of ultraviolet-enhanced reactivation and induction of mammalian viruses
[HEW-PUB-FDA-78-8059] p0084 N79-15575
Mechanism of plant virus inactivation in soil injected with municipal wastewater and treatment plant sludges
[PB-287012/9] p0107 N79-16513
The effect of infection with herpes simplex viruses types 1 and 2 on cell DNA synthesis and thymidine kinase activities in cultured human cells
p0141 N79-18558
Isolation of virus-augmented tumor antigens
p0142 N79-18564

VISCERA
NT ADRENAL GLAND
NT BLADDER
NT INTESTINES
NT KIDNEYS
NT LIVER
NT LUNGS
NT ORGANS
NT PARATHYROID GLAND
NT PINEAL GLAND
NT PITUITARY GLAND
NT PROSTATE GLAND
NT STOMACH
NT TESTES
NT THYMUS GLAND
NT THYROID GLAND

VISCOSITY
Aggregation of red cells and blood viscosity as models of materials experimentation in the space environment
[AIAA PAPER 79-0310] p0069 A79-19664

VISIBILITY
NT LOW VISIBILITY
Driver steering dynamics measured in car simulator under a range of visibility and roadmaking conditions
p0117 N79-17493
Visual requirements for the helicopter pilot
p0151 N79-19636
Observation of night shipboard helicopter operations from a 210 foot US Coast Guard cutter
p0151 N79-19637

VISIBLE RADIATION
U LIGHT (VISIBLE RADIATION)

VISIBLE SPECTRUM
U LIGHT (VISIBLE RADIATION)

VISION
NT BINOCULAR VISION
NT COLOR VISION
NT MONOCULAR VISION
NT NIGHT VISION
NT PERIPHERAL VISION
NT STEREOSCOPIC VISION
Contributions of the retina and of the eye optical system to the modulation lowering of the aerial image
p0100 A79-22771
Survey on eye comfort in aircraft. I - Flight attendants
p0165 A79-30665
Robotic vision --- process control applications
p0187 A79-34984
Dynamical characteristics of visual functions
p0276 A79-50656
Motion and vision. I - Stabilized images of stationary gratings
p0278 A79-50986
The visual cortex of normal and deprived monkeys
p0296 A79-51174

VISUAL ACCOMMODATION
Cerebral hemodynamics and visual analyzer function following exposure to bright light
p0109 N79-16525

VISUAL ACUITY
NT HYPEROPIA
Saccadic eye movements and visual stability
p0035 A79-13075
Visual acuity of the aging hyperopic eye in the intermediate range
p0037 A79-13198
Peripheral acuity and photointerpretation performance
p0068 A79-18996
Visual acuity with regard to simultaneous colored contrast on a television screen - Results
p0103 A79-23952
Visual-vestibular interactions. I - Influence of peripheral vision on suppression of the vestibulo-ocular reflex and visual acuity
p0135 A79-27552
Recognition by the human eye of colored symbols on different backgrounds
p0136 A79-27673
Chromatic border distinctness - Not an index of hue or saturation differences
p0139 A79-28332
Dynamics of an image viewed through a rotating mirror
p0221 A79-36365
Objective determination of human visual acuity from the visual evoked potential
p0228 A79-41423
The retinal resolving power measured by laser interference fringes
p0304 A79-54091
Providing an eye separator on a color cathode tube --- enhancing visual acuity
p0152 N79-19639
Visual and optical assessment of gas protective face masks
p0152 N79-19642

VISUAL DISCRIMINATION
Discrimination of density and clustering on four versions of a stochastic display --- human performance of pattern recognition
p0036 A79-13192
Contrast effects on smooth-pursuit eye movement velocity
p0104 A79-24068

Recognition by the human eye of colored symbols on different backgrounds p0136 A79-27673
Chromatic border distinctness - Not an index of hue or saturation differences p0139 A79-28332
Discrimination, temperature, and time of day --- human performance variances p0161 A79-29718
The visual perception of motion in depth p0210 A79-39087
The relative effects of multiple factors on target acquisition --- by combat pilots p0267 A79-47765
Mutual repulsion between moving visual targets p0275 A79-50473
Upper-velocity threshold for detection of movement p0299 A79-52541
Contrast sensitivity of the human eye to various display phosphor types [AD-A058383] p0056 N79-13695
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 51 [JPRS-72588] p0076 N79-14745
Visual information processing p0076 N79-14747
The relationship between Air Combat Maneuvering Range (ACMR) output measures and initial visual acquisition performance [AD-A062134] p0173 N79-20744
Effects of vestibular factors on color-discriminating function of the human eyes following color preadaptation p0192 N79-23632
Undergraduate pilot training: Visual discrimination pretraining for land task [AD-A068141] p0317 N79-33844
The role of cognitive switching in head-up displays --- to determine pilot ability to accurately extract information from either of two sources [NASA-CR-3137] p0318 N79-33851

VISUAL DISPLAYS
U DISPLAY DEVICES

VISUAL FIELDS
Apparent saturation of blue-sensitive cones occurs at a color-opponent stage p0002 A79-10474
Human factors considerations in the design and evaluation of a helmet mounted display using a light emitting diode matrix p0063 A79-18214
Eye movements and symmetry - Foundations for a quantitative analysis of eye movements as they depend on the structure of the perception field --- German thesis p0098 A79-20756
The common occurrence of errors of perceived distance p0100 A79-22775
The equivalent background and retinal eccentricity p0104 A79-24066
Useful visual field size for pattern perception p0129 A79-25098
Stereo 3-D perception for a robot p0019 N79-10740

VISUAL FLIGHT
Flight management research utilizing an oculometer --- pilot scanning behavior during simulated approach and landing p0001 A79-10389
Choice and techniques of analysis of indices for the perception of visual information. III --- by pilots p0103 A79-23954
Visual workload of the copilot/navigator during terrain flight p0209 A79-38364
Oculomotor performance of aviators during an autorotation maneuver in a helicopter simulator p0151 N79-19638
Visual performance/workload of helicopter pilots during instrument flight p0152 N79-19640

VISUAL OBSERVATION
Locus of the effect of specific practice in continuous visual search p0129 A79-25099
A two-stage model of visual search p0186 A79-33948
Advanced transport operation effects on pilot scan patterns p0295 A79-51098
Two dimensional eye tracking: Sampling rate of forcing function p0090 N79-15617
Head tracking at large angles from the straight ahead position p0090 N79-15618
Airline pilot scan patterns during simulated ILS approaches [NASA-TP-1250] p0155 N79-19682
Visual search performance during simulated radar observation with and without a sweepline [AD-A068020] p0281 N79-30938

VISUAL PERCEPTION
NT CRITICAL FLICKER FUSION
NT SPACE PERCEPTION
NT VISUAL DISCRIMINATION
Apparent saturation of blue-sensitive cones occurs at a color-opponent stage p0002 A79-10474
Perceptual delay - A consequence of metacontrast and apparent motion p0035 A79-13183
Role of the frontal associative region of the cortex in the activity of the auditory and visual sensory systems p0043 A79-14371
Selection and techniques for analysis of indices of visual data reception. II --- aircraft pilot eye movements p0047 A79-15494
Perceptual localization, feature identification and ocular motor factors in scanning a visual display p0064 A79-18218
Human engineering study of information processing applicable to helmet-mounted displays p0068 A79-18994
Evoked potential correlates of display image quality p0068 A79-18998
Light flashes in space --- cosmic ray interaction with astronaut visual system p0100 A79-22261
Choice and techniques of analysis of indices for the perception of visual information. III --- by pilots p0103 A79-23954
Factors controlling the competing sensations produced by a bistable stroboscopic motion display p0104 A79-24067
The perceived direction of the binocular image p0104 A79-24069
Useful visual field size for pattern perception p0129 A79-25098
Hyper-resolution in human perception of movement in visual displays p0132 A79-26240
Elements of the theory of biological analyzers --- Russian book p0132 A79-26450
Aeromedical implications of the X-Chrom lens for improving color vision deficiencies p0135 A79-27556
Object, illusion and frame of reference as design criteria for computer-generated displays p0137 A79-28157
Omnidirectional increase in threshold for image shifts during saccadic eye movements p0139 A79-28198
Piecewise Fourier analysis of images and the role of occipital, temporal and parietal cortex in visual perception p0160 A79-29248
Experimental investigation of the visual system using one-dimensional Walsh gratings p0160 A79-29249
Training of visual recognition p0160 A79-29250
Role of the visual system in the compensation of vestibular dysfunction p0162 A79-29971
Deductive derivation of a mathematical model for spectral sensitivity of the human organ of sight. I, II p0166 A79-31178
A bioengineering simulator of the human visual apparatus

p0166 A79-31180

Visual contrast sensitivity functions obtained with colored and achromatic gratings
p0181 A79-32628

Perception of continuity in stroboscopic motion - A temporal frequency analysis
p0186 A79-34375

The interpretation of visual motion --- Book
p0186 A79-34424

The development of integrated multidimensional displays
p0187 A79-34990

Nonlinear optical susceptibility of the human eye to IR radiation in the 800 to 1355 micron range
p0188 A79-35363

Correlation of binocular vision test results with synaptophore evaluation
p0201 A79-37136

Predicting aircraft detectability
p0208 A79-38358

Oculomotor factors in visual perceptual response efficiency
p0209 A79-38361

The visual perception of motion in depth
p0210 A79-39087

The role of perceived motion in smooth pursuit eye movements
p0225 A79-40184

The relationship between the apparent vertical and the vertical horopter --- visual perception of luminous line
p0225 A79-40186

Axiomatic summary and deductions from Hering's principles of visual direction
p0228 A79-41421

The tilt illusion - Length and luminance changes of induction line and third /disinhibiting/ line
p0228 A79-41422

Objective determination of human visual acuity from the visual evoked potential
p0228 A79-41423

Effects of stimulus onset and image motion on contrast sensitivity
p0231 A79-42231

Light adaptation in a normal and a rod monochromat - Psychophysical and VEP increment threshold comparisons
p0232 A79-42234

Form information is necessary for the perception of motion
p0232 A79-42235

On the latency of human visually evoked response to sinusoidal gratings
p0232 A79-42236

Changes in optokinetic, postoptokinetic, and reverse postoptokinetic nystagmus after bilateral labyrinthectomy
p0255 A79-46499

Sensory illusions - The ophthalmologist's point of view
p0255 A79-46595

Retinal site of transient tritanopia
p0256 A79-46623

Eye torsion and visual tilt are mediated by different binocular processes
p0256 A79-46651

Eye movements and visual perception --- Russian book
p0267 A79-47429

Stereopsis in monkeys using random dot stereograms - The effect of viewing duration
p0271 A79-49481

Contrast sensation - A linear function of stimulus contrast
p0271 A79-49483

Forms of oculomotor activity under conditions of positive visual feedback
p0276 A79-50657

Latency of peripheral saccades
p0278 A79-50987

Reciprocal interaction between the photopic and scotopic systems of the visual analyzer in man
p0296 A79-51327

Effect of adaptation level on certain visual functions in man
p0296 A79-51328

Orientation relative to the retina determines perceptual organization
p0299 A79-52539

Target redundancy in visual search - Do repetitions of the target within the display impair processing
p0299 A79-52540

Visual motion perception by intelligent systems
p0300 A79-52691

A cinematographic technique for investigating some aspects of visual recognition
p0300 A79-53067

Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
p0301 A79-53163

Stereo 3-D perception for a robot
p0019 N79-10740

A behavioral model of target acquisition in realistic terrain
[AD-A056760] p0019 N79-10742

Visual performance assessment through clear and sunscreen-treated windows
[AD-A059750] p0080 N79-14775

Experiments in texture perception
[AD-A059630] p0086 N79-15587

The internal model: A study of the relative contribution of proprioception and visual information to failure detection in dynamic systems --- sensitivity of operators versus monitors to failures
p0087 N79-15596

Vision
p0095 N79-15894

General methods to enable robots with vision to acquire, orient, and transport workpieces
[PB-287199/4] p0113 N79-16556

Image processing program completion report
[AD-A061597] p0123 N79-17549

Visual effects of helicopter maneuvre on weapon aiming performance
p0150 N79-19626

Visual requirements for the helicopter pilot
p0151 N79-19636

Observation of night shipboard helicopter operations from a 210 foot US Coast Guard cutter
p0151 N79-19637

Oculomotor performance of aviators during an autorotation maneuver in a helicopter simulator
p0151 N79-19638

Visual performance/workload of helicopter pilots during instrument flight
p0152 N79-19640

Sensorial aspects of helicopter operations
p0152 N79-19644

Aviator visual performance: A comparative study of a helicopter simulator and the UH-1 helicopter
p0153 N79-19652

Bandpass channels, zero-crossings, and early visual information processing
[AD-A062338] p0170 N79-20724

Restoration of color perception after deadapting flashes
p0193 N79-23640

Effect of optical magnification on the perception of displayed orientation
[AD-A065949] p0196 N79-23660

The effects of pilot age, lighting, and head-down time on visual accomodation
[AD-A064912] N79-25747

The limited range of the human eye for optical aircraft acquisition
p0291 N79-31948

A theoretical and experimental analysis of the outside world perception process
[NLR-MP-78020-U] p0309 N79-32835

Analysis of visual estimation of system state from arbitrary displays
p0317 N79-33843

VISUAL PIGMENTS

Light flashes in space --- cosmic ray interaction with astronaut visual system
p0100 A79-22261

VISUAL SIGNALS

Applications of two-parameter decision theories in psychology
[AD-A059010] p0052 N79-12705

Use of the tilt cue in a simulated heading tracking task
p0091 N79-15621

Manual control of yaw motion with combined visual and vestibular cues
p0119 N79-17513

Human factors analysis of visual distress signaling devices --- used by boaters
[AD-A064174] p0190 N79-22765

VISUAL STIMULI

The responses of frogs to vestibular and visual stimulation in weightlessness
p0006 A79-12513

Perceptual delay - A consequence of metacontrast and apparent motion
p0035 A79-13183

Eye movements and symmetry - Foundations for a quantitative analysis of eye movements as they depend on the structure of the perception field --- German thesis
p0098 A79-20756

Locus of the effect of specific practice in continuous visual search
p0129 A79-25099

Optokinetic motion sickness - Attenuation of visually-induced apparent self-rotation by passive head movements
p0135 A79-27558

A fast-reacting and versatile optokinetic stimulus pattern by computer graphics with application examples
p0160 A79-28993

A further investigation of visual dominance
p0186 A79-33949

Visual search for complex targets
p0208 A79-38357

Detection of coloured stimuli by independent linear systems
p0231 A79-42229

Effects of stimulus onset and image motion on contrast sensitivity
p0231 A79-42231

Visual angle constancy for the subjective checkerboard pattern, as an indication of cortical origination of size constancy
p0231 A79-42232

Spatial frequency masking in human vision - Binocular interactions
p0232 A79-42284

Spatial summation in human vision - Simple reaction time measurements
p0265 A79-47115

Using color substitution pupil response to expose chromatic mechanisms
p0265 A79-47116

Direction-selective adaptation with very slow motion
p0265 A79-47118

An analysis of the saccadic system by means of double step stimuli
p0270 A79-49480

The peripheral critical flicker frequency
p0271 A79-49482

Contrast sensation - A linear function of stimulus contrast
p0271 A79-49483

Orientation relative to the retina determines perceptual organization
p0299 A79-52539

Optokinetic reactions in man elicited by localized retinal motion stimuli
p0304 A79-54251

A comparison of oculomotor and motion parallax cues of egocentric distance
p0305 A79-54253

Eye torsion in response to a tilted visual stimulus
p0305 A79-54254

Cerebral hemodynamics and visual analyzer function following exposure to bright light
p0109 N79-16525

Training effect of recognition of different alphabets of visual stimuli
p0175 N79-21747

Contrast sensitivity of the human visual system at one luminance level while adapted to a stimulus at another luminance level
[AD-A064370] p0190 N79-22759

Methods for localization of electrical sources in the human brain and applications to the visual system
p0314 N79-33815

VISUAL TASKS

Imagery interpreter performance in the comparison of subjective estimates of photographic image quality
p0036 A79-13191

Lateral orientation and cerebral activation - Considerations for information display
p0037 A79-13194

Visual workload of the copilot/navigator during terrain flight
p0038 A79-13206

Observer performance using a video display --- in simulated air to ground target acquisition tasks
p0039 A79-13217

AWAVS, a research facility for defining flight trainer visual system requirements
p0062 A79-18207

Effects of information processing requirements on reaction time of the eye
p0064 A79-18219

Secondary visual workload capability with primary visual and kinesthetic-tactual displays
p0064 A79-18220

Peripheral acuity and photointerpretation performance
p0068 A79-18996

Line criteria in target acquisition with television --- visibility of target image on TV screen
p0068 A79-18997

Speed and load stress as determinants of performance in a time sharing task
p0068 A79-18999

Visual target acquisition and ocular scanning performance
p0069 A79-19000

Visual cues in manual tracking of simulated targets
p0103 A79-23792

Comparative evaluation of the effectiveness of visual and aural tracking of a sinusoidal signal
p0159 A79-28736

The effects of carbon monoxide on dual-task performance
p0161 A79-29716

A rationale for human operator pulsive control behavior
p0186 A79-34520

Visual search for complex targets
p0208 A79-38357

Regression models of search time for color-coded information displays
p0209 A79-38359

Information transmission during eye movements
p0209 A79-38360

Oculomotor factors in visual perceptual response efficiency
p0209 A79-38361

Dynamics of the eye and head during movement between displays - A qualitative and quantitative guide for designers
p0209 A79-38362

Methodological considerations of visual workloads of helicopter pilots
p0209 A79-38363

Visual workload of the copilot/navigator during terrain flight
p0209 A79-38364

Analysis of electroencephalogram during psychomotor performance
p0209 A79-38820

The effect of increased monitoring load on vigilance performance using a simulated radar display
p0236 A79-43674

Tracking-task performance during heat stress simulating cockpit conditions in high-performance aircraft
p0236 A79-43675

Auditory and visual sustained attention during ozone exposure
p0273 A79-49988

Effect on performance of cycling deep body temperature between 37.0 and 37.6 C
p0274 A79-49993

A cinematographic technique for investigating some aspects of visual recognition
p0300 A79-53067

Effects of uncertainty on manual tracking performance --- visual tasks
p0086 N79-15592

A model for dynamic allocation of human attention among multiple tasks
p0092 N79-15627

VISUAL TRACKING
U OPTICAL TRACKING

VISUALIZATION OF FLOW
U FLOW VISUALIZATION
VITAMIN C
U ASCORBIC ACID
VITAMIN E
U TOCOPHEROL
VITAMINS
NT ASCORBIC ACID
NT TOCOPHEROL
Orthomolecular enhancement of human development p0095 N79-15895
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs p0312 N79-33803
VOICE COMMUNICATION
Voice communication in artificial atmospheres --- Russian book p0048 A79-16500
Effects of phase manipulation on speech intelligibility through communication headsets --- light aircraft radio communication p0164 A79-30654
Pilot preflight briefing utilizing an interactive computer generated Voice Response System p0167 A79-31887
Speech quality measurement [AD-A056272] p0033 N79-11745
Human factors. Speech communication [PS-5/78] p0113 N79-16555
Speech as a pilot input medium p0119 N79-17519
VOLTAGE
U ELECTRIC POTENTIAL
VTOL AIRCRAFT
U VERTICAL TAKEOFF AIRCRAFT

W

WAKEFULNESS
Effects of prolonged unidirectional shift of sleeping-waking cycle on physiological functions, mental productivity and sleep of man p0109 N79-16526
WALKING
Mechanism for the regulation of human posture during movements of the foot p0276 A79-50651
WALKING MACHINES
Adaptive locomotion of a multilegged robot over rough terrain p0163 A79-30217
Selecting the program of motions for a biped walking machine p0166 A79-31490
Some properties of conservative systems --- walking robot model p0221 A79-35942
Stabilization of the horizontal motion of a bipedal walking robot p0251 A79-44081
Stabilization of a biped walking machine with incomplete information on its phase coordinates p0273 A79-49879
WARFARE
NT COMBAT
Medical qualification procedures for hazardous-duty aeromedical research p0026 N79-11695
WARMING
U HEATING
WARNING DEVICES
U WARNING SYSTEMS
WARNING SIGNALS
U WARNING SYSTEMS
WARNING SYSTEMS
Arousal from sleep by emergency alarms: Implications from the scientific literature [PB-284044/5] p0051 N79-12700
WASTE DISPOSAL
Waste treatment options for use in closed systems --- in space colonies [AIAA PAPER 79-1409] p0187 A79-34843
Food and waste management biotechnology for the space shuttle [IAF PAPER 79-93] p0302 A79-53294
Mechanism of plant virus inactivation in soil injected with municipal wastewater and treatment plant sludges [PB-287012/9] p0107 N79-16513
Automated biowaste sampling system feces monitoring system [NASA-CR-160301] p0281 N79-30937
WASTE TREATMENT
NT SEWAGE TREATMENT
WASTE UTILIZATION
Utilization of the wastes of vital activity [NASA-TM-75410] p0177 N79-21768
WASTE WATER
Water system virus detection [NASA-CASE-MSC-16098-1] p0013 N79-10693
Evaluation of toxic effects of organic contaminants in recycled water [PB-291379/6] p0190 N79-22760
WASTES
NT FECES
NT HUMAN WASTES
NT METABOLIC WASTES
NT URINE
NT WASTE WATER
WATER
NT COASTAL WATER
NT COLD WATER
NT POTABLE WATER
NT SEA WATER
NT SPRINGS (WATER)
NT WASTE WATER
Effect of water and electrolyte replacement during exercise in the heat on biochemical indices of stress and performance p0127 A79-24629
Raman and infrared investigations of the nature of intracellular water [AD-A061254] p0120 N79-17522
WATER BALANCE
Control by episome on salt-resistance in bacteria p0205 A79-37969
Fluid and Electrolyte Balance model (FEB) [NASA-CR-160206] p0211 N79-24633
Fluid-electrolyte metabolism in the crew of Salyut-4 p0311 N79-33792
WATER CONSUMPTION
Relationship between thermogenic drinking and plasma renin activity in the rat p0235 A79-43211
WATER CONTENT
U MOISTURE CONTENT
WATER COOLING
U LIQUID COOLING
WATER LOSS
Modifications to the steady-state 41-node thermoregulatory model including validation of the respiratory and diffusional water loss equations [NASA-CR-160219] p0219 N79-25738
WATER POLLUTION
Algal growth under multiple nutrient limiting conditions p0013 N79-10692
Distribution of phytoplankton in North Carolina lakes [PB-286387/6] p0084 N79-15573
Proceedings of the first and second USA-USSR Symposia on the Effects of Pollutants upon aquatic ecosystems. Volume 1: USA Symposium. Volume 2: USSR Symposium [PB-287219/0] p0112 N79-16546
Citric acid enhancement of copper sulfate toxicity to blue-green algae and other nuisance organisms [PB-289490/5] p0170 N79-20718
Methods for measuring the acute toxicity of effluents to aquatic organisms [PB-289605/8] p0170 N79-20719
Effects of heavy metals especially selenium, vanadium and zirconium on movement, growth and survival of certain animal aquatic life [PB-292563/4] p0197 N79-25706
Distribution of phytoplankton in Arkansas lakes [PB-292742/4] p0240 N79-26768
WATER PURIFICATION
U WATER TREATMENT
WATER QUALITY
Eutrophication. Volume 2: A bibliography with abstracts [NTIS/PS-78/0771/2] p0013 N79-10695
Eutrophication. Volume 3: A bibliography with abstracts [NTIS/PS-78/0772/0] p0013 N79-10696

Quality of water reclaimed from urine as related to pH of initial product p0313 N79-33807
A system for sterilizing objects --- such as water systems on the space shuttle using ethylene oxide [NASA-CASE-KSC-11085-1] p0318 N79-33848
WATER RECLAMATION
Water system virus detection [NASA-CASE-MSC-16098-1] p0013 N79-10693
Four-man rated dual catalyst system for the recovery of water from urine [NASA-CR-152227] p0112 N79-16550
Microflora of water reclaimed in sealed compartments p0193 N79-23638
Quality of water reclaimed from urine as related to pH of initial product p0313 N79-33807
WATER RECOVERY
U WATER RECLAMATION
WATER TEMPERATURE
Regional heat loss in resting man during immersion in 25.2 C water p0202 A79-37709
Minimum sea surface temperatures and associated survival times [AD-A070162] p0315 N79-33824
WATER TREATMENT
A thermoelectric integrated membrane evaporation system [ASME PAPER 78-ENAS-19] p0007 A79-12568
Water system virus detection [NASA-CASE-MSC-16098-1] p0013 N79-10693
Water system microbial check valve development [NASA-CR-151843] p0032 N79-11733
WATER VAPOR
Synthesis of organic compounds from carbon monoxide and water by UV photolysis p0099 A79-22077
WATER VEHICLES
NT AIRCRAFT CARRIERS
NT BOATS
NT UNDERWATER VEHICLES
WAVE DIFFRACTION
Diffraction-based characterization of biological tissue with ultrasound --- acoustic scattering from liver tissue p0054 N79-13683
WAVE OSCILLATORS
U OSCILLATORS
WAVE PROPAGATION
NT LIGHT SCATTERING
WAVE RADIATION
U ELECTROMAGNETIC RADIATION
WAVE SCATTERING
NT ACOUSTIC SCATTERING
NT LIGHT SCATTERING
NT RAYLEIGH SCATTERING
NT X RAY SCATTERING
WAVEFORMS
NT PULSE DURATION
WAVELENGTHS
Wavelength dependence of ultraviolet-enhanced reactivation and induction of mammalian viruses [HEW-PUB-FDA-78-8059] p0084 N79-15575
WEAK ENERGY INTERACTIONS
Quantitative aspects of the effect of weak interaction during chemical evolution p0204 A79-37959
WEAPON SYSTEMS
Visual effects of helicopter maneuvre on weapon aiming performance p0150 N79-19626
Human factors evaluations of today's helicopters as an aid to future systems design p0150 N79-19627
WEAPONS
NT ARTILLERY
WEATHER
NT HOT WEATHER
WEBS (MEMBRANES)
U MEMBRANES
WEIGHT (MASS)
NT BIOMASS
NT BODY WEIGHT
WEIGHT ANALYSIS
Weight control and restraint of laboratory rats p0133 A79-26584
WEIGHT REDUCTION
Computer design synthesis of a below knee-Syme prosthesis p0251 A79-44300
WEIGHTING FUNCTIONS
Intensity judgements of non-sinusoidal vibrations - Support for the ISO weighting method p0010 A79-12868
WEIGHTLESSNESS
Prolonged weightlessness and calcium loss in man [IAF PAPER 78-48] p0002 A79-11219
A review of the consequences of fluid and electrolyte shifts in weightlessness [IAF PAPER 78-50] p0002 A79-11220
Experiment Chlorella 1 on board of Salyut 6 [IAF PAPER 78-53] p0003 A79-11223
Space medicine - A prognosis for future research [IAF PAPER 78-ST-17] p0003 A79-11364
The responses of frogs to vestibular and visual stimulation in weightlessness p0006 A79-12513
Aggregation of red cells and blood viscosity as models of materials experimentation in the space environment [AIAA PAPER 79-0310] p0069 A79-19664
Cardiovascular regulatory response to lower body negative pressure following blood volume loss p0101 A79-23470
Early cardiovascular adaptation to simulated zero gravity p0162 A79-29727
Spaceflight and bone turnover - Correlation with a new rat model of weightlessness p0182 A79-33049
Continuous metabolic and cardiovascular measurements on a monkey subject during a simulated 6-day Spacelab mission p0229 A79-41713
Man and machine design for space flight p0300 A79-52696
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/ [IAF PAPER 79-87] p0302 A79-53290
Equipment for surgical interventions and childbirth in weightlessness [IAF PAPER 79-97] p0302 A79-53296
The biomedical implications of extended duration zero-g extravehicular activities [IAF PAPER 79-ST-06] p0303 A79-53447
Radiographic comparison of human lung shape during normal gravity and weightlessness p0305 A79-54269
Protein fractions and enzymatic activity thereof in the rat myocardium after the flight on Kosmos-690 biosatellite p0014 N79-10700
State of spermatogenesis in rats flown aboard Kosmos-690 biosatellite p0014 N79-10704
Response of crown gall tissue to the space environment: Residual carbohydrates in supporting tissue --- COSMOS 782 p0020 N79-11653
Responses of crown gall tissue to the space environment: Tumor development and anatomy --- cosmos 782 p0020 N79-11654
Responses of crown gall tissue to the space environment: Glutamine synthetase activity --- cosmos 782 p0020 N79-11655
Responses to crown gall tissue to the space environment: Isozyme patterns --- cosmos 782 p0020 N79-11656
The morphogenetic responses of cultured totipotent cells of carrot (Daucus carota L.) at zero gravity --- cosmos 782 p0021 N79-11657
Killfish development in zero-G on COSMOS 782: Fundulus experiment K-104 p0021 N79-11659
Effects of weightlessness on the embryonic development and aging of Drosophila p0022 N79-11670
Effects of weightlessness on the genetics and aging process of drosophila melanogaster p0023 N79-11673
Effect of weightlessness and centrifugation (LXG) on erythrocyte survival in rats subjected to prolonged space flight

p0023 N79-11674
Quantitative analysis of selected bone parameters
p0023 N79-11676
Anthropometric changes in weightlessness
p0032 N79-11735
Materials of the final reports on the joint
Soviet-American experiment on the Kosmos-936
biosatellite
[NASA-TM-75582] p0071 N79-14711
Changes in amount and composition of phospholipids
in rat skeletal muscle microsomal fraction under
the influence of a flight aboard the Kosmos-690
biosatellite
p0108 N79-16519
Man-machine analysis of translation and work tasks
of Skylab films
[NASA-CR-151879] p0146 N79-18592
Problems of human adaption to spaceflight
p0157 N79-19985
The adrenosympathetic system in the presence of
traumatic shock during simulation of effects of
weightlessness on the human body
p0192 N79-23633
Distinctions referable to excretion of end
products of protein metabolism in urine of man
submitted to 182-day antiorthostatic hypokinesia
p0193 N79-23635
Validation of a model for investigating red cell
mass changes during weightlessness
[NASA-CR-160188] p0211 N79-24634
Development of an hypothesis for simulating
anti-orthostatic bed rest
[NASA-CR-160200] p0217 N79-25717
Possibilities of preventing adverse reactions in
simulating the acute period of adaptation to
weightlessness
p0244 N79-27825
Studies of venous circulation in the crew of the
Salyut-5 orbital station
p0310 N79-33791
Effects on lipid metabolism in man of some factors
that simulate space flight conditions
p0311 N79-33794

WEIGHTLESSNESS SIMULATION
Distribution of pulmonary ventilation and
perfusion during short periods of weightlessness
p0068 A79-18967
A model for vestibular function in altered
gravitational states
p0229 A79-41710
Prophylactic effects of intermittent acceleration
against physiological deconditioning in
simulated weightlessness
p0229 A79-41712
Comparison of physiological effects of head-down
tilting and immersion on the human body
p0298 A79-52279
Ultrastructural development of the vestibular
system under conditions of simulated
weightlessness
p0298 A79-52284
Early cardiovascular adaptation to zero gravity
simulated by head-down tilt
[IAF PAPER 79-77] p0301 A79-53286
Ultrastructural development of the vestibular
system of frog larvae in 0g simulation
[IAF PAPER 79-78] p0301 A79-53287
Cardiac arrhythmia following postimmersion +G sub
z accelerations
p0015 N79-10710
Physiological responses of women to simulated
weightlessness: A review of the first female
bed-rest study
[NASA-SP-430] p0054 N79-13686
Role of vestibular system in behavior of animals
submitted to prolonged slow rotation
p0074 N79-14734
Antiorthostatic hypokinesia as an approximate
model of weightlessness
p0108 N79-16520
Correction of transcapillary exchange in man under
the influence of rotation on a centrifuge while
immersed in water
p0110 N79-16533
*Effects of hypodynamic simulations on the skeletal
system of monkeys*
p0146 N79-19021

WEST GERMANY
U GERMANY

WETNESS
U MOISTURE CONTENT

WHALES
Radio tracking of a fin whale /Balaenoptera
physalus/
p0061 A79-18008

WHIPLASH INJURIES
Head acceleration and psychomotor performance ---
related to crash accident survival rates
p0135 A79-27559

WHIRL
U ROTATION

WHIRLING
U ROTATION

WHITE BLOOD CELLS
Effect of intermittent hypoxia on functional
activity of peripheral blood neutrophils
p0074 N79-14732

WIDEBAND
U BROADBAND

WILDLIFE
NT CHIMPANZEES

WILDLIFE RADIOLOCATION
Wildlife monitoring program plan
[NASA-TM-78578] p0190 N79-23626

WIND SHEAR
Evaluation of display and control concepts for a
terminal configured vehicle in final approach in
a windshear environment
p0090 N79-15616

WINDMILLING
U AUTOROTATION

WINDOWS (APERTURES)
Visual performance assessment through clear and
sunscreen-treated windows
[AD-A059750] p0080 N79-14775

WINDSCREENS
U WINDSHIELDS

WINDSHIELDS
Windshield quality and pilot performance
measurement utilizing computer-generated imagery
p0137 A79-28165

WINGS
NT FIXED WINGS
NT ROTARY WINGS

WOMEN
U FEMALES

WORDS (LANGUAGE)
Attempt to describe a class of man-machine
dialogue systems based on a natural language
p0251 A79-44057

WORK
NT PHYSICAL WORK

WORK CAPACITY
Time estimation as a technique to measure workload
--- of aircraft pilot in flight simulation
p0062 A79-18203
Characteristics of somatic and autonomic
regulation during work of small muscle groups as
a function of loading regime
p0276 A79-50653
Human work measurement. A bibliography with
abstracts
[NTIS/PS-78/1197/9] p0081 N79-14781
Prediction of pilot reserve attention capacity
during air-to-air target tracking
p0116 N79-17488

WORK-REST CYCLE
Simulation study on time series of heart responses
p0037 A79-13197
Characteristics of somatic and autonomic
regulation during work of small muscle groups as
a function of loading regime
p0276 A79-50653
Electrophysiological investigation of sleep during
work-shift regime and production-induced
emotional stress
p0276 A79-50655

WORKLOADS (PSYCHOPHYSIOLOGY)
Visual workload of the copilot/navigator during
terrain flight
p0038 A79-13206
The event related cortical potential as an index
of task workload
p0038 A79-13208
The multiloop concept of the pilot work load as a
basis of future experiments and studies
[ONERA, TP NO. 1978-10] p0085 A79-14795

Secondary visual workload capability with primary visual and kinesthetic-tactual displays
p0064 A79-18220
The effects of participatory mode and task workload on the detection of dynamic system failures
p0098 A79-21156
Morbidity experience of air traffic control personnel - 1967-77
p0101 A79-23466
Functional changes in the cardiovascular system of machine-tool operators under physical and neurologically stressful loads
p0160 A79-29270
Measurement and scaling of workload in complex performance
p0164 A79-30659
A preliminary study of the air traffic controller's 'picture'
p0221 A79-36227
Methodological considerations of visual workloads of helicopter pilots
p0209 A79-38363
Visual workload of the copilot/navigator during terrain flight
p0209 A79-38364
Measurements of pilot workload during low altitude and high speed maneuvers of F-1 supersonic jet fighter
p0209 A79-38821
Pilot workload during final approach in congested airspace
p0269 A79-48014
Electrophysiological investigation of sleep during work-shift regime and production-induced emotional stress
p0276 A79-50655
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] p0302 A79-53291
Life stress, organizational stress, and job satisfaction
[AD-A055153] p0057 N79-13706
A survey of existing computer programs for aircrew workload assessment
[AD-A058518] p0059 N79-13718
Psychological experiment on components of the meaning of work
p0071 N79-14709
A simulator study of the interaction of pilot workload with errors, vigilance, and decisions
[NASA-TM-78482] p0079 N79-14769
Time estimation as a secondary task to measure workload: Summary of research
p0093 N79-15634
Pilot workload qualification for avionics design
p0114 N79-16564
The facilitating effects of uncertainty in long-term manual control
p0115 N79-17485
The effects of participatory mode and task workload on the detection of dynamic system failures
p0116 N79-17487
Reduced mental capacity and behavior of a rider of a bicycle simulator under alcohol stress or under dual task load
p0116 N79-17489
An analysis of helicopter pilot control behaviour and workload during instrument flying tasks
[NLR-MP-78003-U] p0124 N79-17553
The measurement and scaling of workload in complex performance
[FAA-AM-78-34] p0125 N79-17558
An evaluation of the effects of a stability augmentation system upon aviator performance/workload during a MEDEVAC high hover operation
p0148 N79-19612
TADRAP: A computer-aided technique for reducing aircrew task analysis data --- helicopter design considering human factors
p0150 N79-19628
An analysis of helicopter pilot control behavior and workload during instrument flying tasks
p0150 N79-19630
Visual performance/workload of helicopter pilots during instrument flight
p0152 N79-19640
Sensorial aspects of helicopter operations
p0152 N79-19644
Crew workload assessment. Development of a measure of operator workload
[AD-A068616] p0261 N79-28884
A comparison of the job attitudes and interest patterns of air traffic and airway facility personnel
[AD-A067826] p0281 N79-30933
Performance and workload analysis of inflight helicopter missions
[NLR-MP-77013-U] p0308 N79-32834

WORLD
U EARTH (PLANET)

WORMS
Meteorological limits on the growth and development of screwworm populations
[NASA-CR-151873] p0107 N79-16512

WOUND HEALING
Effect of fiber and dye degradation products /FDP/ on burn wound healing
p0298 A79-52277
A porcine bioassay study of the physiological effects of fiber and dye degradation products (FDP) on burn wound healing
[AD-A066990] N79-25748

WRIST
The proto-type wrist joint assembly TACPAW (Triple Axis Common Pivot Arm Wrist), phase 2
[NASA-CR-150885] p0093 N79-15635

X

X BAND
U SUPERHIGH FREQUENCIES

X RAY ABSORPTION
Studying the state of cellular metal ions by the extended X-ray absorption fine structure
[AD-A069799] p0279 N79-30914

X RAY ANALYSIS
The development of a digital video subtraction system for intravenous angiography
p0294 A79-51033
Radiographic comparison of human lung shape during normal gravity and weightlessness
p0305 A79-54269
Computed axial tomography (CAT)
[ISS-R-78/4] p0262 N79-29791

X RAY IRRADIATION
Mechanism of the formation of phosphenes by X-rays
p0006 A79-12516

X RAY SCATTERING
X-ray backscatter imaging
p0176 N79-21754

Y

YAW
Manual control of yaw motion with combined visual and vestibular cues
p0119 N79-17513

YAWMETERS
U YAW

YHU-1 HELICOPTER
U UH-1 HELICOPTER

YOUNG MODULUS
U MODULUS OF ELASTICITY

YUH-1 HELICOPTER
U UH-1 HELICOPTER

Z

ZERO CROSSINGS
U ROOTS OF EQUATIONS

ZERO GRAVITY
U WEIGHTLESSNESS

ZINC
The distribution of cadmium and other metals in human tissues
[PB-285200/2] p0057 N79-13703
Zinc
[PB-285130/1] p0057 N79-13704

ZINC CHLORIDES
A literature review-problem definition studies on selected toxic chemicals. Volume 5: Occupational health and safety and environmental aspects of zinc chloride
[AD-A056020] p0025 N79-11687

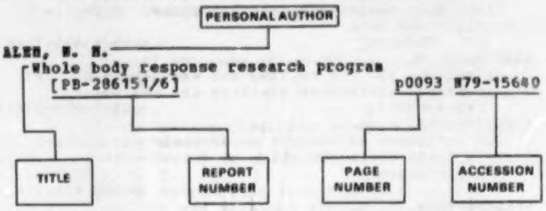
ZINC COMPOUNDS
NT ZINC CHLORIDES
ZIRCONIUM
Effects of heavy metals especially selenium, vanadium and zirconium on movement, growth and survival of certain animal aquatic life
[PB-292563/4] p0197 N79-25706

PERSONAL AUTHOR INDEX

AEROSPACE MEDICINE AND BIOLOGY / *a continuing bibliography* JANUARY 1980

1979 Cumulative Index

Typical Personal Author Index Listing



Listings in this index are arranged alphabetically by personal author. The title of the document provides the user with a brief description of the subject matter. The report number helps to indicate the type of document listed (e.g., NASA report, translation, NASA contractor report). The page and accession numbers are located beneath and to the right of the title, e.g. p0093 N79-15640. Under any one author's name the accession numbers are arranged in sequence with the *IAA* accession numbers appearing first.

A

ABAIDOO, K. J. R.
A literature review-problem definition studies on selected toxic chemicals. Volume 2: Occupational health and safety aspects of phosphorus smoke compounds
[AD-A056019] p0025 N79-11685

ABBATUCCI, J.-S.
Pulmonary functional tolerance to ionizing radiation - An experimental study
p0256 A79-46601

ABDELWAHAB, F. E.
The effects of active and passive heat acclimatization procedures on the cardiovascular, thermoregulatory, and sweat rate responses to work in the heat in male humans
p0195 N79-23651

ABE, N.
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
[IAF PAPER 79-76] p0301 A79-53285

ABEL, L. A.
Saccadic velocity characteristics - Intrinsic variability and fatigue
p0165 A79-30663

ABELES, F.
Firefighters Integrated Response Equipment System
[ASME PAPER 78-ENAS-39] p0009 A79-12586

ABERNETHY, C. N.
Effects of deceleration and rate of deceleration on live seated human subjects
[PB-284653/3] p0057 N79-13702

ABIDIN, B. I.
The combined effect of carbon monoxide and normobaric hyperoxia on animals
p0073 N79-14730

ABRAHAM, S.
COSMOS 936, experiment K204: The effects of space flight on some liver enzymes concerned with carbohydrate and lipid metabolism in the rat
p0023 N79-11675

ABRAMS, M. L.
Relating performance in basic electricity and electronics and A schools
[AD-A060914] p0085 N79-15584

ABRAMS, S. G.
Characterization of cardiovascular function by automated monitoring of cardiac contractility and left ventricular wall motion activity
p0247 N79-27842

ACCOMAZZO, E.
In-flight measures of stress reduction due to wearing expandable foam earplugs
p0273 A79-49986

ACKLES, K. N.
A Canadian approach to high altitude protection
p0085 A79-14435

ADAMS, J. D.
Molecular sieve oxygen generating system - The argon question /A brief review/
p0274 A79-49994

ADAMS, J. J.
Study of the use of a nonlinear, rate limited, filter on pilot control signals
p0119 N79-17515

ADAMS, T. D.
Cardiac adaptation to endurance training: Determined by echocardiography and electrocardiography
p0194 N79-23648

ADAMS, W. C.
Effects of ozone inhalation on work performance and maximal oxygen uptake
p0133 A79-27103
Temperature changes during exercise measured by thermography
p0235 A79-43209

ADAVAL, S. K.
Assessment of burns in accident fatalities
p0272 A79-49729
Delayed effects of alcohol ingestion on + Gz tolerance
p0272 A79-49730

ADEY, W. R.
Possible mechanisms of weak electromagnetic field coupling in brain tissue
p0082 N79-15555

AGADZHANYAN, N. A.
The organism and the habitation atmosphere
[NASA-TM-75536] p0049 N79-12685
Prospects of using Japanese quail in biological life support systems
p0109 N79-16531
Effect of combination of hypoxia and hypercapnia on survival of Japanese quail
p0194 N79-23641
Energy expenditures of man during long exposure to a periodically changing atmosphere
p0312 N79-33799

AGANEZOV, S. A.
The role of lesser circulation hemodynamic changes in pulmonary gas exchange
p0300 A79-53066

AGARWAL, G. C.
Directional errors of movements and their correction in a discrete tracking task
p0086 N79-15589
A quasi-linear control theory analysis of timesharing skills
p0120 N79-17520

AGARWAL, S. K.
Cases of probable Aero Otitis interna
p0183 A79-33194

AGIN, A. K.
A behavioral model of target acquisition in realistic terrain
[AD-A056760] p0019 N79-10742

AHLUWALIA, J. N.
Abolition of a viscerosomatic reflex during oxygen deprivation
p0227 A79-41187

AHLUWALIA, K. J. S.
Cases of probable Aero Otitis interna
p0183 A79-33194

AISEN, S.
Intelligence
p0095 N79-15896

AKERMAN, A., III
Predicting aircraft detectability
p0208 A79-38358
AKERS, L. A.
Left Anterior Hemiblock (LAH): Diagnosis and aeromedical risk
p0029 N79-11715
AKESENOV, V. A.
Investigation of composition of trace contaminants in the air environment of the Soyuz-22 spacecraft
p0072 N79-14720
AKHMADIEVA, A. KH.
Genetic effects of cosmic radiation on bacteriophage T4Br/+/ /On materials of biological experiment Soyuz-Apollo/
p0229 A79-41708
AKHTAR, M.
Electrocardiographic abnormalities in Air Force personnel
p0182 A79-33191
Comparative study of hypoxia and other non-invasive stress tests for evaluation of ischaemic heart disease
p0272 A79-49731
AKHUNOV, A. A.
Changes in blood sugar content of dogs exposed to chronic gamma radiation for six years
p0014 N79-10706
AKIMOV, G. A.
Paroxysmal disorders of consciousness due to flight factors
p0161 A79-29300
AKIYAMA, M.
Epimerization of L-isoleucine on Na-montmorillonite and its implication to Precambrian chemical fossils
p0206 A79-37979
AKOEV, I. G.
Genetic effects of cosmic radiation on bacteriophage T4Br/+/ /On materials of biological experiment Soyuz-Apollo/
p0229 A79-41708
AKSENOV, S. I.
Some comments on interpretations of Viking biological experiments
p0255 A79-46465
ALARIE, Y. C.
Renal damage in mice following exposure to the pyrolysis products of polytetrafluoroethylene
p0066 A79-18306
ALAVERDIAN, A. M.
Norepinephrine uptake by the isolated heart of rats adapted and deadapted to hypoxia
p0097 A79-20621
ALBANESE, R. A.
Human operators in adversary tracking encounters
p0269 A79-48015
ALBUS, J. S.
Proximity-vision system for protoflight manipulator arm
[NASA-CR-158652] p0197 N79-24658
ALEKSANDROVA, E. A.
Prophylactic effects of intermittent acceleration against physiological deconditioning in simulated weightlessness
p0229 A79-41712
Comparison of physiological effects of head-down tilting and immersion on the human body
p0298 A79-52279
ALEKSEENKO, N. IU.
Significance of motor activity for spatial hearing
p0043 A79-14372
ALEKSEEV, M. A.
Mechanism for the regulation of human posture during movements of the foot
p0276 A79-50651
ALEKSENKO, A. S.
Blood lipid changes in hypoxic rats
p0074 N79-14731
ALEKSEYA, V. P.
Antiorthostatic hypokinesia as an approximate model of weightlessness
p0108 N79-16520
ALEKSEYEV, D. A.
Bioelectrical activity of the brain during 49-day antiorthostatic hypokinesia in individuals with early signs of vegetovascular dysfunction
p0108 N79-16521
ALEKSEYEV, Y. I.
Morphological study of adrenals of rats irradiated during flight aboard Kosmos-690 satellite
p0108 N79-16517
ALEM, N. M.
Whole body response research program
[PB-286151/6] p0093 N79-15640
Whole body response research program. Appendix A: Methodology
[PB-286152/4] p0094 N79-15641
Whole body response research program. Appendix B: Raw data
[PB-286153/2] p0094 N79-15642
Whole body response research program. Appendix C: Processed data
[PB-286154/0] p0094 N79-15643
ALEXANDER, M.
Guidelines for fit testing and evaluation of USAF personal-protective clothing and equipment
[AD-A065901] p0197 N79-23668
ALEXANDRIDIS, A. A.
The influence of vehicle aerodynamic and control response characteristics on driver-vehicle performance
p0089 N79-15608
ALLAKHVERDOV, B. L.
Coacervate drops - Primitive forms of precells
p0204 A79-37962
ALLAN, J. R.
Effect of induced cyclic changes of deep body temperature on task performances
p0202 A79-37708
Effect of cockpit temperature gradients on the validity of single-point measurements
p0234 A79-43203
Separation of the effects of raised skin and core temperature on performance of a pursuit rotor task
p0234 A79-43204
Effect on performance of cycling deep body temperature between 37.0 and 37.6 C
p0274 A79-49993
ALLEN, C. L.
The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces
[AD-A069865] p0316 N79-33829
ALLEN, G.
The use of spinal analogue to compare human tolerance of repeated shocks with tolerance of vibration, part 1
p0288 N79-31926
ALLEN, R. W.
Use of reward-penalty structures in human experimentation
p0089 N79-15607
The effects of alcohol on driver performance in a decision making situation
p0092 N79-15629
A decision model applied to alcohol effects on driver signal light behavior
p0092 N79-15630
Driver steering dynamics measured in car simulator under a range of visibility and roadmaking conditions
p0117 N79-17493
ALLER, C.
Chemicals identified in human biological media, a pilot literature survey
[PB-290690/7] p0214 N79-24649
ALLUISI, E. A.
Measurement and scaling of workload in complex performance
p0164 A79-30659
The measurement and scaling of workload in complex performance
[FAA-AM-78-34] p0125 N79-17558
ALPEROVITCH, Y.
Adaptive estimation of information values in continuous decision making and control of advanced aircraft
[AD-A069741] p0282 N79-30941
ALTLAND, P. D.
Cross-adaptive effects of cold, hypoxia, or physical training on decompression sickness in mice
p0268 A79-47855
ALTMAN, IA. A.
The relationship between classical centers of the auditory tract and certain 'nonspecific' brain structures in the organization of the auditory

function in animals
p0043 A79-14370

ALWAR, R. S.
Computer design synthesis of a below knee-Syme prosthesis
p0251 A79-44300

AMANTUROVA, K. A.
Immunophysiological aspects of man's adaptation to highland
p0188 A79-35123

AMELINA, D. SH.
Paradoxical reaction of some intracellular antioxidative defense mechanisms during adaptation of the organism to hypoxia
p0165 A79-30696

AMOSOV, N. M.
Functional outcomes of prosthetic cardiac valve replacement
p0076 N79-14746

ANANIN, V. F.
A bioengineering simulator of the human visual apparatus
p0166 A79-31180

ANASHKIN, O. D.
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
p0313 N79-33809

ANDERS, F., JR.
Space osteoporosis - An electromagnetic hypothesis
p0165 A79-30666

ANDERSON, A. L.
New developments in ultrasonic imaging of the chest and other body organs
[UCRL-80340-REV-1] p0018 N79-10735

ANDERSON, C. D.
Windshield quality and pilot performance measurement utilizing computer-generated imagery
p0137 A79-28165

ANDERSON, D. B.
The effect of Nap-of-the-Earth (NOE) helicopter flying on pilot blood and urine biochemicals
[AD-A055204] p0055 N79-13693

ANDERSON, D. W.
Suppression of the immune response by ultrasound
p0142 N79-18560

ANDERSON, D. E.
A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles
p0294 A79-51038

ANDERSON, M.
BIOSPEX: Biological space experiments, a compendium of life sciences experiments carried on US spacecraft
[NASA-TM-58217] p0261 N79-29784

ANDERSON, R. A.
Functional connections of the central auditory nervous system: Thalamocortical corticothalamic and corticotectal connections of the AI, AII and AAF auditory cortical fields
p0246 N79-27839

ANDERSON, R. C.
Renal damage in mice following exposure to the pyrolysis products of polytetrafluoroethylene
p0066 A79-18306

ANDREWS, H. C.
Digital color image compression in a perceptual space
p0136 A79-28013

ANDREYEVA, O.
Light and color on a manned spacecraft
p0059 N79-13996

ANDRUK, P. S.
Aluminized firefighters' crash-rescue protective hood: Facepiece-visor redesign study
[AD-A066492] p0223 N79-25764
Aluminized firemen's (fire proximity) handwear: Redesign of experimental prototype
[AD-A069895] p0290 N79-31940

ANGELL, J. B.
A study of noninvasive blood pressure measurement techniques
p0294 A79-51036

ANISIMOV, G. V.
A method of evaluating the pupillary reaction to vestibular stimuli
p0016 N79-10717

ANNIS, J. F.
Variability in human body size
p0032 N79-11736

ANSELMO, V. J.
Diagnosis of cutaneous thermal burn injuries by multispectral imaging analysis
[NASA-CR-162103] p0279 N79-30922

ANTIPOV, V. V.
The time parameter in exposures to microwave radiation
p0105 A79-24419
Time parameter in microwave irradiation
p0277 A79-50694

ANTON, D. J.
Prediction of body temperatures during exercise in flying clothing
p0273 A79-49989

ANTONETS, V. A.
Possibility of quantitative evaluation of the heart's mechanical activity from seismocardiosignals
p0276 A79-50658

APANASENKO, Z. I.
Rat behavior in maze after flight aboard Kosmos-690 biosatellite
p0014 N79-10705

APPLEMAN, M. A.
Algal growth under multiple nutrient limiting conditions
p0013 N79-10692

APUKHOVSKAYA, L. I.
Sterols bound with blood plasma proteins and erythrocyte membranes during hypokinesia
p0193 N79-23636

ARAYA, S.
Possible contribution of transferable exogenous DNA in prokaryotic evolution
p0205 A79-37971

ARCHER, G. T.
User's instructions for the Guyton circulatory dynamics model using the Univac 1110 batch and demand processing (with graphic capabilities)
[NASA-CR-160215] p0218 N79-25731
User's guide for the Skylab integrated medical data analysis system
[NASA-CR-160189] p0220 N79-25740

ARCHER, L. T.
Effects of methylprednisolone sodium succinate on clearance of livine E. coli from peripheral blood of dogs
[AD-A062123] p0169 N79-20717

ARISTAPKHOV, V. M.
Biological effects of a magnetic field
p0172 N79-20734

ARMITAGE, R.
Rhythms in human performance - 1-1/2-hour oscillations in cognitive style
p0210 A79-39601

ARMSTRONG, R. W.
Oculomotor performance of aviators during an autorotation maneuver in a helicopter simulator
p0151 N79-19638

ARNO, R.
Wildlife monitoring program plan
[NASA-TM-78578] p0190 N79-23626

AROMATORIO, D. K.
Calcium regulation in smooth muscle: Isolation and characterization of the myosin light chain kinase
p0024 N79-11680

ARP, G. K.
Meteorological limits on the growth and development of screwworm populations
[NASA-CR-151873] p0107 N79-16512

ARSENEVA, L. I.
Some tests used in the practice of aviation medical examination for differential diagnosis of heart diseases
p0188 A79-35136

ARUIN, A. S.
Biomechanical properties of muscles and the efficiency of movement
p0276 A79-50652

ARUTIUNIAN, H. A.
Effect of the blockade of hypothalamic adrenergic structures on thermoregulatory reactions
p0167 A79-31950

ASANO, S.
Accuracy of RGD approximation for computing light

scattering properties of diffusing and motile bacteria p0233 A79-42448

ASGARI, M.
The effect of plasmodial slime on the metabolism of haploid cells of Physarum flavicomum and the respiration of isolated mitochondria p0105 A79-24513

ASHKENAZI, M.
Perceptual localization, feature identification and ocular motor factors in scanning a visual display p0064 A79-18218

ASHWORTH, B. R.
Helmet weight simulator [NASA-CASE-LAR-12320-1] p0223 N79-25761

ASHWORTH, G. R.
Flight test evaluation of an RAF high altitude partial pressure protective assembly [NASA-TM-72864] p0214 N79-24654

ASKANAZI, J.
Influence of exercise and CO2 on breathing pattern of normal man p0237 A79-43704

ASKINS, B. S.
Autoradiographic enhancement of mammograms p0227 A79-40773

ASLING, C. W.
Histological studies on tibial bone of rats in the 1975 COSMOS-782 flight. Part 1: Endochondral osteogenesis; medullary bone turnover p0022 N79-11665
Histological studies on tibial bone of rats in the 1975 COSMOS-782 flight. Part 2: Microradiographic study of cortical bone p0022 N79-11666

ASLING, W.
Mineralization in teeth and jaws, as judged radiographically, in rats of the COSMOS-782 experiment p0022 N79-11667

ASYAMOLOV, B. F.
Possibilities of preventing adverse reactions in simulating the acute period of adaptation to weightlessness p0244 N79-27825

ATAMANYUK, M. Y.
Functional outcomes of prosthetic cardiac valve replacement p0076 N79-14746

ATEN, J. B. T.
Evaluation of the risks involved in the application of tritium gas and measures which have to be taken [MBL-1978-6] p0122 N79-17541

ATTERBOM, H. A.
Effect of impermeable clothing and respirator on work performance. Part 1: Laboratory studies [SAND-77-2132] p0034 N79-11748

ATWOOD, M. E.
A critally annotated bibliography of the literature on human factors in computer systems [AD-A058081] p0052 N79-12707

AUDET, N. F.
Field evaluation of experimental crash-crew firefighter's facepiece [AD-A066544] p0223 N79-25765

AUFFRET, R.
Radiological examination of the Rachis and fitness for employment as a helicopter pilot p0151 N79-19634
Vertebral pains in helicopter pilots p0153 N79-19656

AUGUSTINE, W. L.
A head-up display for mid-air drone recovery p0090 N79-15615

AULT, R. T.
Evaluation of kinesthetic-tactual displays using a critical tracking task p0119 N79-17516

AUNE, N. H.
Computer-graphic design for human performance [AD-A055132] p0046 A79-15399

AUST, G.
Results of tests of the equilibrium organ of candidates for payload expert for the first Spacelab mission [DGLR PAPER 78-134] p0042 A79-14084
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight [IAF PAPER 79-80] p0301 A79-53288

AUSTIN, F. C. G.
Isolation of virus-augmented tumor antigens p0142 N79-18564

AVDEEV, P. S.
Experimental determination of maximum permissible exposure to laser radiation of 1.54-micron wavelength p0002 A79-10648

AVELLINI, B. A.
A comparison of sweating responses in men and women before and after acclimation to humid heat p0175 N79-21752

AVULA, X. J. R.
Unsteady-state response of the vascular system to transient and sustained aerospace acceleration profiles p0286 N79-31917

AWDEH, M. R.
The evolutionary pattern of exercise-induced ST segment depression p0251 A79-44166

AYOUB, M. M.
Seating, console and workplace design - Seated operator reach profiles p0036 A79-13188
Seating, console, and workplace design - Integration of literature and accommodation model p0036 A79-13189

AZHAEV, A. N.
Model of human heat exchange and identification of its parameters Physiological studies and mathematical modeling p0159 A79-28739

B

BABUNASHVILI, M. K.
Use of the systems analytic approach for organization and coordination of complex biomedical research p0079 N79-14767

BABURINA, Y. D.
The cosmonaut in flight [NASA-TT-F-17438] p0032 N79-11729

BABUSHIKOVA, D.
Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite p0244 N79-27822

BACHURINA, T. I.
Cerebral hemodynamics and visual analyzer function following exposure to bright light p0109 N79-16525

BACK, K. C.
Effects of propellant hydrazines on red blood cells: Methemoglobin and Heinz body formation [AD-A064133] p0189 N79-22755

BADAMI, V.
General methods to enable robots with vision to acquire, orient, and transport workpieces [PB-287199/4] p0113 N79-16556

BADLER, N.
Analysis and validation of human biodynamic models [AD-A059013] p0058 N79-13714

BADLER, N. I.
A spherical representation of a human body for visualizing movement p0301 A79-53096

BAEHR, E. F.
Intraocular pressure reduction and regulation system [NASA-TM-79187] p0260 N79-28881

BAEV, V. I.
Epiphysis of rats under the combined action of hypoxia, hypercapnia and cooling p0256 A79-46680

BAHILL, A. T.
How does the saccadic eye movement controller adapt for pathological states p0046 A79-14961
The trajectories of saccadic eye movements p0065 A79-18250
Linearization and sensitivity analysis of model for human eye movements p0102 A79-23783

BAILEY, J. P.
The effect of increased monitoring load on vigilance performance using a simulated radar display
p0236 A79-43674

BAILEY, N.
Insulated firefighters' crash-crew rescue boots and components: Field and laboratory evaluation
[AD-A068264] p0262 N79-29795

BAILEY, N. T.
The prediction of the existence or nonexistence of coronary artery disease using routine clinical laboratory measurement
p0028 N79-11703

BAISE, E. J.
Human Factors Society, Annual Meeting, 22nd, Detroit, Mich., October 16-19, 1978, Proceedings
p0062 A79-18201

BAKER, B. L.
Response of crown gall tissue to the space environment: Residual carbohydrates in supporting tissue
p0020 N79-11653
Responses of crown gall tissue to the space environment: Tumor development and anatomy
p0020 N79-11654

BAKER, D. G.
Hyperthermia in the treatment of cancer: A review of the radiobiological basis
p0017 N79-10729

BAKER, D. W.
Cardiac blood flow measurement - A component of the comprehensive cardiac examination
p0295 A79-51041

BAKER, R.
Responses of crown gall tissue to the space environment: Tumor development and anatomy
p0020 N79-11654

BALAKHOVSKIY, I. S.
Dynamics of Cosmonauts' blood biochemistry during space missions
p0072 N79-14717

BALASHOVA, T. S.
Paradoxical reaction of some intracellular antioxidative defense mechanisms during adaptation of the organism to hypoxia
p0165 A79-30696

BALISH, E.
Effect of space flight on cell-mediated immunity
p0021 N79-11661

BALKWILL, D. L.
Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates
p0297 A79-51701

BALLAS, J. A.
Two approaches to category representation in aural classification
[AD-A066705] N79-25754
Predicting individual listener confusions in the classification of complex, steady-state sounds
[AD-A066704] p0222 N79-25755
Classification of amplitude-modulated noise patterns with extended practice
[AD-A066703] p0222 N79-25756

BALLDIN, U. I.
Intracardial gas bubbles and decompression sickness while flying at 9,000 m within 12-24 h of diving
p0010 A79-12866
Case report - Intracardial gas bubbles in relation to altitude decompression chokes
p0011 A79-12871

BALOH, R. W.
Effect of alcohol and marijuana on eye movements
p0101 A79-23469

BANDE, J.
Follow-up and transversal study of vital capacity and FEV sub values among personnel of the Belgian Army forces
p0028 N79-11706

BANDERET, L. E.
Sustained operations and sleep deprivation - Effects on indices of stress
p0009 A79-12859

BANERJEE, K. R.
Effects of partial sleep deprivation on psychological performance and behaviour
p0200 A79-37130
Design, fabrication and utility of a flight oriented performance test
p0271 A79-49728

BANIN, A.
Chemical fingerprints of life in terrestrial soils and their possible use for the detection of life on Mars and other planets
p0136 A79-27929

BANK, H.
Gas diffusion liquid storage bag and method of use for storing blood
[NASA-CASE-NPO-13930-1] p0076 N79-14749

BAR-NUN, A.
Synthesis of organic compounds from carbon monoxide and water by UV photolysis
p0099 A79-22077

BARABANSHCHIKOV, V. A.
Forms of oculomotor activity under conditions of positive visual feedback
p0276 A79-50657

BARANOV, A. G.
Norepinephrine action on smooth muscle cells of coronary arteries
p0208 A79-38149

BARANOV, V. M.
Energy expenditures of man during long exposure to a periodically changing atmosphere
p0312 N79-33799

BARANSKA, W.
Ultrasonic investigations of the soleus muscle after space flight on the Biosputnik 936
p0274 A79-49992

BARANSKI, S.
Stereological ultrastructural analysis of the axonal endings in the neuromuscular junction of rats after a flight on biosputnik 782
p0101 A79-23468
Ultrasonic investigations of the soleus muscle after space flight on the Biosputnik 936
p0274 A79-49992
Preliminary selection of candidates for space flights
[IAF PAPER 79-83] p0302 A79-53289

BARASHKOV, V. A.
Characteristics of proteins of some unicellular organisms as potential components of ecological life support systems
p0246 N79-27834

BARBER, P. W.
Electromagnetic absorption in a multilayered model of man
p0226 A79-40650

BARBIER, M.
Biological study of tobacco seeds flown in the joint Apollo-Soyuz test-project
p0006 A79-12519

BARDSLEY, J. E.
The Canadian Forces Life Quality Improvement Programme
p0026 N79-11693

BARENGOLTZ, J. B.
The effect of 1 to 5 keV electrons on the reproductive integrity of microorganisms
p0147 N79-19025

BARER, A. S.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
p0303 A79-53486
Probability of caisson disease while wearing a space suit when exiting from a spacecraft with an atmosphere close to that of earth
p0244 N79-27826

BARET, A.
Adaptation to chronic hyperoxia in the rat - A study of pulmonary surfactant, tissue levels of superoxide dismutases and histology
p0256 A79-46603

BARFIELD, A. F.
Flight experience with manually controlled unconventional aircraft motions
p0088 N79-15602

BARGHOORN, E. S.
Biological implications of the Viking mission to Mars
p0045 A79-14595

BARKER, N. D.
Application of an isolated heart model to investigate blood-oxygen delivery
p0296 A79-51112

BARLOW, C. H.
Temporal relation between onset of cell anoxia and ischemic contractile failure
p0300 A79-52895
BARLOW, J. S.
Computerized clinical electroencephalography in perspective
p0226 A79-40648
BARNES, J. A.
Lightweight helmet-mounted eye movement measurement system
p0303 A79-53516
Lightweight helmet-mounted eye movement measurement system
p0090 N79-15619
A review of individual performance in air-to-ground target detection and identification studies
[AD-A061580] p0124 N79-17551
BARNES, R. J.
Factors that affect display size criteria in a cockpit display system
p0063 A79-18212
BARNETT, J. W.
The effect of infection with herpes simplex viruses types 1 and 2 on cell DNA synthesis and thymidine kinase activities in cultured human cells
p0141 N79-18558
BARNETTE, J. F.
Human factors considerations in the design and evaluation of a helmet mounted display using a light emitting diode matrix
p0063 A79-18214
BARNEY, C. C.
Time for loss of increased cardiac responsiveness to isoproterenol in cold-acclimated rats after removal from cold
p0128 A79-24636
Relationship between thermogenic drinking and plasma renin activity in the rat
p0235 A79-43211
BARNWELL, T. P., III
Speech quality measurement
[AD-A056272] p0033 N79-11745
BARON, S.
Closed loop models for analvzing the effects of simulator characteristics
p0087 N79-15598
Combined monitoring, decision and control model for the human operator in a command and control desk
p0092 N79-15631
The effects of deviate internal representations in the optimal model of the human operator
p0114 N79-17477
A decision, monitoring and control model of the human operator applied to an RPV control problem
[AD-A069880] p0282 N79-30939
Development of human performance models for man-machine system simulation
[AD-A069879] p0282 N79-30940
BARON, W. S.
Primate cone sensitivity to flicker during light and dark adaptation as indicated by the foveal local electroretinogram
p0104 A79-24065
BARR, J. K.
Low tryptophan diet decreases brain serotonin and alters response to apomorphine
p0226 A79-40672
BARRETT, A. H.
Microwave thermography: Physical principles and diagnostic applications
p0083 N79-15567
BARROW, W. W.
Effects of lead on subcellular components in bacteria
p0142 N79-18565
BARTEL, B. C.
Synthetic training and evaluation - Some current issues
p0275 A79-50550
BARTSCH, H.-J.
Problem of modeling the mechanism of heart contraction
p0275 A79-50287
BARTZ, A. E.
Information transmission during eye movements
p0209 A79-38360
BARZA, M. J.
Determination of antimicrobial susceptibilities on infected urines without isolation
[NASA-CASE-GSC-12046-1] p0076 N79-14750
BASON, R.
Aircrew personnel restraint subsystems definition of deficiencies and requirements
[AD-A058995] p0053 N79-12711
BASSETT, D. J. P.
Glucose metabolism in rat lung during exposure to hyperbaric O2
p0221 A79-36047
BASU, D.
Health effects associated with diesel exhaust emissions, literature review and evaluation
[PB-289817/9] p0171 N79-20727
BATEMAN, R. P.
Investigation of arrangement of multipurpose displays and use of tailored control logic in a fighter aircraft cockpit
p0038 A79-13205
BATOV, V. I.
Psychological experiment on components of the meaning of work
p0071 N79-14709
BATUEV, A. S.
Role of the frontal associative region of the cortex in the activity of the auditory and visual sensory systems
p0043 A79-14371
BAUMGARDNER, F. W.
The dynamic oxygen-regulator test stand
[AD-A060978] p0125 N79-17560
Hybrid computation of left ventricular performance using noninvasive techniques
[AD-A063749] p0190 N79-22758
BAWIN, S. M.
Possible mechanisms of weak electromagnetic field coupling in brain tissue
p0082 N79-15555
BAYER, A. R., JR.
Calibration of three year old child dummies
[PB-288961/6] p0157 N79-19692
BAYLINK, D. J.
Quantitative analysis of selected bone parameters
p0022 N79-11668
Quantitative analysis of selected bone parameters
p0023 N79-11676
BAYLOR, D. A.
Thermal activation of the visual transduction mechanism in retinal rods
p0230 A79-41746
BAZHENOV, IU. I.
Temperature effect of muscular work in the white rat during hypoxia
p0097 A79-20654
BEAMON, W. S.
Observer performance using a video display
p0039 A79-13217
BEANE, W. E.
Making it in academic psychology: Demographic and personality correlates of eminence
[NASA-CR-162287] p0289 N79-31932
BEATRICE, E. S.
Laser safety bioeffects research - Histopathology of retinal effects
p0138 A79-28169
BEAUCHAMP, D. E.
The impact of a Learn-Forget-Learn (LFL) curve and learning curves on a system effectiveness model
[AD-A061622] p0124 N79-17550
BECK, E. A.
Selective attention: The influences of subject sex and degree of prior habituation on performance of an attention task with distraction
p0260 N79-28876
BECK, M.
Prebiotic coordination chemistry: The potential role of transition-metal complexes in the chemical evolution
[NASA-TM-75381] p0169 N79-20715
BECK, T. W.
Detection of bubbles in decompression sickness
p0041 A79-13573
BECKER, H. S.
A technology assessment of vegetable substitutes for animal protein in human food. Volume 1: The study

[PB-284681/4] p0059 N79-13719
A technology assessment of vegetable substitutes for animal protein in human food. Volume 2: Appendices
[PB-284682/2] p0059 N79-13720

BECKER, R. O.
Space osteoporosis - An electromagnetic hypothesis
p0165 A79-30666

BECKER, W.
An analysis of the saccadic system by means of double step stimuli
p0270 A79-49480

BECKMAN, D. A.
Studies on the erythron and the ferrokinetic responses in beagles adapted to hypergravity
p0010 A79-12869
RBC-/Cr-51/ half-life and albumin turnover in growing Beagle dogs during chronic radial acceleration
p0135 A79-27553

BEDI, J. F.
Response of women mountaineers to maximal exercise during hypoxia
p0234 A79-43201

BEDNENKO, V. S.
Studies of venous circulation in the crew of the Salyut-5 orbital station
p0310 N79-33791

BEERS, K.
Spinal injuries in the F/FB-111 crew escape system
p0274 A79-49996

BEHAR, I.
Training requirements for helicopter operation with night vision goggles
p0153 N79-19650

BEIERGROHSLEIN, D.
Reactions of methamidophos with mammalian cholinesterases
[AD-A058683/4] p0051 N79-12698

BEISER, L.
Visual simulation and image realism; Proceedings of the Seminar, San Diego, Calif., August 30, 31, 1978
p0137 A79-28156

BEJAR, I. I.
A construct validation of adaptive achievement testing
[AD-A063148] p0173 N79-20742

BEJCZY, A. K.
Advanced teleoperators
p0187 A79-34982
Event-driven displays for manipulator control
p0089 N79-15610
Terminal guidance sensor system
[NASA-CASE-NPO-14521-1] p0174 N79-20746

BELESLIN, B.
Biomagnetism and artificial magnetic stimulation of living structures
[IAF PAPER 78-52] p0002 A79-11222

BELETSKII, IU. V.
Possibility of quantitative evaluation of the heart's mechanical activity from seismocardiosignals
p0276 A79-50658

BELICH, A. I.
Continuous long-duration recording of the heart rate by means of a noncontact technique
p0300 A79-53068

BELITSKAYA, E. A.
Changes in amount and composition of phospholipids in rat skeletal muscle microsomal fraction under the influence of a flight aboard the Kosmos-690 biosatellite
p0108 N79-16519
Tissular metabolism in mixed type fibers of rat skeletal muscles after flight aboard Cosmos-690 biosatellite
p0244 N79-27823

BELKIN, V. I.
The combined effect of carbon monoxide and normobaric hyperoxia on animals
p0073 N79-14730

BELL, E. L.
Electrical parameter values of some human tissues in the radiofrequency radiation range
[AD-A064202] p0189 N79-22754

BELLENKES, A. H.
Space medicine - A prognosis for future research
[IAF PAPER 78-ST-17] p0003 A79-11364

The biomedical implications of engineering in space
p0166 A79-31122
The biomedical implications of extended duration zero-g extravehicular activities
[IAF PAPER 79-ST-06] p0303 A79-53447

BELYAVIN, A. J.
Core temperature measurement in man
p0010 A79-12862
Effect of cockpit temperature gradients on the validity of single-point measurements
p0234 A79-43203
Prediction of body temperatures during exercise in flying clothing
p0273 A79-49989

BELYI, IU. N.
Investigation of psychological compatibility of crew members of multiseat aircraft
p0166 A79-31165

BELYTSCHKO, T.
A three dimensional discrete element dynamic model of the spine, head and torso
p0285 N79-31910
Refinement and validation of a three-dimensional head-spin model
[AD-A062502] p0307 N79-32826

BENDER, J.
Advanced industrial robot control systems
[PB-287273/7] p0113 N79-16558

BENDET, Y. A.
Functional outcomes of prosthetic cardiac valve replacement
p0076 N79-14746

BENEL, R. A.
Judgement evaluation and instruction in civil pilot training
[AD-A057440] p0019 N79-10737

BENIGNUS, V. A.
Carbon monoxide and human time discrimination - Failure to replicate Beard-Wertheim experiments
p0102 A79-23472

BENNETT, A. M.
Telehealth handbook: A guide to telecommunications technology for rural health care
[PB-292557/6] p0241 N79-26778

BENNETT, G.
Cardiovascular fitness of pilots of transport aircraft
p0031 N79-11726

BENNIS, B. J.
Effects of stimulus onset and image motion on contrast sensitivity
p0231 A79-42231

BENSON, A. J.
Voluntary movement control and adaptation to cross-coupled stimulation
p0009 A79-12860

BENSON, J. B.
Whole body response research program
[PB-286151/6] p0093 N79-15640
Whole body response research program. Appendix A: Methodology
[PB-286152/4] p0094 N79-15641

BENTON, E. V.
Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798
Space radiation dosimetry onboard COSMOS 936: US portion of experiment K-206
p0023 N79-11677

BERAN, A. V.
An improved method for inducing hypothermia and rewarming
p0267 A79-47339

BERBARI, E. J.
The effects of filtering the His-Purkinje system electrocardiogram
p0130 A79-26073

BERBERICH, J. J.
Evidence for increased intrathoracic fluid volume in man at high altitude
p0305 A79-54266
Evidence for increased intrathoracic fluid volume in man at high altitude
[AD-A065333] p0220 N79-25743
The effects of dehydration on peripheral cooling
[AD-A065332] p0220 N79-25745

BEREGOVOI, G. T.
On the man's adaptation to the operator's work under stressful conditions of space flight
[IAF PAPER 78-A-56] p0003 A79-11345
Experimental and psychological investigations in aviation and astronautics
p0041 A79-13998
Psychological training - One of the most important factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] p0303 A79-53426

BEREZHNAIA, N. K.
Comparative evaluation of the effectiveness of visual and aural tracking of a sinusoidal signal
p0159 A79-28736

BEREZIN, IU. D.
Experimental determination of maximum permissible exposure to laser radiation of 1.54-micron wavelength
p0002 A79-10648

BEREZOV, V. P.
Compensatory reactions of the kidneys to orthostatic factors
p0015 N79-10708

BEREZOVSKII, V. A.
Individual differences in hypoxic responses at high altitudes
p0159 A79-28738
The physiological role of surface-active substances in the lung
p0296 A79-51117

BERGER-VACHON, CH.
Adjustment of an electronic model for electrocardiogram simulation
p0232 A79-42240

BERGER, K. R.
Clinical importance of directional statistics for electrocardiographic differentiation of smoking habits
p0098 A79-21246

BERGER, M. D.
The effect of impact acceleration on the electrical activity of the brain
p0287 N79-31921

BERGH, U.
Physical performance and peak aerobic power at different body temperatures
p0221 A79-36046

BERGMANN, S. R.
The effect of moderate hypothermia on the circulatory and myocardial consequences of acute coronary ligation in dogs
p0049 N79-12683

BERGSTROM, D. A.
Effect of electroconvulsive shock on monoaminergic receptor binding sites in rat brain
p0162 A79-29925

BERGSTROM, S. L.
Thermal resistance of naturally occurring airborne bacterial spores
p0131 A79-26147

BERINGER, D. B.
Response surface methodology as a manipulator of complex task difficulty
p0039 A79-13211
Collision avoidance response stereotypes in pilots and nonpilots
p0068 A79-18995

BERISFORD, K. M.
Refinement of a computer simulation model for evaluating DAIS display concepts
p0038 A79-13209

BERKOVICH, Y. A.
Adaptive optimization of exchange of gases in plants in a sealed phytotron
p0313 N79-33806

BERLINER, J. E.
The effects of deviate internal representations in the optimal model of the human operator
p0114 N79-17477

BERMUDEZ, J. M.
Pilot performance during flight simulation with peripherally presented visual signals
p0063 A79-18213

BERNAUER, E. M.
Temperature changes during exercise measured by thermography
p0235 A79-43209

BERNHARDT, J.
Biological effects of electromagnetic fields
p0184 A79-33711

BERRY, W.
Biological specimen holding facilities for Spacelab experiments
[IAF PAPER 78-56] p0003 A79-11224

BERRY, W. E.
Animal life support transporters for Shuttle/Spacelab
[ASME PAPER 78-ENAS-10] p0006 A79-12559

BERS, D. M.
A correlation of the effects of cationic uncouplers on intact cardiac muscle and on calcium bound to isolated cardiac muscle plasma membranes
p0111 N79-16540

BERTASH, V. I.
Epiphysis of rats under the combined action of hypoxia, hypercapnia and cooling
p0256 A79-46680

BESPALOVA, L. A.
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation
p0312 N79-33804

BEVER, D. L.
An illness-injury severity index
p0050 N79-12688

BEVERLEY, K.
The visual perception of motion in depth
p0210 A79-39087

BHARGAVA, P. M.
Radiological diagnosis of spinal injuries and deformities
p0272 A79-49735

BHATTACHARYA, A.
Cardiac responses of dogs to nonsynchronous and heart synchronous whole-body vibration
p0162 A79-29728
Sweating responses during heat acclimation and moderate conditioning
p0185 A79-33803
Deconditioning-induced exercise responses as influenced by heat acclimation
p0273 A79-49985
Modification of cardiac function by synchronized oscillating acceleration
p0278 A79-50908

BICKING, C. A.
Report of the Workshop on Biological Screening Tests
[PB-294303/3] p0279 N79-30916

BIDANI, A.
Analysis of Pco2 differences during rebreathing due to slow pH equilibration in blood
p0067 A79-18958

BILAY, V. I.
Orenburg symposium on mycotoxins
p0175 N79-21749

BINNARD, R.
Quantitative analysis of mating behavior in aging male Drosophila Melanogaster
p0252 A79-44799
Effects of weightlessness on the embryonic development and aging of Drosophila
p0022 N79-11670

BIRK, J.
Visually estimating workpiece pose in a robot hand using the feature points method
p0269 A79-48018
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/
[IAF PAPER 79-87] p0302 A79-53290
General methods to enable robots with vision to acquire, orient, and transport workpieces
[PB-287199/4] p0113 N79-16556

BISH, K. G.
Evoked potential correlates of display image quality
p0068 A79-18998

BISHOP, P. J.
Aircrew helmet protection against potential cerebral concussion in low-magnitude impacts
p0201 A79-37705

BITTNER, A. C., JR.
Effects of vibration on humans - Performance decrements and limits
p0035 A79-13185
Seating, console, and workplace design - Integration of literature and accommodation model
p0036 A79-13189

BIZIN, Y. P.
Effect of hypokinesia on animal resistance to chemical agents
p0109 N79-16524

BLAAUW, G. J.
The driving simulator developed by the Institute for Perception TNO. A validation study in straight road driving
[IZF-1978-16-PR-1] p0145 N79-18588
Car driving as a cybernetic task
[IZF-1979-6] p0309 N79-32838

BLACK, S.
Cosmic ray effects on the eyes of rats flown on COSMOS 782
p0022 N79-11669
Cosmic ray effects on the eyes of stationary and centrifuged rats flown on COSMOS 936, experiment K-207
p0024 N79-11678

BLACK, T. L.
Development of recommendations to improve controls operability
[PB-284433/0] p0053 N79-12714

BLAIR, N.
Synthesis of amino acids under primitive earth conditions in the presence of clay
p0203 A79-37930

BLANC, P.
Sensory illusions of vestibular origin
p0255 A79-46596

BLANKENHORN, D. H.
Computer quantitation of coronary angiograms
p0293 A79-51030

BLANKENSHIP, J. E.
The effects of high nitrogen tensions of the properties of neuronal membranes and synaptic transmission
[AD-A063856] p0213 N79-24647

BLASCO, M.
A simple technique for evaluation of vitality loss in aging mice, by testing their muscular coordination and vigor
p0274 A79-50205

BLASKO, G.
Effect of hypoxia on the development of Drosophila melanogaster /Meigen/
p0165 A79-30667

BLOMQVIST, C. G.
ST isopotential precordial surface maps in patients with acute myocardial infarction
p0098 A79-21245
Early cardiovascular adaptation to simulated zero gravity
p0162 A79-29727
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] p0301 A79-53286

BLOOM, A.
Oral/nasal breathing systems in the year 2000
p0183 A79-33621

BLUTH, B. J.
Consciousness alteration in space
[AIAA PAPER 79-1430] p0187 A79-34853

BOAL, H. S.
Modeling human tracking performance in a high G-stress environment
p0269 A79-48012

BOCHKAREVA, L. E.
Myocardial infarction in young men
p0188 A79-35137

BOCKEMUELLER, E. A.
Man, dummy, test vehicle: A comparison of test results for escape systems with the 3 different test methods
p0287 N79-31924

BOELTER, J.
Man-machine analysis of translation and work tasks of Skylab films
[NASA-CR-151879] p0146 N79-18592

BOKHOV, B. B.
Vertical orientation of man during 5-day antiorthostatic hypokinesia (-4, -8 and -12 deg head down position)
p0313 N79-33810

BOLLER, H. E.
The human operator in the control system: Linear models
p0132 A79-26356

BOLSHOV, V. M.
Studies of venous circulation in the crew of the Salyut-5 orbital station
p0310 N79-33791

BOLTZ, R. L.
Stereopsis in monkeys using random dot stereograms - The effect of viewing duration
p0271 A79-49481

BONASHEVSKAYA, T. I.
Chemicals in environment affect man's physiology
p0077 N79-14754

BONDAREV, V. B.
Amino acids in southern Kamchatka hot springs
p0182 A79-33122

BONORIS, P. E.
Predicting coronary artery disease with treadmill stress testing Changes in R-wave amplitude compared with ST segment depression
p0186 A79-34284

BONTE, F. J.
ST isopotential precordial surface maps in patients with acute myocardial infarction
p0098 A79-21245

BONTING, S. L.
Light flashes in space
p0100 A79-22261

BOONE, J. O.
The development of the ATC selection battery: A new procedure to make maximum use of available information when correcting correlations for restriction in range due to selection
[FAA-AM-78-36] N79-25752
The selection of air traffic control specialists: Two studies demonstrating methods to insure an accurate validity coefficient for selection devices
[AD-A068581] p0281 N79-30932

BOOTH, F. W.
Recovery of skeletal muscle after 3 mo of hindlimb immobilization in rats
p0268 A79-47856

BOOZE, C. F.
Morbidity experience of air traffic control personnel - 1967-77
p0101 A79-23466
The morbidity experience of air traffic control personnel, 1967-1977
[AD-A056053] p0051 N79-12696

BORAH, J.
Sensory mechanism modeling
[AD-A069439] p0262 N79-29796

BOREN, H. E., JR.
Cost analysis of pilot training systems
[SAE PAPER 781005] p0130 A79-25887

BORGER, H. J.
A new application of LBNP to measure orthostatic tolerance before and after O-G simulation /water immersion/
[IAF PAPER 79-87] p0302 A79-53290

BORGMAN, T. J., JR.
Transient intraventricular conduction defects observed during experimental impact in human subjects
p0285 N79-31907

BORODULINA, I. I.
Distinctions referable to excretion of end products of protein metabolism in urine of man submitted to 182-day antiorthostatic hypokinesia
p0193 N79-23635

BOSKER, G. W.
A theoretical model to estimate some ergonomic parameters from age, height and weight
p0132 A79-26150

BOSSARD, A.
Abundance of organic compounds photochemically produced in the atmospheres of the Outer Planets
p0210 A79-39075

BOTKIN, D. B.
Closed regenerative life support systems for space travel - Their development poses fundamental questions for ecological science
p0228 A79-41702

BOULANGER
Evaluation of the amount of exposure to vibrations transmitted to the whole body case of vibrations due to a loader mounted on catapillar tracks, a fork-lift truck and a hydraulic excavator
[RAE-LIB-TRANS-1930] p0080 N79-14773

BOULIER, A.
Pulmonary functional tolerance to ionizing radiation - An experimental study
p0256 A79-46601
BOUTELIER, C.
Special tests for astronaut selection - Study of cardiovascular reactions by the orthostatism test
p0047 A79-15490
Survival and protection of aircrew in the event of accidental immersion in cold water
[AGARD-AG-211(ENG)] p0196 N79-23661
BOVEE, E. C.
Effects of heavy metals especially selenium, vanadium and zirconium on movement, growth and survival of certain animal aquatic life
[PB-292563/8] p0197 N79-25706
BOWEN, T. E.
A head-up display for mid-air drone recovery
p0090 N79-15615
BOWMAN, B. R.
Whole body response research program
[PB-286151/6] p0093 N79-15640
BOWMAN, G. H.
Support system considerations for STS biological investigations
[ASME PAPER 78-ENAS-37] p0008 A79-12584
BOWMAN, G. H., III
Advanced life support equipment for nitrogen tetroxide environments
p0169 N79-20432
BOWMAN, J. S.
Physiologic and performance measurements in simulated airborne combined stress environments
p0202 A79-37710
BOYD, J. F.
Killfish development in zero-G on COSMOS 782: Fundulus experiment K-104
p0021 N79-11659
BOYDSTUN, J. A.
Psychosocial aspects of syncope and vertigo in aircrew
p0027 N79-11701
BOYLE, D.
Eye-ball control
p0270 A79-49225
BOYNTON, R. M.
Primate cone sensitivity to flicker during light and dark adaptation as indicated by the foveal local electroretinogram
p0104 A79-24065
BOYS, J. T.
A continuous wave, frequency modulated, ultrasonic device with auditory output for observing the heart
p0045 A79-14602
BOYTER, J. K.
The interaction of carbon monoxide and altitude on aviator performance: Pathophysiology of exposure to carbon monoxide
[AD-A055212] p0056 N79-13694
BOZZETTI, M.
On the measurement of hazardous e.m. fields radiated through an aperture
p0233 A79-42486
BRADFORD, L. W.
Binocular holographic helmet mounted display
[AD-A062761] p0174 N79-20749
BRADY, J.
The effect of 1 to 5 keV electrons on the reproductive integrity of microorganisms
p0147 N79-19025
BRADY, J. V.
Methodological and operational aspects of programmed environment research
[AD-A068587] p0289 N79-31936
BRANDENBERGER, G.
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
p0297 A79-52023
BRANTHWAITE, M.
Growth of pulmonary circulation in normal pig - Structural analysis and cardiopulmonary function
p0067 A79-18961
BRATTSEV, B. P.
Blood clotting factors of the vascular wall and myocardium of hypokinetic rabbits
p0108 N79-16523
BRATUS, T. N.
Current conceptions of the mechanism of the effect of chemical stimulus on taste receptors
p0043 A79-14375
BRAUNS, IA. A.
Investigation of blood subjected to volume tension
p0275 A79-50261
BREMOND, J.
Psychological selection of payload astronauts
p0047 A79-15488
BRENNECKE, R.
Computer quantitation of angiocardiographic images
p0293 A79-51028
BRETTEL, H.
The peripheral critical flicker frequency
p0271 A79-49482
BRICTSON, C. A.
Air Combat Maneuvering Range /ACMR/ - Has operational performance measurement entered a Golden Age
p0064 A79-18221
A7 training effectiveness through performance analysis
[AD-A056230] p0031 N79-11728
BRIDGEMAN, B.
Omnidirectional increase in threshold for image shifts during saccadic eye movements
p0139 A79-28198
BRIGHT, C. W.
Prosthesis coupling
[NASA-CASE-KSC-11069-1] p0240 N79-26772
BRILL, A. B.
Autoradiographic enhancement of mammograms
p0227 A79-40773
BRILLING, G.
Comparative experiments on performance and fatigue effects on pilots using tracking tests and physiological measurement parameters
[RAE-LIB-TRANS-1971] p0080 N79-14774
BRINKHUS, H. B.
Skin-resistance measuring device with higher resolution
p0252 A79-45476
BRINKLEY, J. W.
Application of biodynamic models to the analysis of F-16 canopy birdstrike
p0285 N79-31911
BROCK, P. J.
Plasma volume and electrolyte shifts with heavy exercise in sitting and supine positions
p0161 A79-29336
Effect of sodium and calcium ingestion on thermoregulation during exercise in man
p0163 A79-30624
Sweating responses during heat acclimation and moderate conditioning
p0185 A79-33803
Limb blood flow - Rest and heavy exercise in sitting and supine positions in man
p0235 A79-43208
Deconditioning-induced exercise responses as influenced by heat acclimation
p0273 A79-49985
BRODY, W. R.
Current status of cardiovascular imaging by transmission computed tomography
p0294 A79-51032
Quantitative flow estimation with transcutaneous Doppler ultrasound
p0295 A79-51042
BROELL, J. R.
Influence of exercise and CO2 on breathing pattern of normal man
p0237 A79-43704
BROEZE, R. J.
Effects of low temperature on in vivo and in vitro protein synthesis in Escherichia coli and Pseudomonas fluorescens
p0131 A79-26141
BRONSKILL, P. M.
Inadequacy of prebiotic synthesis as origin of proteinous amino acids
p0253 A79-45643
BROOKE, J. D.
Bimodal relationship of human tremor and shivering on introduction to cold exposure
p0298 A79-52278
BROOKS, D. E.
A method for separating biological cells

[NASA-CASE-MFS-23883-1] p0175 N79-21743
BROOKS, G. A.
Effects of glycogen depletion and work load on postexercise O2 consumption and blood lactate
p0277 A79-50903
BROOKS, J.
A critical assessment of the origin of life
p0207 A79-37985
BROOKS, T. L.
Human/computer control of undersea teleoperators
p0089 N79-15612
BROSE, H.
Concept definition for an extended duration orbiter ECLSS
[NASA-CR-160164] p0197 N79-23666
BROUILLET, A. O.
Challenges to life support system's future
[ASME PAPER 78-ENAS-28] p0008 A79-12577
BROUSSARD, J. R.
Prediction of pilot-aircraft stability boundaries and performance contours
p0118 N79-17507
BROUSSOLLE, B.
Adaptation to chronic hyperoxia in the rat - A study of pulmonary surfactant, tissue levels of superoxide dismutases and histology
p0256 A79-46603
BROWELL, T.
General methods to enable robots with vision to acquire, orient, and transport workpieces
[PB-287199/4] p0113 N79-16556
BROWER, R. W.
Clinical usefulness of radiopaque markers in left ventricular function
p0293 A79-51029
BROWN, A. D.
Manual landings in Category 3 conditions
p0297 A79-52055
BROWN, A. H.
Serendipitous solution to the problem of culturing Arabidopsis plants in sealed containers for spaceflights of long duration
p0229 A79-41704
Importance of temperature control for HEFLEX, a biological experiment for Spacelab 1
p0230 A79-41716
BROWN, B.
Contrast effects on smooth-pursuit eye movement velocity
p0104 A79-24068
BROWN, G. L. S.
The effect of 17alpha-ethynylestradiol on the radiation sensitivity of mice
p0141 N79-18557
BROWN, J.
Increased survival in experimental dog heatstroke after reduction of gut flora
p0266 A79-47335
BROWN, J. E.
Subjective motion discrimination in the simulator for air-to-air combat
[AD-A059742] p0079 N79-14770
BROWN, J. L.
Changes in critical duration during dark-adaptation
p0304 A79-54252
BROWN, J. M.
Medical technology transfer
p0048 A79-16138
BROWN, J. W.
Considerations associated with the introduction of female crewmembers in spacecraft and space stations
[IAF PAPER 79-A-22] p0303 A79-53424
BROWN, L. S.
Conjoint effect of physical stress and noise stress on information processing performance and cardiac response
p0161 A79-29715
BROWN, O. R.
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] p0307 N79-32823
BROWN, P. A.
Synaptosomal uptake of hypothalamic monoamines and recovery of pituitary-adrenal activity following medial forebrain bundle lesions in rats
p0275 A79-50232
Absence of gastric ulceration in rats after flight on the COSMOS 782
p0021 N79-11660
Indomethacin-antihistamine combination for gastric ulceration control
[NASA-CASE-ARC-11118-2] p0077 N79-14755
BROWN, R.
Advanced industrial robot control systems
[PB-287273/7] p0113 N79-16558
BROWN, S.
Organic geochemical studies on kerogen precursors in recently deposited algal mats and oozes
p0001 A79-10419
BROWN, T. E.
The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces
[AD-A069865] p0316 N79-33829
BRUCE, R. A.
Clinical importance of directional statistics for electrocardiographic differentiation of smoking habits
p0098 A79-21246
Noninvasive estimation of bilirubin and hemoglobin oxygen saturation in the skin by reflection spectrophotometry
p0054 N79-13684
BRUNE, D. E.
The growth kinetics of freshwater algae
p0174 N79-21740
BRYAN, C. J.
A system for sterilizing objects
[NASA-CASE-KSC-11085-1] p0318 N79-33848
BRYANT, C.
Early cardiovascular adaptation to simulated zero gravity
p0162 A79-29727
BRYANT, H. J.
The effects of high nitrogen tensions of the properties of neuronal membranes and synaptic transmission
[AD-A063856] p0213 N79-24647
BRYANT, S. R.
The objective evaluation of aircrew protective breathing equipment. III - Improved types of mask/goggles combinations. IV - Fullface masks and hoods suitable for flight attendant use
p0184 A79-33638
BRYE, R. G.
Earth orbital teleoperator systems evaluation
[NASA-CR-150912] p0112 N79-16552
BUAS, M.
A theoretical study of membrane diffusion and lymphocyte patching
p0142 N79-18563
BUBB, P.
Ergonomic research into human tolerances for roll and pitch as well as their influence on individual perception and reactions to control parameters
[BMVG-FBWT-78-18] p0282 N79-30944
BUCCI, T. J.
Two-week studies of survivors from exposures to pyrolysis gases
p0066 A79-18307
BUCHANAN, P.
Effect of ultrasonic irradiation on mammalian cells and chromosomes in vitro
p0134 A79-27239
BUCKLEY, C.
Relating performance in basic electricity and electronics and A schools
[AD-A060914] p0085 N79-15584
BUCKLEY, E. P.
Development of a performance criterion for air traffic personnel research through air traffic control simulation
[AD-A058082] p0031 N79-11727
BUDENNAIA, T. IU.
Paradoxical reaction of some intracellular antioxidative defense mechanisms during adaptation of the organism to hypoxia
p0165 A79-30696
BUDIG, S. R.
Oxygen systems for Army helicopters
p0044 A79-14421
BUDININKAS, P.
Four-man rated dual catalyst system for the recovery of water from urine
[NASA-CR-152227] p0112 N79-16550
BUDKO, V. N.
Nonparametric model for the detection of signals observed by a human operator on a CRT screen on

a noise background
p0159 A79-28565
BUDRENE, S. P.
Effects of electromagnetic field induction on development of the green algae, scenedesmus quadricauda (Turbpin) Breb. and composition of free amino acids in its biomass and medium
p0075 N79-14740
BUECKER, H.
The Biostack experiment in the U.S. long exposure duration test program
p0227 A79-41230
BUEHRLEN, L.
Investigations into the importance of the direction of centrifugal forces acting on the human body
[RAE-LIB-TRANS-1945] p0077 N79-14758
BUERSCH, J. H.
Computer quantitation of angiocardiographic images
p0293 A79-51028
BUGGE, J. F.
Changes in the circadian rhythm of performance and mood in healthy young men exposed to prolonged, heavy physical work, sleep deprivation, and caloric deficit
p0234 A79-43202
BUGLIARELLO, G.
Basic biomechanics equations for cardiovascular flow
p0304 A79-53534
BUGUET, A.
Measurement of skin temperatures of active subjects by wireless telemetry
p0011 A79-12872
BUGUET, A. G. C.
Skin temperature changes in paradoxical sleep in man in the cold
p0201 A79-37706
BUNKER, W. M.
Training effectiveness versus simulation realism
p0138 A79-28166
BURAKOVSKIY, V. I.
The role of computer technology mathematical models in treatment of patients following heart surgery
p0170 N79-20721
BURAKOVSKIY, V. N.
New principles of automation of biomedical research
p0078 N79-14763
BURDEN, R. T., JR.
An evaluation of perceptual-motor workload during a helicopter hover maneuver
[AD-A058016] p0052 N79-12709
An evaluation of the effects of a stability augmentation system upon aviator performance/workload during a MEDEVAC high hover operation
p0148 N79-19612
BURGEAT, M.
The responses of frogs to vestibular and visual stimulation in weightlessness
p0006 A79-12513
BURGIN, R. E.
False hypothesis and the pilot
[SAE PAPER 780528] p0001 A79-10399
BURKE, K. A.
Technology advancement of an oxygen generation subsystem
[NASA-CR-152257] p0261 N79-28883
BURKE, M. W.
Secondary visual workload capability with primary visual and kinesthetic-tactual displays
p0064 A79-18220
BURNAZYAN, A.
Man in space and on earth
[NASA-TM-75602] p0122 N79-17533
BURNET, H.
Adaptation to chronic hyperoxia in the rat - A study of pulmonary surfactant, tissue levels of superoxide dismutases and histology
p0256 A79-46603
BURNETT, J. E.
Intraocular pressure reduction and regulation system
[NASA-TM-79187] p0260 N79-28881
BURNS, J. W.
Regional coronary blood flow at rest and during high sustained +Gz in a miniature swine with subclinical, ischemic, coronary heart disease due to coronary stenosis
p0010 A79-12865
Better definition of eye to aortic valve distance in high acceleration cockpit /HAC/ seating geometries
p0183 A79-33632
BURNS, R. L.
Analytical modelling of load-deflection behavior of intervertebral discs subjected to axial compression
[AD-A071019] p0316 N79-33830
BURNS, S. P.
Responses of retinal and visual pathway potentials of the guinea pig to nitrogen and helium at high pressure
p0266 A79-47331
BURR, M. J.
Cardiorespiratory assessment of decongestant-antihistamine effects on altitude, +Gz, and fatigue tolerances
p0127 A79-24628
BURTON, A. K.
Renal damage in mice following exposure to the pyrolysis products of polytetrafluoroethylene
p0066 A79-18306
BURTON, R. R.
Physiological effect of high, sustained +Gz forces on man
p0229 A79-41711
Influence of the ambient acceleration field upon acute acceleration tolerance in chickens
p0230 A79-41715
Evaluation of assisted positive-pressure breathing on +Gz tolerance
p0266 A79-47336
BUSH, A. M.
Speech quality measurement
[AD-A056272] p0033 N79-11745
BUSH, W. H., JR.
Life sciences experiments mission development test program
[ASME PAPER 78-ENAS-36] p0008 A79-12583
BUSIJA, D. W.
The effect of hyperoxia on cerebral blood flow in the unanesthetized pony
p0107 N79-16511
BUTCHER, W. I.
Suprathreshold retinal damage due to single 6 picosecond 1060 nm laser light pulses
p0266 A79-47330
BUTLER, B. D.
The lung as a filter for microbubbles
p0277 A79-50906
BUTLER, D.
Knee flail design limits: Background, experimentation and design criteria
[AD-A062384] p0220 N79-25746
BUTLER, K. C.
Development of an electrical energy converter for driving left heart assist blood pumps
[PB-293510/4] p0241 N79-26780
BUTYRSKII, L. S.
Voice communication in artificial atmospheres
p0048 A79-16500
BUVET, R.
A simple analogical model for the selection of optical activity and of the most efficient catalysts in the course of molecular evolution
p0204 A79-37957
BUZUNOV, V. A.
Characteristics of somatic and autonomic regulation during work of small muscle groups as a function of loading regime
p0276 A79-50653
BYCHKOV, V. P.
Distinctions referable to excretion of end products of protein metabolism in urine of man submitted to 182-day antiorthostatic hypokinesia
p0193 N79-23635
Effects on lipid metabolism in man of some factors that simulate space flight conditions
p0311 N79-33794
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
p0311 N79-33798
BYERS, S. O.
Comparison of plasma and urinary steroids in men with type A and type B behavior patterns
p0028 N79-11704

BYKHOVSKAIA, I. M.
Mechanics of the regulation of the respiratory system in man
p0160 A79-29258

BYNUM, G.
Increased survival in experimental dog heatstroke after reduction of gut flora
p0266 A79-47335

BYNUM, J. A.
Army Aviation Training - Research now and then
[SAE PAPER 781008] p0130 A79-25890

BYRD, L. D.
A tethering system for direct measurement of cardiovascular function in the caged baboon
p0200 A79-36576

BYSTROVA, A. G.
Third Symposium on Motion Sickness
p0313 N79-33814

C

CABARROU, P.
Compatibility test of oxygen exposures in the range of 2.2 to 2.8 bar absolute
[DLR-FB-78-10] p0280 N79-30925

CAHILL, M.-C.
Regression models of search time for color-coded information displays
p0209 A79-38359

CAILLE, E. J.
A description of the recent neuropsychological selection of pilots for land forces light aircraft
p0151 N79-19633

CAILLER, B. G.
Two primate biological facility module in Spacelab
[IAF PAPER 78-70] p0003 A79-11229

CAIRNS-SMITH, A. G.
Takeover mechanisms and early biochemical evolution
p0205 A79-37965

CALEB, B.
Increased survival in experimental dog heatstroke after reduction of gut flora
p0266 A79-47335

CALHOUN, G. L.
Control logic design criteria for multifunction switching devices
p0064 A79-18223

CALL, D. W.
Development of a specialized head/face protective device for test parachuting operations
p0045 A79-14437

CALVET, H.
Contribution to the theory of photopic vision: Retinal phenomena
[NASA-TM-75507] p0315 N79-33823

CALVIN, M.
Organic geochemical studies on kerogen precursors in recently deposited algal mats and oozes
p0001 A79-10419

CAMMEN, L. M.
Bacteria in a North Carolina salt marsh. Standing crop and importance in the decomposition of Spartina alterniflora
[PB-288816/2] p0153 N79-19668

CAMP, R. T., JR.
The effective acoustic environment of helicopter crewmen
p0152 N79-19645

CAMPBELL, G. W.
New developments in ultrasonic imaging of the chest and other body organs
[UCRL-80340-REV-1] p0018 N79-10735

CAMPBELL, J. E.
Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components
[NASA-CR-158627] p0197 N79-25705

CANDAS, V.
Human skin wettedness and evaporative efficiency of sweating
p0162 A79-29726
Effect of rate of change in skin temperature on local sweating rate
p0268 A79-47853

CANNON, M. W., JR.
Contrast sensation - A linear function of stimulus contrast
p0271 A79-49483

CAPP, M. P.
The development of a digital video subtraction system for intravenous angiography
p0294 A79-51033

CARAUX, D.
Pilot workload in the aircraft of the future
p0226 A79-40646

CARBONE, D.
Real-time computerized fluoroscopic cardiac imaging
p0294 A79-51035

CARDEN, J. L.
Systems integration in the development of controlled ecological life support systems
[AIAA PAPER 79-1406] p0187 A79-34842

CARDOSO, J. N.
A biogeochemical study of the Abu Dhabi algal mats - A simplified ecosystem
p0132 A79-26373

CARETTE, G.
Thermal sweat rate response to an acute short exposure at a simulated altitude of 4,600 m
p0102 A79-23474

CARGO, D.
Results of benthic studies at Calvert Cliffs
[PB-294261/3] p0261 N79-29788

CARL, E. R.
A hazard assessment method for the U.S. Army Microwave Radiation Protection Program
p0129 A79-25304

CARLISLE, B.
Effects of brief exposure of domestic fowl to very intense acceleration fields
p0127 A79-24631

CARMAN, H. K.
An investigation to determine the effect of physical conditioning upon fibrinolytic reactivity in normal young men
p0110 N79-16536

CARO, C. G.
Mass transport in arteries
p0247 N79-27848

CARO, P. W.
Simulator Training Requirements and Effectiveness Study /STRES/
p0063 A79-18216
The relationship between flight simulator motion and training requirements
p0267 A79-47766

CARPENTER, A.
Human factors. Speech communication
[PS-5/78] p0113 N79-16555

CARPENTER, M.
Intestinal transport of hexoses in the rat following chronic heat exposure
p0236 A79-43701

CARR, R. W.
Analysis of naval aviation head and neck injuries (1969-1978)
[AD-A057657] p0026 N79-11689
Evaluation of occupant protection devices and restraint systems
[PB-284299/5] p0053 N79-12713

CARRE, R.
Difficulties posed by left axis deviation in the evaluation of fliers, and their relations to the concept of left anterior hemiblock
p0029 N79-11714
Measuring systolic time intervals at rest and under stress by external methods. Advantages in the evaluation of fliers
p0030 N79-11717

CARRETTA, R.
Detection of coronary artery disease in apparently healthy, asymptomatic aircrew members using thallium-201 myocardial perfusion scintigraphy
p0029 N79-11712

CARRIKER, W.
Development of an electrical energy converter for driving left heart assist blood pumps
[PB-293510/4] p0241 N79-26780

CARTER, C. L.
Aortic blood flow velocity during exercise in man
p0216 N79-25710

CARTER, D. B.
The influence of various physiological responses on ratings of perceived exertion before and after training
p0194 N79-23649

CARTER, R. C.
Regression models of search time for color-coded information displays

p0209 A79-38359
CARTER, V. E.
Development of automated performance measures for
introductory air combat maneuvers
p0040 A79-13223
CASEY, S. M.
Lateral orientation and cerebral activation -
Considerations for information display
p0037 A79-13194
CASIDA, L. E., JR.
Effects of magnesium, calcium, and serum on
reversion of stable L-forms
p0131 A79-26140
Minute tubular forms in soil
p0297 A79-51698
Attachment to autoclaved soil of bacterial cells
from pure cultures of soil isolates
p0297 A79-51701
CASSOU, R.
Effects of high-LET neon /Ne-20/ particle
radiation on the brain, eyes and other head
structures of the pocket mouse - A histological
study
p0252 A79-44798
Space radiation dosimetry onboard COSMOS 936: US
portion of experiment K-206
p0023 N79-11677
CASSUTO, Y.
Circulatory response to arterial hyperoxia
p0221 A79-36048
CASTELLANET, M. J.
Predicting coronary artery disease with treadmill
stress testing Changes in R-wave amplitude
compared with ST segment depression
p0186 A79-34284
CASTINE, J. W.
Improved headgear for fixed wing Navy aircrewmen
p0184 A79-33641
CASTLE, B. L.
Computer program for calculation of oxygen uptake
[NASA-TM-78585]
p0174 N79-21741
CASTLE, G.
Computer program for calculation of oxygen uptake
[NASA-TM-78585]
p0174 N79-21741
CASTLEMAN, K. R.
COSMOS 936, experiment K-208: Spaceflight effects
on muscle fibers
p0024 N79-11679
Automated clinical system for chromosome analysis
[NASA-CASE-NPO-13913-1]
p0050 N79-12694
CATTROLL, S. W.
Evaluation of British and Canadian conductive
rubber heating elements for handwear:
Preliminary report
[AD-A052826]
p0093 N79-15637
CAVALLI, D.
Discrete-time pilot model
p0088 N79-15601
Discrete time modeling of heavy transport plane
pilot behavior
p0118 N79-17508
CERRETELLI, P.
Oxygen affinity of blood in altitude Sherpas
p0268 A79-47854
CHAHINE, R. A.
The evolutionary pattern of exercise-induced ST
segment depression
p0251 A79-44166
CHAMBERS, J. A.
Development of an electrical energy converter for
circulatory device
[PB-286738/0]
p0111 N79-16545
CHAMBERS, W. S.
AWAVS, a research facility for defining flight
trainer visual system requirements
p0062 A79-18207
CHANG, S.
Prebiotic nucleotide oligomerization in a
fluctuating environment - Effects of kaolinite
and cyanamide
p0162 A79-29938
CHANG, T.-C.
Studies on thermoregulation in the rat
p0162 A79-30019
CHAPEL, F. G.
Extended duration orbiter life support system
options
[ASME PAPER 78-ENAS-31]
p0008 A79-12580
CHAPMAN, D. K.
Importance of temperature control for NEFLEX, a
biological experiment for Spacelab 1
p0230 A79-41716
CHAPMAN, P. K.
Health maintenance and health surveillance
considerations for an SPS space construction
base community
[AAS PAPER 78-176]
p0099 A79-21273
CHAPMAN, R. W.
The effects of brain ischemia on the control of
breathing in unanesthetized goats
p0190 N79-23624
CHAPPELLE, E. W.
Determination of antimicrobial susceptibilities on
infected urines without isolation
[NASA-CASE-GSC-12046-1]
p0076 N79-14750
CHATTERJEE, I.
Electromagnetic absorption in a multilayered model
of man
p0226 A79-40650
CHATTERJEE, P. C.
Effects of partial sleep deprivation on
psychological performance and behaviour
p0200 A79-37130
Design, fabrication and utility of a flight
oriented performance test
p0271 A79-49728
Comparative study of hypoxia and other
non-invasive stress tests for evaluation of
ischaemic heart disease
p0272 A79-49731
CHATTERJI, J. C.
Electrocardiographic abnormalities in Air Force
personnel
p0182 A79-33191
Comparative study of hypoxia and other
non-invasive stress tests for evaluation of
ischaemic heart disease
p0272 A79-49731
CHELLAPPA, V.
Human error accidents - Some case studies
p0183 A79-33193
CHEN, W.
Visually estimating workpiece pose in a robot hand
using the feature points method
p0269 A79-48018
CHEN, S.-H.
Accuracy of RGD approximation for computing light
scattering properties of diffusing and motile
bacteria
p0233 A79-42448
CHEO, P. C.
Mechanism of plant virus inactivation in soil
injected with municipal wastewater and treatment
plant sludges
[PB-287012/9]
p0107 N79-16513
CHEREDNICHENKO, O. B.
Nonlinear optical susceptibility of the human eye
to IR radiation in the 800 to 1355 micron range
p0188 A79-35363
Nonlinear perception of infrared radiation in the
800-1355 nm range with human eye
p0301 A79-53163
CHERENKOVA, L. V.
Role of the frontal associative region of the
cortex in the activity of the auditory and
visual sensory systems
p0043 A79-14371
CHEREPAKHIN, M. A.
Effects of physical conditioning and electric
stimulation on metabolic processes in the soleus
muscle and structure thereof in hypokinetic man
p0192 N79-23634
CHERKASHINA, N. G.
Functional outcomes of prosthetic cardiac valve
replacement
p0076 N79-14746
CHERKASOV, O. A.
A method of evaluating the pupillary reaction to
vestibular stimuli
p0016 N79-10717
CHERMNYKH, P. A.
Effect of infra-low-frequency magnetic fields on
cell division
p0173 N79-20739
CHENN, Y.-F.
Studies on thermoregulation in the rat
p0162 A79-30019

CHERNOFF, B.
Effects of uncertainty on manual tracking performance
p0086 N79-15592

CHERNUKH, A. M.
A complex system for planning scientific medical research
p0078 N79-14761
Problem-oriented program approach to planning and management of medicine
p0078 N79-14762

CHERNYAKOV, G. M.
Dynamics of impairment of pilot performance in the presence of hypoxia
p0073 N79-14724

CHERNYAKOV, I. N.
Probability of caisson disease while wearing a space suit when exiting from a spacecraft with an atmosphere close to that of earth
p0244 N79-27826
Pneumotachographic distinctions of external respiration in man in the presence of excess intrapulmonary pressure on ground level and at high altitudes
p0245 N79-27827

CHESSON, R. C.
Spacelab's payload specialists, their selection and duties on-board
p0226 A79-40720

CHESTUKHIN, V. V.
Central and cerebral hemodynamics and metabolism of the healthy man during head-down tilting
p0127 A79-24634
Effect of brief head-down hypokinesia on pressure in various parts of the healthy man's cardiovascular system
p0245 N79-27831
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
p0311 N79-33797

CHEUNG, A. Y.
The Physical Basis of Electromagnetic Interactions with Biological Systems
[HEW-PUB-FDA-78-8055] p0081 N79-15551
Electric field measurements within biological media
p0083 N79-15562

CHEVALERAUD, J.-P.
Sensory illusions - The ophthalmologist's point of view
p0255 A79-46595

CHEVALIER, P. A.
Distribution of regional volumes and ventilation in excised canine lobes
p0236 A79-43703

CHIANTA, M. A.
Heat transfer principles in personal protection applications
p0043 A79-14405
Thermal conduction effects in human skin
p0265 A79-47329
Thermal conduction effects in human skin. 1: Experimental data acquisition
[AD-A068479] p0259 N79-28871
Thermal conduction effects in human skin. 3: Influence of epidermal thickness and exposure time
[AD-A068481] p0259 N79-28872

CHIEL, H. J.
Low tryptophan diet decreases brain serotonin and alters response to apomorphine
p0226 A79-40672

CHIGOLEV, V. V.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
p0303 A79-53486

CHILDS, J. M.
Development of an objective grading system along with procedures and aids for its effective implementation in flight
[AD-A071106] p0318 N79-33846

CHILES, E. D.
Time-sharing ability in complex performance: An expanded replication
[FAA-AM-78-33] p0145 N79-18591

CHILES, W. D.
Effects of altitude and two decongestant-antihistamine preparations on physiological functions and performance
p0127 A79-24635
Measurement and scaling of workload in complex performance
p0164 A79-30659
The measurement and scaling of workload in complex performance
[FAA-AM-78-34] p0125 N79-17558
Laboratory performance during acute intoxication and hangover
[AD-A069373] p0314 N79-33820

CHILLAG, N.
Tracking in two dimensions as a function of dimension priorities and tracking difficulty
p0036 A79-13193

CHIOU, W. C.
Operational consideration of AN/PVS-5 night vision goggles for helicopter night flight
p0152 N79-19649

CHISUM, G. T.
Laser eye protection for flight personnel
p0135 A79-27555
Laser eye protection for flight personnel, volume 1
[AD-A057417] p0034 N79-11747

CHITORE, D. S.
Heat transfer and temperature distribution in the human body
p0041 A79-13612
Simulation and control of a human temperature regulation system
p0041 A79-13613

CHIZHOV, S. V.
Utilization of the wastes of vital activity
[NASA-TM-75410] p0177 N79-21768
Microflora of water reclaimed in sealed compartments
p0193 N79-23638
Effects of different values of urine pH during long-term storage on microflora composition
p0194 N79-23643
Quality of water reclaimed from urine as related to pH of initial product
p0313 N79-33807

CHOU, C. K.
Microwave and RF dosimetry
p0083 N79-15561

CHOUDHURY, A. R.
Delayed effects of alcohol ingestion on + Gz tolerance
p0272 A79-49730

CHRIST, R. E.
Four years of color research for visual displays
p0039 A79-13210

CHRISTISON, G. W.
Predicting coronary artery disease with treadmill stress testing Changes in R-wave amplitude compared with ST segment depression
p0186 A79-34284

CHU, Y. Y.
Pilot decision making in a computer-aided flight management situation
p0093 N79-15633

CHUI, L. A.
COSMOS 936, experiment K-208: Spaceflight effects on muscle fibers
p0024 N79-11679

CHURCH, N.
Time-sharing is not a unitary ability
[AD-A056632] p0019 N79-10739

CHURCHILL, E.
Anthropometric source book. Volume 1: Anthropometry for designers
[NASA-RP-1024] p0032 N79-11734
Statistical considerations in man-machine designs
p0033 N79-11743

CHURCHILL, T.
Editing procedure for anthropometric survey data
[AD-A060393] p0093 N79-15639
Analysis of body size measurements for US Navy women's clothing and pattern design
[AD-A068600] p0290 N79-31939

CIAVARELLI, A. P.
Air Combat Maneuvering Range /ACMR/ - Has operational performance measurement entered a Golden Age
p0064 A79-18221

CLARK, B.
Vestibular influences on other sensory and motor processes
p0094 N79-15893

CLARK, B. C.
Solar-driven chemical energy source for a Martian

biota
p0254 A79-46464

CLARK, C. E.
Helmet weight simulator
[NASA-CASE-LAR-12320-1] p0223 N79-25761

CLARK, N. B.
Multiple tracer diffusion methods for the evaluation of cerebral capillary permeability and capillary blood flow rate in the rat
p0169 N79-20712

CLARK, S. P.
A technology assessment of vegetable substitutes for animal protein in human food. Volume 1: The study
[PB-284681/4] p0059 N79-13719
A technology assessment of vegetable substitutes for animal protein in human food. Volume 2: Appendices
[PB-284682/2] p0059 N79-13720

CLARKE, L. K.
Cardiac changes during behavioral stress in dogs
p0200 A79-36575

CLARKE, M. J.
A study of the available evidence on duration effects on comfort and task proficiency under vibration
p0254 A79-46399

CLAXTON, L.
Biomedical data validation through an on-line computer system
[PB-285249/9] p0057 N79-13700

CLEARY, S. F.
Survey of microwave and radiofrequency biological effects and mechanisms
p0082 N79-15552

CLEGG, J. S.
Interfacial and intracellular water: Expected anomalies in dielectric properties
p0082 N79-15558

CLELAND, E. L.
Gas diffusion liquid storage bag and method of use for storing blood
[NASA-CASE-NPO-13930-1] p0076 N79-14749

CLEMENT, J.
Follow-up and transversal study of vital capacity and FEV sub values among personnel of the Belgian Army forces
p0028 N79-11706

CLEVENSON, S. A.
Discomfort criteria for single-axis vibrations
[NASA-TP-1422] p0196 N79-23662
Effect of helicopter noise on passenger annoyance
[NASA-TM-80106] p0241 N79-26782

CLOUGHERTY, E. V.
Protective clothing and equipment for firefighters: Current standards and practices
[PB-286990/7] p0113 N79-16557

COATES, G.
Changes in lung volume, lung density, and distribution of ventilation during hypobaric decompression
p0185 A79-33806

COBLENTZ, A.
The use of biostereometry in helicopter cockpit design
p0150 N79-19629

COCHRANE, L. A.
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
p0266 A79-47334

COCKRELL, J. T.
Evaluation of four target-identification training techniques
[AD-A061175] p0123 N79-17548

COECKELENBERGH, Y.
An approach to the origin of self-replicating system. I - Intermolecular interactions
p0204 A79-37948

COEHLO, B. A.
Aeromedical aspects of flying training with special reference to instructor pupil relationship
p0201 A79-37139

COFER, C. H.
Improved airline-type supplied-air plastic suit
[DPSPU-78-30-12] p0282 N79-30943

COGAN, A. I.
The relationship between the apparent vertical and the vertical horopter
p0225 A79-40186

COHEEN, S. C.
Raman spectroscopy of biological membranes and other biological systems
p0141 N79-18559

COHEN, G. H.
Using color substitution pupil response to expose chromatic mechanisms
p0265 A79-47116

COHEN, J.
Studies of metabolism, function and mechanism of destruction of red cells
[AD-A070240] p0315 N79-33828

COHEN, M. V.
Effect of exercise on collateral development in dogs with normal coronary arteries
p0067 A79-18960

COLAVITA, F. B.
A further investigation of visual dominance
p0186 A79-33949

COLE, P.
Development of techniques to enhance man/machine communication
[NASA-CR-157886] p0032 N79-11730

COLE, R.
Human factors design criteria for transilluminated displays
p0036 A79-13187

COLER, C. R.
Speech as a pilot input medium
p0119 N79-17519

COLIN, J.
The physiologist's view of sensory illusions
p0255 A79-46597
Paul Bert
[NASA-TM-75599] p0055 N79-13687

COLLEWIJN, H.
Optokinetic reactions in man elicited by localized retinal motion stimuli
p0304 A79-54251

COLLIGNON, R.
Risks from various products used in paint spraying
[BLL-RTS-11499] p0142 N79-18569

COLLINS, W. E.
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
p0273 A79-49984
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
[AD-A069375] p0314 N79-33819
Laboratory performance during acute intoxication and hangover
[AD-A069373] p0314 N79-33820

COLLURA, T. F.
Synchronous brain evoked potential correlates of directed attention in humans
p0110 N79-16537

COLLYER, S. C.
AWAVS, a research facility for defining flight trainer visual system requirements
p0062 A79-18207

COLOMBO, G. V.
Microbial Check Valve for Shuttle
[ASME PAPER 78-ENAS-27] p0008 A79-12576
Water system microbial check valve development
[NASA-CR-151843] p0032 N79-11733

COMBS, S. P.
Correlation of mechanism of extremity injury and aerodynamic factors in ejections from F-4 aircraft
p0284 N79-31904

COMPANION, M. A.
Task taxonomy - Two ignored issues
p0039 A79-13212

COMPTON, J. R.
The role of physical examinations and education in prospective medicine
p0026 N79-11694

CONVERTINO, V. A.
Effect of sodium and calcium ingestion on thermoregulation during exercise in man
p0163 A79-30624

COOHILL, T. P.
Wavelength dependence of ultraviolet-enhanced reactivation and induction of mammalian viruses
[HEW-PUB-FDA-78-8059] p0084 N79-15575

COOKE, J. N. C.
Beta-adrenoceptor antagonists: Central effects
p0027 N79-11702

CORBETT, R.
Cosmic ray effects on the eyes of rats flown on

COSMOS 782
p0022 N79-11669
Cosmic ray effects on the eyes of stationary and centrifuged rats flown on COSMOS 936, experiment K-207
p0024 N79-11678

CORBIN, D.
Isokinetic exercise: A review of the literature
[NASA-CR-151841] p0051 N79-12695

CORBIN, S. D.
Telemetry of intracranial pressure
p0227 A79-41400

CORSO, G. M.
Task taxonomy - Two ignored issues
p0039 A79-13212

COSTIN, P. A. T.
Value and limits of the electrocardiogram in aviation medicine evaluations
p0048 A79-15495

COTE, D. O.
Augmented feedback in adaptive motor skill training
p0062 A79-18208

COTTON, J. C.
Universal airborne approach to pilot performance assessment
[SAE PAPER 781009] p0130 A79-25891

COWAN, M. J.
Clinical importance of directional statistics for electrocardiographic differentiation of smoking habits
p0098 A79-21246

COWGILL, D. W.
Evaluation of the Sierra Engineering Company lightweight helmet
[AD-A061799] p0157 N79-19689

COX, A.
Application of Fresnel lenses to virtual image display
p0139 A79-28173

COX, D. C.
Compensation for transport delays produced by computer image generation systems
[AD-A056720] p0019 N79-10738

COX, R. N.
The human micro-environment
p0248 N79-27851

CRAIG, A.
Discrimination, temperature, and time of day
p0161 A79-29718
Nonparametric measures of sensory efficiency for sustained monitoring tasks
p0161 A79-29719

CRAIG, D. W.
Synthetic aperture radar operator tactical target acquisition research
p0037 A79-13202

CRAMPTON, G. H.
Motion sickness in cats - A symptom rating scale used in laboratory and flight tests
p0202 A79-37711

CRANDALL, E. D.
Analysis of Pco2 differences during rebreathing due to slow pH equilibration in blood
p0067 A79-18958

CRANE, C. R.
Reactions of methamidophos with mammalian cholinesterases
[AD-A058683/4] p0051 N79-12698

CRAWFORD, B. M.
Multipurpose digital switching and flight control workload
[AD-A069606] p0281 N79-30934

CRAWFORD, D. W.
Apparatus and method of inserting a microelectrode in body tissue or the like using vibration means
[NASA-CASE-NPO-13910-1] p0246 N79-27836

CREAN, B. W.
Simulator Training Requirements and Effectiveness Study /STRES/
p0063 A79-18216

CRIBORN, C. O.
Effect on mice of microwaves in the non-thermal intensity region. Respiration, rectal temperature and mental reaction
[FOA-C-54021-H2(H6)] p0120 N79-17523

CRISP, C.
Effect of phosphorus supply on algal biomass in a turbid Missouri Reservoir
[PB-293183/0] p0243 N79-27816

CRISP, N.
Effect of phosphorus supply on algal biomass in a turbid Missouri Reservoir
[PB-293183/0] p0243 N79-27816

CROCKER, T. T.
Direct exposure of monolayers of mammalian cells to airborne pollutants in a unique culture system
[AD-A069822] p0283 N79-31897

CROCKETT, P. W.
Biocompatible materials, volume 2. A bibliography with abstracts
[NTIS/PS-78/0675/5] p0019 N79-10736
Biological effects of laser radiation, volume 1. A bibliography with abstracts
[NTIS/PS-79/0019/4] p0176 N79-21760

CROCKETT, S.
Mechanisms of retinal damage from chronic laser radiation: Thresholds and mechanisms
[AD-A058449] p0056 N79-13698

CROSBY, E. C.
Ruptured arteriovenous anomaly in a former woman astronaut candidate
p0128 A79-24640

CROSTON, R. C.
User's instructions for the cardiovascular Walters model
[NASA-CR-160204] p0217 N79-25721
User's instructions for the high speed version of the cardiovascular exercise model
[NASA-CR-160211] p0218 N79-25724

CROW, R. M.
Pattern of heat loss from a subject wearing CF temperate-climate combat clothing
[AD-A057746] p0093 N79-15636

CRUMMY, A.
Real-time computerized fluoroscopic cardiac imaging
p0294 A79-51035

CULLER, V. H.
Multifunctional transducer
[NASA-CASE-NPO-14329-1] p0219 N79-25737

CUMMINS, J.
Alterations in erythrocyte survival parameters in rats after 19.5 days aboard COSMOS 782
p0021 N79-11663

CUMMINS, K. L.
Estimation of nerve-bundle conduction
p0154 N79-19672

CUNDICK, R. M., JR.
Clinical comparisons of pressure pulse and indicator dilution methods of determining cardiac output
p0050 N79-12690

CUNNINGHAM, D. A.
Effects of endurance training on left ventricular dimensions in healthy men
p0237 A79-43706

CUNNINGHAM, F.
Effect of phosphorus supply on algal biomass in a turbid Missouri Reservoir
[PB-293183/0] p0243 N79-27816

CUNNINGHAM, R. T.
Robotic vision
p0187 A79-34984

CURRAN, P. M.
Human factor engineering test and evaluation of the US Navy LAMPS helicopter system
p0151 N79-19632

CURRIE, J. S.
Cerebral accident subsequent to G-force loading - A case report
p0165 A79-30664

CURRIER, G.
Mechanisms of retinal damage from chronic laser radiation: Thresholds and mechanisms
[AD-A058449] p0056 N79-13698

CURRY, R. E.
The human as a detector of changes in variance and bandwidth
p0117 N79-17496

CURRY, R. F.
Sensory mechanism modeling
[AD-A069439] p0262 N79-29796

CURTIS, J. T.
Blood pressure variability of the individual in orthostatic testing
p0265 A79-47328
Distinguishing borderline hypertensives from normotensives: A clinical study of 300 aircrewmen
p0027 N79-11699

CVETKOVIC, V. S.
Biped stability considerations with vestibular models
p0066 A79-18287
CYGNAROWICZ, T. A.
System for and method of freezing biological tissue
[NASA-CASE-GSC-12173-1] p0013 N79-10694
CYMERMAN, A.
Evidence for increased intrathoracic fluid volume in man at high altitude
p0305 A79-54266
Evidence for increased intrathoracic fluid volume in man at high altitude
[AD-A065333] p0220 N79-25743
CYNADER, M.
The visual perception of motion in depth
p0210 A79-39087
CYRUS, M. L.
Compensation for transport delays produced by computer image generation systems
[AD-A056720] p0019 N79-10738
CZEGE, J.
Quantitative aspects of the effect of weak interaction during chemical evolution
p0204 A79-37959
CZEISLER, C. A.
Human circadian physiology: Internal organization of temperature, sleep-wake and neuroendocrine rhythms monitored in an environment free of time cues
p0154 N79-19670
CZELUSNIAK, J.
On investigating the statistical properties of the populous path algorithm by computer simulation - Counterconclusions to those of Tateno and Nei
p0253 A79-45640
CZERWINSKI, M. G.
Application of pattern recognition to ultrasonic tissue characterization
p0194 N79-23647

D

DACANAY, S.
Regional heat loss in resting man during immersion in 25.2 C water
p0202 A79-37709
DACCARDI, R. J.
Modeling and analysis of man-machine interface information
[AD-A063515] p0178 N79-21772
DAHL, A. O.
Serendipitous solution to the problem of culturing Arabidopsis plants in sealed containers for spaceflights of long duration
p0229 A79-41704
DALKEY, N.
Human health damages from mobile source air pollution: A delphi method, volume 1
[PB-288319/7] p0145 N79-18585
Human health damages from mobile source air pollution: Additional Delphi data analysis, volume 2
[PB-288320/5] p0145 N79-18586
DAMEN, A. A. H.
Observability of electrical heart activity studied with singular value decomposition
[TH-78-E-81] p0144 N79-18584
DAMOS, D.
Development and transfer of timesharing skills
p0035 A79-13184
A quasi-linear control theory analysis of timesharing skills
p0115 N79-17479
DANA, W.
Joint testing of the RAF high altitude protective ensemble
p0044 A79-14434
DANA, W. J.
Flight test evaluation of an RAF high altitude partial pressure protective assembly
[NASA-TM-72864] p0214 N79-24654
DANCER, A.
Startle reactions to simulated sonic booms - Influence of habituation, boom level and background noise
p0097 A79-20502
DANIELS, S.
Detection of bubbles in decompression sickness
p0041 A79-13573
DANIELS, W. L.
Physiological effects of a military training program on males and females
[AD-A062936] p0220 N79-25744
DANILOV, L. N.
The role of lesser circulation hemodynamic changes in pulmonary gas exchange
p0300 A79-53066
DANNEBURG, E.
A study of pilot/observed interaction in aligning a helicopter with a target
[DLR-FB-79-04] p0283 N79-30945
DANNHAUS, D. M.
Seating, console, and workplace design - Integration of literature and accommodation model
p0036 A79-13189
DARCEY, T. M.
Methods for localization of electrical sources in the human brain and applications to the visual system
p0314 N79-33815
DARK, S. J.
Characteristics of medically disqualified airman applicants in calendar years 1975 and 1976
[FAA-AM-78-25] p0144 N79-18582
DARK, V. J.
Short-term memory factors in ground controller/pilot communication
p0181 A79-32626
DAROFF, R. B.
Saccadic velocity characteristics - Intrinsic variability and fatigue
p0165 A79-30663
DAS, B. K.
Electrocardiographic abnormalities in Air Force personnel
p0182 A79-33191
Comparative study of hypoxia and other non-invasive stress tests for evaluation of ischaemic heart disease
p0272 A79-49731
DASLER, R.
Relationship between thermogenic drinking and plasma renin activity in the rat
p0235 A79-43211
DAUNTON, N. G.
Vestibular Function Research aboard Spacelab
[ASME PAPER 78-ENAS-25] p0007 A79-12574
Motion sickness in cats - A symptom rating scale used in laboratory and flight tests
p0202 A79-37711
DAVID, E.
Bilateral and interhemispheric asymmetry of acoustic evoked potentials during monoaural acoustic stimulation
p0159 A79-28735
DAVIES, C. T. M.
The effects of different levels of heat production induced by diathermy and eccentric work on thermoregulation during exercise at a given skin temperature
p0128 A79-24698
Influence of skin temperature on sweating and aerobic performance during severe work
p0305 A79-54268
DAVIES, L. A.
Development of an electrical energy converter for circulatory device
[PB-286738/0] p0111 N79-16545
DAVIS, A. W.
Characteristics of medically disqualified airman applicants in calendar years 1975 and 1976
[FAA-AM-78-25] p0144 N79-18582
DAVIS, A. W., JR.
Cardiorespiratory assessment of decongestant-antihistamine effects on altitude, +Gz, and fatigue tolerances
p0127 A79-24628
DAVIS, J. A.
Anaerobic threshold alterations caused by endurance training in middle-aged men
p0227 A79-41184
DAVIS, J. G.
A sample volume tracking unit for pulsed Doppler echocardiography
p0200 A79-36869
DAVIS, K.
Adaptive estimation of information values in

continuous decision making and control of advanced aircraft
[AD-A069741] p0282 N79-30941

DAVIS, S. H.
The dependence of the CO2 removal efficiency of LiOH on humidity and mesh size
[ASME PAPER 78-ENAS-5] p0006 A79-12554

DAVITASHVILI, O. Z.
Bilateral and interhemispheric asymmetry of acoustic evoked potentials during monoaural acoustic stimulation
p0159 A79-28735

DAVNICHENKO, L. S.
Role of n-aminobenzoic acid in repairing UV and gamma radiation damage
p0301 A79-53211

DAVYDOV, B. I.
The time parameter in exposures to microwave radiation
p0105 A79-24419
Time parameter in microwave irradiation
p0277 A79-50694

DAVYDOV, G. A.
Energy expenditures of man during long exposure to a periodically changing atmosphere
p0312 N79-33799

DAVYDOV, I. V.
Psychological training - One of the most important factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] p0303 A79-53426

DAVYDOVA, N. A.
Effects of LBNP on catecholamines and adrenal cortex
p0110 N79-16532

DAWSON, C. A.
Lung inflation and longitudinal distribution of pulmonary vascular resistance during hypoxia
p0277 A79-50905

DAY, C. N.
AAA gunnermodel based on observer theory
p0087 N79-15594

DAYHOFF
Cosmic ray effects on the eyes of stationary and centrifuged rats flown on COSMOS 936, experiment K-207
p0024 N79-11678

DAYHOFF, M. O.
The point mutation process in proteins
p0205 A79-37972
Evolution of early life inferred from protein and ribonucleic acid sequences
p0206 A79-37980

DE LEO, R.
On the measurement of hazardous e.m. fields radiated through an aperture
p0233 A79-42496

DE VRIES, H. A.
Time course of O2-pulse during various tests of aerobic power
p0297 A79-52024

DE WAARD, J.
Spacelab's payload specialists, their selection and duties on-board
p0226 A79-40720

DEAL, D. W.
Modeling heat transfer through human skin subjected to high external temperatures
p0102 A79-23782

DEAL, P. H.
Characterization of a novel extremely alkalophilic bacterium
p0004 A79-11950

DEBONIS, J. N.
Visual workload of the copilot/navigator during terrain flight
p0038 A79-13206

DECKER, P.
Evolution in open systems - Acquisition and conservation of information in bioids
p0207 A79-37987
Inverse assimilation - A general principle of evolution of planetary surfaces
p0207 A79-37989

DEDECKERE, E. A. M.
Influences of dietary fats on coronary flow rate and left ventricular work of the isolated rat heart
p0239 N79-26766
Effects of dietary fats on the coronary flow rate and the left ventricular function of the isolated rat heart
p0239 N79-26767

DEGROOT, S.
Human factors aspects of low light level television and forward looking infrared sensor displays. 1: A feasibility study of scaled subjective complexity of still scenes applied to computer image generation
[AD-A058938] p0058 N79-13715

DEGTIAR, U. N.
The effect of microwave fields on muscle oxygen pressure and temperature in animals previously adapted to hypoxia
p0296 A79-51116

DEGTYAREV, V. A.
Studies of hemodynamics and phase structure of cardiac cycle in the crew of Salyut-4
p0072 N79-14718
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819
Studies of venous circulation in the crew of the Salyut-5 orbital station
p0310 N79-33791

DEHART, R. L.
Evaluation of cardiac risk and subject response to ameliorative efforts
p0031 N79-11723

DEKLEVA, N.
The comparative study of metabolism changes dynamics during hypoxia and hyperoxia in mice lungs
[IAF PAPER 78-51] p0002 A79-11221
Biomagnetism and artificial magnetic stimulation of living structures
[IAF PAPER 78-52] p0002 A79-11222

DEL VECCHIO, R. J.
Physiological aspects of flight
p0134 A79-27298

DELAHAYE, R. P.
Radiological examination of the Rachis and fitness for employment as a helicopter pilot
p0151 N79-19634
Vertebral pains in helicopter pilots
p0153 N79-19656

DELEMOS, S.
Time-sharing is not a unitary ability
[AD-A056632] p0019 N79-10739

DELLOSSO, L. F.
Saccadic velocity characteristics - Intrinsic variability and fatigue
p0165 A79-30663

DELOISON, Y.
The use of biostereometry in helicopter cockpit design
p0150 N79-19629

DELPOUX, M.
Radiobiological investigations in Cosmos 782 space flight /Biobloc SF1 experiment/
p0006 A79-12518

DELUCIEN, A. G.
Workload and the certification of helicopters for IFR operation
[AD-A072758] p0318 N79-33850

DEMIDA, B. F.
Rehabilitation measures used to restore physical fitness of man after long-term restriction of movement
p0110 N79-16534

DEMIN, N. N.
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
p0299 A79-52475

DEMING, J. W.
Determination of antimicrobial susceptibilities on infected urines without isolation
[NASA-CASE-GSC-12046-1] p0076 N79-14750

DEMPSEY, T. K.
Discomfort criteria for single-axis vibrations
[NASA-TP-1422] p0196 N79-23662

DENNISTON, J. C.
Evidence for increased intrathoracic fluid volume in man at high altitude
p0305 A79-54266
Left Anterior Hemiblock (LAH): Diagnosis and aeromedical risk
p0029 N79-11715

The interaction of carbon monoxide and altitude on aviator performance: Pathophysiology of exposure to carbon monoxide
[AD-A055212] p0056 N79-13694

DEPAOLA, D. P.
The combined effects of pulsed magnetic radiation (diapulse) and chemotherapy on tumor bearing mice. The measurement of rodent palatal explants as a device for measurement of the biologic effects of nonionic radiation (EMR)
p0018 N79-10733

DEROCHER, W. L., JR.
Computer aided control of a mechanical arm
p0275 A79-50334

DEROSHIA, C. W.
Comparison of circadian rhythms in male and female humans
p0004 A79-11947

DESOUSA, C.
Intelligence
p0095 N79-15896

DESTEIGUER, D.
The objective evaluation of aircrew protective breathing equipment. III - Improved types of mask/goggles combinations. IV - Fullface masks and hoods suitable for flight attendant use
p0184 A79-33638

DETERING, F.
Mechanics of breathing during graded exercise measured with the bodyplethysmograph
p0029 N79-11709

DEUTSCH, S.
Life sciences in the Shuttle era
[ASME PAPER 78-ENAS-34] p0008 A79-12582
BIOSPEX: Biological space experiments, a compendium of life sciences experiments carried on US spacecraft
[NASA-TM-58217] p0261 N79-29784

DEVER, J.
Development of an electrical energy converter for driving left heart assist blood pumps
[PB-293510/4] p0241 N79-26780

DEVINCENZI, D. L.
Planetary protection guidelines for Outer Planet missions
p0005 A79-12511

DHAN, S. K.
Influence of Beta-Blockade on asymptomatic ST-T wave changes - A follow up study
p0201 A79-37137

DIDIER, A.
The electrocardiogram recorded by telemetry during a parachute jump, compared to a trace during stress tests - A preliminary study of 29 cases
p0256 A79-46600
Difficulties posed by left axis deviation in the evaluation of fliers, and their relations to the concept of left anterior hemiblock
p0029 N79-11714

DIDNER, R. S.
Perceptual delay - A consequence of metacontrast and apparent motion
p0035 A79-13183

DIECKHUES, B.
The physiological significance of light for human beings
[RAE-LIB-TRANS-1976] p0077 N79-14757

DIETERLY, D. L.
Team performance - A model for research
p0065 A79-18227

DIETZ, A.
The significance of rhythm disturbances in asymptomatic persons
p0027 N79-11698

DILLARD, C. J.
Effects of exercise, vitamin E, and ozone on pulmonary function and lipid peroxidation
p0067 A79-18965

DIMANCESCU, M. D.
Coma recovery
p0094 N79-15891

DINABURG, A. D.
The role of the neurohormone system of the hypothalamus in physiology and pathology
p0251 A79-43835

DINNAR, U.
Bio-heat transfer processes, for human thermoregulatory and circulatory characteristics measurements
p0304 A79-53536

DINTENFASS, L.
Aggregation of red cells and blood viscosity as models of materials experimentation in the space environment
[AIAA PAPER 79-0310] p0069 A79-19664

DINYAK, G. S.
Decreased activity of palladium catalyst during processing of excreta
p0016 N79-10716

DIVOR, A. R.
Identification of a tripeptidyl aminopeptidase in the anterior pituitary gland - Effect on the chemical and biological properties of rat and bovine growth hormones
p0069 A79-19449

DMITRIEV, V. G.
Nonlinear optical susceptibility of the human eye to IR radiation in the 800 to 1355 micron range
p0188 A79-35363
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
p0301 A79-53163

DOBLAR, D. D.
A study of cerebral blood flow in the goat. A. Correlations between the ventilatory and cerebrovascular responses to carbon monoxide inhalation. B. The dynamics of the cerebral blood flow response to hypoxia by frequency response analysis
p0107 N79-16510

DOBRONRAVOVA, I. S.
Mechanism for the regulation of human posture during movements of the foot
p0276 A79-50651

DODSON, D. W.
Man/terminal interaction evaluation of computer operating system command and control service concepts
p0064 A79-18224

DOEBBER, T. W.
Identification of a tripeptidyl aminopeptidase in the anterior pituitary gland - Effect on the chemical and biological properties of rat and bovine growth hormones
p0069 A79-19449

DOERING, B.
Analytical methods for biotechnological design of man machine systems: Work on system ergonomy
[FB-28] p0242 N79-26787

DOERSCHUK, P. C.
Microprocessor: Based prosthetic control
[PB-286652/3] p0113 N79-16559

DOLOMAN, L. B.
Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics
p0296 A79-51118

DOLY, M.
Mechanism of the formation of phosphenes by X-rays
p0006 A79-12516

DONAN, G.
Intelligence
p0095 N79-15896

DONAN, J.
Intelligence
p0095 N79-15896

DONCHIN, E.
The event related cortical potential as an index of task workload
p0038 A79-13208

DONGES, E.
The human operator in the control system: Linear models
p0132 A79-26356
A control theoretic model of driver steering behavior
p0116 N79-17491
A two level model of human steering behavior in a motor vehicle
[FB-27] p0197 N79-24657

DONINA, Z. A.
Toxicity of oxygen mixed with helium
p0245 N79-27829

DONNELL, M. L.
System operability - Concept and measurement in test and evaluation
p0062 A79-18204

DORFMAN, P. W.
Speed and load stress as determinants of performance in a time sharing task
p0068 A79-18999

DOROFEEV, G. I.
Cyclic nucleotides and adaptation of the organism
p0133 A79-26500

DOROKHOVA, B. R.
Effects of hyperhydration on human endurance of orthostatic and LBNP tests
p0072 N79-14721
Fluid-electrolyte metabolism in the crew of Salyut-4
p0311 N79-33792

DOROSHEV, V. G.
Studies of hemodynamics and phase structure of cardiac cycle in the crew of Salyut-4
p0072 N79-14718

DOST, F. N.
Metabolism of hydrazine
[AD-A062251] p0169 N79-20716

DOTY, K. L.
Computer augmented manual control of remote manipulators
p0269 A79-48019

DOUCHA, J.
Experiment Chlorella 1 on board of Salyut 6
[IAF PAPER 78-53] p0003 A79-11223

DOWD, P. J.
Tracking-task performance during heat stress simulating cockpit conditions in high-performance aircraft
p0236 A79-43675

DOWNING, J.
Radar observation of insects: Mosquitoes
p0148 N79-19600

DOYLE, R. L.
Acute toxicity of a number of chemicals of interest to the Air Force
[AD-A067313] p0220 N79-25742

DRAECK, P. N.
Early diagnosis for decompression sickness. Changes in the blood found shortly after decompression. Part 2: Experiments on rats
[NBL-1978-7] p0120 N79-17524

DRAKE, G. A.
A preliminary toxicological study of silastic 386 foam elastomer: catalyst
[LA-7366-MS] p0071 N79-14714

DRESSEL, J. D.
The effects of ambient illumination, aircraft velocity and feedback on absolute distance judgments during simulated night nap-of-the-earth flight
p0038 A79-13204

DRIGO, Y. A.
Utilization of the wastes of vital activity
[NASA-TM-75410] p0177 N79-21768

DRINKWATER, B. L.
Response of women mountaineers to maximal exercise during hypoxia
p0234 A79-43201

DRONIOU, J.
Mitral prolapse and acceleration
p0103 A79-23951
Conduction difficulties of vagal origin in flight personnel - Significance of intrathoracic data on the bundle of His
p0103 A79-23955
Pneumothorax and flight personnel
p0103 A79-23956
Detection and supervision of obstructed respiratory flow in fliers. Advantages of debit-volume graphs
p0028 N79-11707
Cardiac conduction and aptitude problem of fliers. The benefits of endocavital recording of the His bundles
p0030 N79-11716
The advantages of ultrasonic echocardiography in the cardiological evaluation of fliers
p0030 N79-11718

DROST-HANSEN, W.
Interfacial and intracellular water: Expected anomalies in dielectric properties
p0082 N79-15558

DRUZGALSKI, C. K.
Techniques of cumulative quantitative characterization of the thorax using audiosonic methods
p0240 N79-26769

DUBOIS, A. B.
Fluid shifts during initial phase of immersion diuresis in man
p0185 A79-33804

DUBOIS, R. F. W.
Optokinetic reactions in man elicited by localized retinal motion stimuli
p0304 A79-54251

DUBOSE, D.
Increased survival in experimental dog heatstroke after reduction of gut flora
p0266 A79-47335

DUDKIN, V. E.
Atlas of the dose characteristics of external ionizing radiation /Handbook/
p0098 A79-20669

DUDKIN, V. Y.
Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582] p0071 N79-14711

DUDNIKOV, V. V.
Evaluation of physiological indices during preflight medical examination of pilots
p0188 A79-35138

DUKET, S. D.
Modeling and analysis using SAINT - A combined discrete/continuous network simulation language
p0004 A79-11480

DULIEU, H. L.
Biological study of tobacco seeds flown in the joint Apollo-Soyuz test-project
p0006 A79-12519

DUMANSKII, Y. D.
Investigation of the activity of some enzymatic systems in response to a super-high frequency electromagnetic field
p0074 N79-14737
Dependence of the functional activity of liver mitochondria on microwave radiation
p0075 N79-14741

DUMELIN, E. E.
Effects of exercise, vitamin E, and ozone on pulmonary function and lipid peroxidation
p0067 A79-18965

DUNCAN, J. R.
Computer simulation of thermoregulatory responses to heat stress - A future work design and training tool
p0037 A79-13196

DUNN, C. D. R.
Erythropoietic effects of space flight
p0231 A79-42193
Use of a computer model in the understanding of erythropoietic control mechanisms
[NASA-CR-160201] p0217 N79-25718

DUNN, R. S.
Helicopter commands at the touch of a hand
[AHS 79-13] p0270 A79-49066

DUPUIS, H.
The influence of mechanical vibration and noise on the peripheral blood circulation at skin level
[RAE-LIB-TRANS-1980] p0084 N79-15578
Human exposure to mechanical vibration at lying posture in the ambulance helicopter UH-1D
p0149 N79-19617

DUPUY, O.
Contributions of the retina and of the eye optical system to the modulation lowering of the aerial image
p0100 A79-22771

DURET, J.
Mitral prolapse and acceleration
p0103 A79-23951

DURET, J. C.
Conduction difficulties of vagal origin in flight personnel - Significance of intrathoracic data on the bundle of His
p0103 A79-23955
Cardiac conduction and aptitude problem of fliers. The benefits of endocavital recording of the His bundles
p0030 N79-11716
The advantages of ultrasonic echocardiography in the cardiological evaluation of fliers
p0030 N79-11718

DURNEY, C. H.
An empirical formula for broad-band SAR

calculations of prolate spheroidal models of humans and animals
p0278 A79-51015

DURNOVA, G. N.
Effects of space flight on course of radiation lesions in rat lymphoid organs
p0107 N79-16516

DUTKEVICH, I. G.
Effects of laser radiation on morphology of peripheral blood and bone marrow under experimental and clinical conditions
p0071 N79-14710

DYGIN, V. P.
Clinical and morphological studies of people in the course of long-term hypokinesia and subsequent readaptation
p0015 N79-10709

E

EARLES, J. A.
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology
[AD-A069983] p0308 N79-32833

ECKERLEY, J. S.
A study of noninvasive blood pressure measurement techniques
p0294 A79-51036

ECKERMANN, P.
Problem of modeling the mechanism of heart contraction
p0275 A79-50287

ECKERT, H.
Spacelab environmental control/life support system /ECLS/ for life science experiments
[IAF PAPER 78-59] p0003 A79-11225

Medical characteristics of the Spacelab life support system
[DGLR PAPER 78-130] p0041 A79-14082

ECKERT, R.
Special test for astronaut selection - Tests of tolerance in the centrifuge and in flight
p0047 A79-15491

Tentative estimation of the injuries likely to occur during the crash of a SA 341 Gazelle helicopter, from a study on mannequins
p0287 N79-31925

ECONOMOS, A. C.
Analysis of population mortality kinetics with application to the longevity followup of the Navy's '1,000 aviators'
p0234 A79-43207

Quantitative analysis of mating behavior in aging male Drosophila Melanogaster
p0252 A79-44799

EDWARDS, B. J.
Undergraduate pilot training: Visual discrimination pretraining for land task
[AD-A068141] p0317 N79-33844

EDWARDS, R. J.
Core temperature measurement in man
p0010 A79-12862

EFFERT, S.
Mechanics of breathing during graded exercise measured with the bodyplethysmograph
p0029 N79-11709

EGAMI, F.
Experimental approach to the chemical evolution in the primeval sea. I - Formation of amino acids and amino acid polymers in modified sea mediums
p0203 A79-37935

Experimental approach to the chemical evolution in the primeval sea. II - Formation of protocell-like structures 'marigranules' in a modified sea medium
p0204 A79-37964

Polymers produced by heating an amino acid mixture in sea water enriched with transition elements
p0254 A79-46461

EGGEMEIER, F. T.
Simulator Training Requirements and Effectiveness Study /STRES/
p0063 A79-18216

Life cycle costing of simulated vs actual equipment for intermediate maintenance training
p0064 A79-18217

EGLINTON, G.
A biogeochemical study of the Abu Dhabi algal mats - A simplified ecosystem
p0132 A79-26373

EGOLF, D. P.
A mathematical scheme for predicting the electro-acoustic frequency response of hearing aid receiver-earmold-ear systems
p0154 N79-19673

EGOROV, A. D.
Medical control in prolonged space flights
[IAF PAPER 78-63] p0003 A79-11226

EGOROV, I. A.
Influence of high-altitude conditions on the metabolism of nucleic acids and proteins in the thymocytes of the rat
p0069 A79-19425

3'5'-cyclic AMP content in rat tissues during hypoxic adaptation and gamma irradiation
p0069 A79-19426

Metal porphyrins in pre-Cambrian deposits as a probable evidence for early photosynthesis
p0165 A79-30695

EICHBERG, J.
Prebiotic condensation reactions using cyanamide
p0203 A79-37932

EIKEMEIER, K. D.
Balance training of the equilibrium organ and its effect on flight strategy
p0242 N79-27074

EISENMAN, J.
Isolation of a shock-induced circulating cardiodepressant substance
p0257 A79-46967

EKBLOM, B.
Physical performance and peak aerobic power at different body temperatures
p0221 A79-36046

EL-MAHDI, A. M.
Hyperthermia as an Antineoplastic Treatment Modality
[NASA-CP-2051] p0017 N79-10728

ELAD, A.
Thermal bounds to the time of stay of human beings in enclosures
p0231 A79-41770

ELANGOVAN, P. T.
Computer design synthesis of a below knee-Syme prosthesis
p0251 A79-44300

ELDREDGE, D.
RNAV procedural turn anticipation techniques experiment no. 2, GAT-2A. Phase 3: 2 and 4 nmi offset tracking procedures
[AD-A060501] p0085 N79-15583

ELIVANOV, V. A.
Significance of the vibration component to the deleterious effect of impact accelerations
p0312 N79-33801

ELIZONDO, R. S.
Thermoregulation in Macaca mulatta - A thermal balance study
p0133 A79-27101

ELKINS, W.
Evolution of space suit technology
[IAF PAPER 79-92] p0302 A79-53293

ELLESTAD, M. H.
Predicting coronary artery disease with treadmill stress testing Changes in R-wave amplitude compared with ST segment depression
p0186 A79-34284

Predictive accuracy of Q-X/Q-T ratio, Q-Tc interval, S-T depression and R wave amplitude during stress testing
p0225 A79-40464

ELLIOT, L.
Responses of crown gall tissue to the space environment: Tumor development and anatomy
p0020 N79-11654

ELLIS, J. W., JR.
Cerebral accident subsequent to G-force loading - A case report
p0165 A79-30664

ELLIS, S.
In vivo response of ornithine decarboxylase activity to growth hormone as demonstrated by oxidation of L-ornithine-1-/C-14/ in hypophysectomized rats
p0005 A79-12400

Identification of a tripeptidyl aminopeptidase in the anterior pituitary gland - Effect on the chemical and biological properties of rat and

bovine growth hormones
p0069 A79-19449

Studies on the bioassayable growth hormone-like activity of plasma
p0267 A79-47848

Effects of space flight on plasma and glandular concentrations of pituitary hormones
p0021 N79-11664

Mineralization in teeth and jaws, as judged radiographically, in rats of the COSMOS-782 experiment
p0022 N79-11667

ELMORE, O. F.
Effects of methylprednisolone sodium succinate on clearance of livine E. coli from peripheral blood of dogs
[AD-A062123] p0169 N79-20717

ELSWORTH, C.
The effects of pilot age, lighting, and head-down time on visual accomodation
[AD-A064912] N79-25747

ELWORTH, C. L.
Windshield quality and pilot performance measurement utilizing computer-generated imagery
p0137 A79-28165

ELZEAR, A.
A description of the recent neuropsychological selection of pilots for land forces light aircraft
p0151 N79-19633

EM, V. S.
The problem of optimally fast response as solved by the nerve cell
p0166 A79-31179

EMELIANOV, V. N.
Nonlinear optical susceptibility of the human eye to IR radiation in the 800 to 1355 micron range
p0188 A79-35363

Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
p0301 A79-53163

EMERY, J. C.
Medical barofunction testing of aviators with otorhinolaryngologic disease
p0298 A79-52285

EMURIAN, C. S.
Methodological and operational aspects of programmed environment research
[AD-A068587] p0289 N79-31936

EMURIAN, H. H.
Methodological and operational aspects of programmed environment research
[AD-A068587] p0289 N79-31936

ENDO, S.
Motion cue effects on human pilot dynamics in manual control
p0119 N79-17514

ENEVOLDSON, E.
Joint testing of the RAF high altitude protective ensemble
p0044 A79-14434

ENEVOLDSON, E. K.
Flight test evaluation of an RAF high altitude partial pressure protective assembly
[NASA-TM-72864] p0214 N79-24654

ENG, W. G.
Survey on eye comfort in aircraft. I - Flight attendants
p0165 A79-30665

ENGEBRETSON, G.
Intelligence
p0095 N79-15896

ENGIN, A. E.
Passive resistive torques about long bone axes of major human joints
p0298 A79-52283

ENOMOTO, S.
Prebiotic synthesis of amino acids by carboxylation of amines in oxidative atmosphere
p0203 A79-37937

EPHRATH, A. R.
Effects of target motion and image on AAA tracking
p0046 A79-14969

Visual cues in manual tracking of simulated targets
p0103 A79-23792

Adaptive estimation schemes for minimizing uncertainty in manual control tasks
p0269 A79-48013

Effects of uncertainty on manual tracking performance
p0086 N79-15592

EPLER, J. L.
Mutagenic components of alternate energy sources
[CONF-780636-8] p0280 N79-30923

EPPS, D. E.
Prebiotic condensation reactions using cyanamide
p0203 A79-37932

ERGUN, D. L.
Real-time computerized fluoroscopic cardiac imaging
p0294 A79-51035

ERICKSON, R. A.
Line criteria in target acquisition with television
p0068 A79-18997

ERIKSEN, B. A.
Target redundancy in visual search - Do repetitions of the target within the display impair processing
p0299 A79-52540

ERIKSEN, C. W.
Target redundancy in visual search - Do repetitions of the target within the display impair processing
p0299 A79-52540

ERMAKOVA, I. I.
Regulation and efficiency of sweating in man /Mathematical modeling/
p0097 A79-20622

ERSHOVA, L. K.
Changes in the bioelectrical activity of some cerebral structures in rabbits exposed to microwaves
p0188 A79-35917

ERWIN, D. E.
The importance of providing stereoscopic vision in training for nap-of-the-earth /NOE/ flight
p0062 A79-18206

ESKENAZI, R.
Robotic vision
p0187 A79-34984

ESSER, A. F.
Temperature-dependent morphological changes in membranes of Bacillus stearothermophilus
p0005 A79-12475

ESSIOUX, H.
A new case of autochthonous malaria in the Paris region associated with frequentation of airports - Recommendations of prophylactic procedures
p0104 A79-23958

ETHEREDGE, J.
Aircrew personnel restraint subsystems definition of deficiencies and requirements
[AD-A058995] p0053 N79-12711

EULER, D. E.
Role of skin temperature in the control of sweating
p0277 A79-50907

EVANS, D. A.
Disorientation in Royal Naval helicopter pilots
p0152 N79-19648

EVANS, J. H.
A failure criterion for human, vertebral, cancellous bone
p0285 N79-31912

EVANS, J. M.
Cardiac responses of dogs to nonsynchronous and heart synchronous whole-body vibration
p0162 A79-29728

Modification of cardiac function by synchronized oscillating acceleration
p0278 A79-50908

Frequency response of cardiovascular regulation in canines to sinusoidal acceleration at frequencies below 1 Hz (basis for biodynamic modeling)
p0286 N79-31915

The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress
[AD-A069952] p0318 N79-33845

EVANS, J. W.
Studies on the erythron and the ferrokinetic responses in beagles adapted to hypergravity
p0010 A79-12869

RBC-/Cr-51/ half-life and albumin turnover in growing Beagle dogs during chronic radial acceleration
p0135 A79-27553

EVANS, T. C., JR.
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-284686/3] p0052 N79-12703
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-286696/0] p0085 N79-15581

EVREINOVA, T. N.
Coacervate drops - Primitive forms of precells
p0204 A79-37962

EWART, R. B.
Visual system for the Boom Operator Part Task Trainer
p0137 A79-28162

EWING, C. L.
Medical qualification procedures for hazardous-duty aeromedical research
p0026 N79-11695
Multiaxis dynamic response of the human head and neck to impact acceleration
p0284 N79-31906
Transient intraventricular conduction defects observed during experimental impact in human subjects
p0285 N79-31907
Potential relationship between human central nervous system injury and impact forces based on primate studies
p0286 N79-31919

F

FABER, J. M.
Left Anterior Hemiblock (LAH): Diagnosis and aeromedical risk
p0029 N79-11715

FABRE, J.
Pulmonary functional tolerance to ionizing radiation - An experimental study
p0256 A79-46601

FABRESSE, P.
Pneumothorax and flight personnel
p0103 A79-23956

FABRIKANT, J. I.
Effects on populations of exposure to low levels of ionizing radiation: Implications for nuclear energy and medical radiation
[LBL-9084] p0316 N79-33833
Health effects of low-level ionizing radiation
[LBL-9018] p0316 N79-33834

FAITELBERG-BLANK, V. R.
Dynamics of the impulse activity of the neurons in the posterior hypothalamus upon exposure to microwaves
p0188 A79-35918

FAJSZI, C.
Quantitative aspects of the effect of weak interaction during chemical evolution
p0204 A79-37959

FALCH, D. K.
Pulmonary blood volume and interventricular circulation time in physically trained and untrained subjects
p0128 A79-24700

FARAFONOV, N. S.
Utilization of the wastes of vital activity
[NASA-TM-75410] p0177 N79-21768

FARFAL, P.
Contributions of the retina and of the eye optical system to the modulation lowering of the aerial image
p0100 A79-22771

FARHI, L. E.
Circulatory response to arterial hyperoxia
p0221 A79-36048
Cardiopulmonary readjustments in passive tilt
p0277 A79-50901

FARRELL, D.
Non-invasive information on the P-R segment of the cardiac cycle - An assessment of the clinical potential of the electric and magnetic methods
p0295 A79-51045

FARRISH, R. O. P.
A technology assessment of vegetable substitutes for animal protein in human food. Volume 1: The study
[PB-284681/4] p0059 N79-13719
A technology assessment of vegetable substitutes for animal protein in human food. Volume 2: Appendices
[PB-284682/2] p0059 N79-13720

FAULKNER, W. H.
Prediction, evaluation, and specification of flying qualities by means of step target tracking
p0088 N79-15604
Error rate information in attention allocation pilot models
p0115 N79-17483
Prediction of pilot reserve attention capacity during air-to-air target tracking
p0116 N79-17488

FAVERO, M. S.
Public health considerations associated with a Mars surface sample return mission
p0005 A79-12510

FAYTELBERG-BLANK, V. R.
Effect of different doses of centimeter-band electromagnetic oscillations of biochemiluminescence of central nervous system and liver tissues
p0172 N79-20738

FAYTELBERG, R. P.
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs
p0312 N79-33803

FEDORENKO, G. T.
Effects of physical conditioning and electric stimulation on metabolic processes in the soleus muscle and structure thereof in hypokinetic man
p0192 N79-23634

FEDOROVICH, I. B.
Photochemical transformations of the visual pigment rhodopsin
p0181 A79-32319

FEEHRER, C. E.
A decision, monitoring and control model of the human operator applied to an RPV control problem
[AD-A069880] p0282 N79-30939
Development of human performance models for man-machine system simulation
[AD-A069879] p0282 N79-30940

FEIGE, B.
Initial training and retraining of technical agricultural flight personnel
p0227 A79-41166

FEINSTEIN, R.
The effects of high nitrogen tensions of the properties of neuronal membranes and synaptic transmission
[AD-A063856] p0213 N79-24647

FEKE, G. T.
Laser Doppler technique for measurement of eye movement
p0233 A79-42450

FELDER, S. F.
Intraocular pressure reduction and regulation system
[NASA-TM-79187] p0260 N79-28881

FELDMAN, A. G.
Central and reflex mechanisms of controlling movements
p0251 A79-43950

FELDSTEIN, C.
Multifunctional transducer
[NASA-CASE-NPO-14329-1] p0219 N79-25737
Apparatus and method of inserting a microelectrode in body tissue or the like using vibration means
[NASA-CASE-NPO-13910-1] p0246 N79-27836

FELLER, D. D.
In vivo response of ornithine decarboxylase activity to growth hormone as demonstrated by oxidation of L-ornithine-1-/C-14/ in hypophysectomized rats
p0005 A79-12400
Insulin-like effect of bovine growth hormone in vivo as demonstrated by oxidation of C/14/-U-glucose in diabetic rats
p0252 A79-44797

FENCL, V.
Composition of cerebral fluids in goats adapted to high altitude
p0277 A79-50902
Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] p0310 N79-33788

FENDER, D. H.
Velocity precision in smooth pursuit eye movements
p0129 A79-25399
FENDRICH, R.
Smooth pursuit eye movements - Is perceived motion necessary
p0139 A79-28375
FERRELL, W. R.
Adaptive supervisory control of remote manipulation
p0046 A79-14987
FERRIS, J. P.
HCN did not condense to give heteropolypeptides on the primitive earth
p0133 A79-26542
FESENKO, L. D.
Reliability of determining the cardiac output by the method of quadrupole chest impedance rheography
p0098 A79-21243
FEUERMAN, E.
Allergy to lanolin
[BLL-RTS-11185] p0142 N79-18570
FICH, S.
A catheter flow probe for measurement of left ventricular source parameters
p0274 A79-50108
FILIPENKOV, S. N.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
p0303 A79-53486
Probability of caisson disease while wearing a space suit when exiting from a spacecraft with an atmosphere close to that of earth
p0244 N79-27826
FILIPPOV, M. M.
Reliability of determining the cardiac output by the method of quadrupole chest impedance rheography
p0098 A79-21243
FILIPPOV, O. V.
Problem-oriented program approach to planning and management of medicine
p0078 N79-14762
Current status and prospects of continued refinement of planning and coordination of scientific medical research
p0078 N79-14765
FINCH, W. L.
A subhuman primate restraint system
[AD-A069607] p0279 N79-30915
FINDLER, N. V.
Multi-PIERRE - A learning robot system
p0066 A79-18425
FINEBERG, M. L.
The effects of ambient illumination, aircraft velocity and feedback on absolute distance judgments during simulated night nap-of-the-earth flight
p0038 A79-13204
Quantifying operator preference during human factors test and evaluation
p0062 A79-18202
FINKE, H.-O.
Aircraft noise and its effect on man: Methods and results of research, consequences for environmental protection
p0162 A79-29763
FINKELMAN, J. M.
Conjoint effect of physical stress and noise stress on information processing performance and cardiac response
p0161 A79-29715
FINNEGAN, J. P.
Transfer of a computer-assisted instrument procedures trainer to flight
p0039 A79-13216
FISCHER, E.
The role of cognitive switching in head-up displays
[NASA-CP-3137] p0318 N79-33851
FISCHER, J. R.
Blood pressure variability of the individual in orthostatic testing
p0265 A79-47328
Distinguishing borderline hypertensives from normotensives: A clinical study of 300 aircrewmen
p0027 N79-11699
FISCHER, W. A.
Medical technology transfer
p0048 A79-16138
FISHER, A. B.
Glucose metabolism in rat lung during exposure to hyperbaric O2
p0221 A79-36047
FISHER, H. D.
The development of a digital video subtraction system for intravenous angiography
p0294 A79-51033
FISHER, J. R.
Reproducibility of human cardiovascular responses to orthostatic stress
p0030 N79-11720
FITSNER, L. N.
Process of search control of coordinated movement in man
p0166 A79-30701
FITZGIBBON, G. M.
Coronary atherosclerosis and fitness for flying
p0029 N79-11711
FITZJERRELL, D. G.
Fluid and Electrolyte Balance model (FEB)
[NASA-CR-160206] p0211 N79-24633
Design specification for the whole-body algorithm
[NASA-CR-160226] p0212 N79-24641
Development of an hypothesis for simulating anti-orthostatic bed rest
[NASA-CR-160200] p0217 N79-25717
Study report on interfacing major physiological subsystem models: An approach for developing a whole-body algorithm
[NASA-CR-160232] p0218 N79-25729
Study report on guidelines and test procedures for investigating stability of nonlinear cardiovascular control system models
[NASA-CR-160229] p0219 N79-25734
User's instructions for the whole-body algorithms
[NASA-CR-160233] p0219 N79-25735
FITZPATRICK, E. L.
Hybrid computation of left ventricular performance using noninvasive techniques
[AD-A063749] p0190 N79-22758
FITZPATRICK, M.
Development of a solid propellant inflation technique for the subcompact car passenger restraint system, phase 1
[PB-290328/4] p0178 N79-21775
FLANDROIS, R.
Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
p0305 A79-54267
FLEMING, C.
Ejection problems and injuries - Their causes, effects and treatments, and suggestions for preventive measures
p0267 A79-47338
FLIEDNER, T. M.
Cell biology basis for the life of an organism in the radiation field
[ANL-TRANS-1152] p0261 N79-29786
FLINK, J. M.
Mechanisms of deterioration of nutrients
[NASA-CR-160128] p0156 N79-19686
FLION, A.
Analysis of the intervention of the human factor as a principal cause or influence in accidents of Mirage aircraft in the Belgian Air Force
p0290 N79-31945
FLORIN, U.
Value and limits of the electrocardiogram in aviation medicine evaluations
p0048 A79-15495
FLUGEL, C. W.
Test evaluation of space station ECLSS maintenance concepts
[ASME PAPER 78-ENAS-43] p0009 A79-12589
FOFANOV, V. I.
Prospects of using Japanese quail in biological life support systems
p0109 N79-16531
Effect of combination of hypoxia and hypercapnia on survival of Japanese quail
p0194 N79-23641
FOGLESONG, R. H.
Modeling heat transfer through human skin subjected to high external temperatures
p0102 A79-23782
FOHEY, M. F.
Food packages for Space Shuttle
[ASME PAPER 78-ENAS-13] p0007 A79-12562

FOLBERTH, O. G.
Very-large-scale integration - What it means for technical systems and humans
p0181 A79-32640

FOLIGUET, B.
Adaptation to chronic hyperoxia in the rat - A study of pulmonary surfactant, tissue levels of superoxide dismutases and histology
p0256 A79-46603

FOLINSBEE, L. J.
Response of women mountaineers to maximal exercise during hypoxia
p0234 A79-43201

FOLLAND, E.
Coronary calcification in the diagnosis of coronary artery disease
p0226 A79-40465

FOLLENIUS, M.
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
p0297 A79-52023

FONSECA, G. F.
A biophysical model for evaluating auxiliary heating and cooling systems
[ASME PAPER 78-ENAS-33] p0008 A79-12581

FORSTER, L. D.
Measurements in the laser irradiated eye
[AD-A069842] p0315 N79-33825

FOSTER, W. D.
Correlation of choice reaction time performance with biorhythmic criticality and cycle phase
p0102 A79-23471

FOUDIN, L.
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] p0307 N79-32823

FOWLER, C. F.
Photochemistry and enzymology of photosynthesis
[COO-3326-70] p0239 N79-26763

FOWLER, W. T.
Simple models for the shuttle remote manipulator system
[NASA-CR-151881] p0113 N79-16554

FOX, J. L.
Evolution of enzyme function - The coupled oscillator theory
p0205 A79-37970

FOX, S.
The origin of life on earth - Recent studies
p0134 A79-27335

FRANCESCONI, R.
Heat- and exercise-induced hyperthermia - Effects on high-energy phosphates
p0266 A79-47332

FRANCESCONI, R. P.
Sustained operations and sleep deprivation - Effects on indices of stress
p0009 A79-12859

FRANCIS, K. T.
Effect of water and electrolyte replacement during exercise in the heat on biochemical indices of stress and performance
p0127 A79-24629

FRANK, A.
Space radiation dosimetry onboard COSMOS 936: US portion of experiment K-206
p0023 N79-11677

FRANK, H. H.
Anaerobic threshold alterations caused by endurance training in middle-aged men
p0227 A79-41184

FRASER, A. S.
Water system virus detection
[NASA-CASE-MSC-16098-1] p0013 N79-10693

FRASER, M.
Vehicle Steering control: A model of learning
p0089 N79-15606

FRAZER, R. E.
Coupling apparatus for ultrasonic medical diagnostic system
[NASA-CASE-NPO-13935-1] p0077 N79-14751
Apparatus for endoscopic examination
[NASA-CASE-NPO-14092-1] p0155 N79-19678

FREEDY, A.
Adaptive estimation of information values in continuous decision making and control of advanced aircraft
[AD-A069741] p0282 N79-30941

FREEMAN, B. A.
The effects of ozone on human erythrocytes and phospholipid vesicles
p0049 N79-12687

FREGLY, M. J.
Time for loss of increased cardiac responsiveness to isoproterenol in cold-acclimated rats after removal from cold
p0128 A79-24636
Relationship between thermogenic drinking and plasma renin activity in the rat
p0235 A79-43211

FREY, M. A. B.
Systolic time intervals during combined hand cooling and head-up tilt
p0135 A79-27554
Cardiac response to whole-body heating
p0165 A79-30661

FRIEDAN, H. J.
Automated clinical system for chromosome analysis
[NASA-CASE-NPO-13913-1] p0050 N79-12694

FRIEDMAN, M.
Hemodynamics in teenagers and asthmatic children during exercise
p0133 A79-27102
Comparison of plasma and urinary steroids in men with type A and type B behavior patterns
p0028 N79-11704

FRIEDMAN, P. J.
Radiographic comparison of human lung shape during normal gravity and weightlessness
p0305 A79-54269

FRIEND, H. A.
Conjoint effect of physical stress and noise stress on information processing performance and cardiac response
p0161 A79-29715

FRISBY, J. P.
Texture contours can facilitate stereopsis by initiating vergence eye movements
p0270 A79-48816

FRISCH, G. D.
A human body and crew station modelling system for motion studies
p0287 N79-31922

FRISCIA, D. A.
Predictive accuracy of Q-X/Q-T ratio, Q-Tc interval, S-T depression and R wave amplitude during stress testing
p0225 A79-40464

FROEBERG, J. E.
Task complexity and 24-hr performance patterns in morning and evening active subjects
[FOA-C-52001-H6] p0122 N79-17537

FROLOV, M. V.
Psychophysiological forecasting of efficiency
p0010 A79-12867

FROMZEL, V. A.
Experimental determination of maximum permissible exposure to laser radiation of 1.54-micron wavelength
p0002 A79-10648

FROST, E.
Radar observation of insects: Mosquitoes
p0148 N79-19600

FROST, M. M.
The development of a digital video subtraction system for intravenous angiography
p0294 A79-51033

FROWEIN, H. W.
Effects of amphetamine on response selection and response execution processes in choice reaction tasks
[IZF-1978-8] p0309 N79-32839

FRY, G. A.
The perceived direction of the binocular image
p0104 A79-24069

FRYER, T. B.
The use of hybrid integrated circuit techniques in biotelemetry applications
p0131 A79-26145
Telemetry of intracranial pressure
p0227 A79-41400
An inductively powered telemetry system for temperature, EKG, and activity monitoring
p0228 A79-41424
Aircraft flight simulation of spacelab experiment using an implanted telemetry system to obtain cardiovascular data from the monkey

p0147 N79-19022
A long-range and long-life telemetry data-acquisition system for heart rate and multiple body temperatures from free-ranging animals
[NASA-TM-78590] p0239 N79-26762

FUCHS, R. J.
The prediction of the existence or nonexistence of coronary artery disease using routine clinical laboratory measurement
p0028 N79-11703

FUJIHARA, O.
Measurements of pilot workload during low altitude and high speed maneuvers of F-1 supersonic jet fighter
p0209 A79-38821

FULD, K.
The equivalent background and retinal eccentricity
p0104 A79-24066

FULGHAM, D. D.
Psychologists vs engineers
p0132 A79-26499

FULLER, P. M.
Killfish development in zero-G on COSMOS 782: Fundulus experiment K-104
p0021 N79-11659

FUNKHOUSER, G. E.
Effects of altitude and two decongestant-antihistamine preparations on physiological functions and performance
p0127 A79-24635
Effects of propranolol on Time of Useful Function (TUF) in rats
[AD-A068535/4] p0283 N79-31896

FURRY, D. E.
Medical barofunction testing of aviators with otorhinolaryngologic disease
p0298 A79-52285

FURST, A.
Two-week studies of survivors from exposures to pyrolysis gases
p0066 A79-18307

FURUKAWA, S.
Systems identification and application systems development for monitoring the physiological and health status of crewmen in space
[NASA-CR-160235] p0212 N79-24642
Study report on combining diagnostic and therapeutic considerations with subsystem and whole-body simulation
[NASA-CR-160231] p0213 N79-24644

FUST, H. D.
Compatibility test of oxygen exposures in the range of 2.2 to 2.8 bar absolute
[DLR-FB-78-10] p0280 N79-30925

FUTERMAN, N. A.
Circadian rhythm of electrolyte uresis in healthy persons
p0257 A79-46681

G

GABEL, R. A.
Composition of cerebral fluids in goats adapted to high altitude
p0277 A79-50902
Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] p0310 N79-33788

GAERTNER, K. P.
The determination of the operating range of a twin-grip control yoke through biomechanical means
p0089 N79-15609

GAERTNER, K.-P.
Ergonomic problems regarding the interactive touch input via screens in onboard and ground-based flight control
p0061 A79-17695

GAEVYI, M. D.
Self-regulation of cerebral circulation under orthostatic influences
p0221 A79-36098

GAILLARD, G.
Mechanism of the formation of phosphenes by X-rays
p0006 A79-12516

GAINER, P. A.
Analysis of visual estimation of system state from arbitrary displays
p0317 N79-33843

GALAKTIONOVA, G. V.
Effect of infra-low-frequency magnetic fields on cell division
p0173 N79-20739

GALANTER, E.
Applications of two-parameter decision theories in psychology
[AD-A059010] p0052 N79-12705

GALLAGHER, R. R.
Evaluation of exercise-respiratory system modifications and preliminary respiratory-circulatory system integration scheme
[NASA-CR-160221] p0212 N79-24639
Physiological system integrations with emphasis on the respiratory-cardiovascular system
[NASA-CR-160230] p0213 N79-24643
Investigations of respiratory control systems simulation
[NASA-CR-160213] p0218 N79-25726
Evaluation of exercise-respiratory system modifications and integration schemes for physiological systems
[NASA-CR-160223] p0219 N79-25733

GALLE-TESSONNEAU, J.-R.
Psychosis in air force flight personnel during the last 25 years
p0103 A79-23957

GALOSY, R. A.
Cardiac changes during behavioral stress in dogs
p0200 A79-36575

GAMMELL, P. M.
Signal processing in ultrasound
p0294 A79-51039

GANDHI, O. P.
Electromagnetic absorption in a multilayered model of man
p0226 A79-40650
Some recent results on the deposition of electromagnetic energy in animals and models of man
p0083 N79-15563

GANTI, T.
On the reality of extraterrestrial biogenesis
[IAF PAPER 78-A-51] p0003 A79-11344

GARDNER, D. E.
The effects of H_2SO_4 on men and H_2SO_4 and O_3 on laboratory animals
p0141 N79-18354

GARRETT, P. F., JR.
An interface evaluation of the XM-29 protective mask and the AH-1S telescopic sight unit
[AD-A064203] p0190 N79-22764

GASPARYAN, S. A.
The conception of the systems analytic approach to planning and organization of medical scientific research
p0078 N79-14764

GASSET, G.
Development capacity of artemia cysts and lettuce seeds flown in Cosmos 936 and directly exposed to cosmic rays
p0127 A79-24632

GAUBIN-BLANQUET, Y.
Radiobiological investigations in Cosmos 782 space flight /Biobloc SP1 experiment/
p0006 A79-12518

GAUBIN, Y.
Development capacity of artemia cysts and lettuce seeds flown in Cosmos 936 and directly exposed to cosmic rays
p0127 A79-24632

GAUDETTE, D.
Effects of space flight on plasma and glandular concentrations of pituitary hormones
p0021 N79-11664

GAWORSKI, C. L.
Acute toxicity of a number of chemicals of interest to the Air Force
[AD-A067313] p0220 N79-25742

GAYEVSKAYA, N. S.
Protein fractions and enzymatic activity thereof in the rat myocardium after the flight on Kosmos-690 biosatellite
p0014 N79-10700
Changes in metabolism of soleus muscle tissue in rats following the flight aboard the Kosmos-690 biosatellite
p0108 N79-16518

Tissular metabolism in mixed type fibers of rat skeletal muscles after flight aboard Cosmos-690 biosatellite
p0244 N79-27823

GAZENKO, O. G.
Space biology and medicine
p0132 A79-26344
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
p0299 A79-52475
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
p0303 A79-53486
Space biology and aerospace medicine, vol. 12, no. 6
[JPRS-72487] p0072 N79-14716
Principal results of experiment with mammals onboard the Kosmos-782 biosatellite
p0073 N79-14726
Problems of human adaption to spaceflight
p0157 N79-19985
Space biology and aerospace medicine, no. 2, 1979
[JPRS-73377] p0190 N79-23627
Some problems involved in using mathematical methods for evaluation of pathophysiological changes in the body
p0192 N79-23628
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819

GAZIYEV, G. A.
Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body
p0073 N79-14725
Liberation of carbon monoxide by man when working in protective gear
p0076 N79-14748
Concentration of trace contaminants during gas chromatography and chromato-mass spectrometry in biomedical research
p0109 N79-16528

GEBHARDT, U.
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/
[IAF PAPER 79-87] p0302 A79-53290

GEIS, G. S.
Role of skin temperature in the control of sweating
p0277 A79-50907

GEISELHART, R.
Study of crew task loading on the C-141A aircraft
[AD-A057346] p0034 N79-11746

GEISER, G.
Petri nets as a modeling tool for discrete concurrent tasks of the human operator
p0088 N79-15600

GEISLER, W. S.
Evidence for the equivalent-background hypothesis in cones
p0232 A79-42233

GELLY, R.
Psychological selection of payload astronauts
p0047 A79-15488

GENBACEV, O.
The comparative study of metabolism changes dynamics during hypoxia and hyperoxia in mice lungs
[IAF PAPER 78-51] p0002 A79-11221

GENIN, A. M.
Principal results of experiment with mammals onboard the Kosmos-782 biosatellite
p0073 N79-14726

GENTILE, P. P.
Computed axial tomography (CAT)
[ISS-R-78/4] p0262 N79-29791

GENTZLER, G. L., JR.
Depth perception and manual control
p0038 A79-13207

GEORGE, M. E.
Effects of propellant hydrazines on red blood cells: Methemoglobin and Heinz body formation
[AD-A064133] p0189 N79-22755

GEORGIYEVSKIY, V. S.
Effects of hyperhydration on human endurance of orthostatic and LBNP tests
p0072 N79-14721

Control of vertical position after flights aboard the Salyut-4 orbital station
p0311 N79-33793

GERASIMOV, A. N.
Paradoxical reaction of some intracellular antioxidative defense mechanisms during adaptation of the organism to hypoxia
p0165 A79-30696

GERATHEWOHL, S. J.
Psychophysiological effects of aging: Developing a functional age index for pilots. 2: Taxonomy of psychological factors
[FAA-AM-78-16] p0054 N79-13685
Psychophysiological effects of aging: Developing a functional age index for pilots. 3: Measurement of pilot performance
[FAA-AM-78-27] p0123 N79-17546

GERSHUNI, G. V.
The sensory systems
p0042 A79-14369

GERSHZOHN, G.
Perpetual factors involved in performance of air traffic controllers using a microwave landing system
p0092 N79-15628

GERZBERG, L.
Quantitative flow estimation with transcutaneous Doppler ultrasound
p0295 A79-51042

GESCHWIND, I. I.
Effects of space flight on plasma and glandular concentrations of pituitary hormones
p0021 N79-11664

GESELOWITZ, D. B.
Magnetocardiography - An overview
p0274 A79-50107

GHISTA, D. N.
Cardiovascular regulatory response to lower body negative pressure following blood volume loss
p0101 A79-23470
Computer design synthesis of a below knee-Syme prosthesis
p0251 A79-44300
Analyses for noninvasive monitoring of arterial blood pressure by /I/ phono cuff-sphygmomanometry, for discrete measurements and /II/ arterial ultrasonic imaging, for continuous measurements
p0294 A79-51037
Theoretical foundations of cardiovascular processes
p0304 A79-53531

GIACCHINO, J.
Thermoregulation in unrestrained rats during and after exposure to 1.5-4 G
p0227 A79-41185

GIBSON, S. F.
Microbial load monitor
[NASA-CR-160274] p0243 N79-27815

GIBSON, T. M.
Effect of induced cyclic changes of deep body temperature on task performances
p0202 A79-37708
Separation of the effects of raised skin and core temperature on performance of a pursuit rotor task
p0234 A79-43204
Hyperventilation in aircrew - A review
p0235 A79-43212
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
p0266 A79-47334
Prediction of body temperatures during exercise in flying clothing
p0273 A79-49989
Effect on performance of cycling deep body temperature between 37.0 and 37.6 C
p0274 A79-49993

GIDDENS, D. P.
Disorder in pulsatile flow - Biomedical measurements with hot film, laser and ultrasound anemometers
p0210 A79-39509

GIEROWSKI, Z.
Preliminary selection of candidates for space flights
[IAF PAPER 79-83] p0302 A79-53289

GIESS, M. C.
Genetic effects of balloon flight in Drosophila melanogaster
p0006 A79-12520

GILBERT, B. K.
High-speed computerized tomography
p0004 A79-12030

GILBERT, N. S.
Medical qualification procedures for hazardous-duty aeromedical research
p0026 N79-11695

GILL, A. T.
The holographic Pancake Window
p0138 A79-28172

GILLAM, B.
Orientation relative to the retina determines perceptual organization
p0299 A79-52539

GILLESPIE, G. P.
An overview of helicopter mission specific survival equipment
p0183 A79-33625

GILLESPIE, J. H.
Are evolutionary rates really variable
p0232 A79-42273

GILLILAND, P.
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] p0307 N79-32823

GILLINGHAM, K. K.
Relaxed +Gz tolerance in healthy men - Effect of age
p0067 A79-18956
Effect of age on relaxed +G sub z tolerance of aircrewmen
p0030 N79-11719
Mathematical modeling of arterial oxygen saturation and eye-level blood pressure during +G sub Z stress
p0286 N79-31916

GILLIS, M. F.
The use of Na-22 as a tracer for long-term bone mineral turnover studies.
p0265 A79-47327

GILSON, R. D.
Secondary visual workload capability with primary visual and kinesthetic-tactual displays
p0064 A79-18220
A comparison of kinesthetic-tactual and visual displays via a critical tracking task
p0162 A79-29720
Helicopter commands at the touch of a hand
[AHS 79-13] p0270 A79-49066
Evaluation of kinesthetic-tactual displays using a critical tracking task
p0119 N79-17516

GITELZON, I. I.
Characteristics of proteins of some unicellular organisms as potential components of ecological life support systems
p0246 N79-27834

GLADILIN, K. L.
Coacervate drops as a model for precellular structures
p0204 A79-37960

GLADKII, T. V.
Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs
p0312 N79-33803

GLAISTER, D. H.
Mechanics of mammalian lung
p0247 N79-27844
The effect of a reclined sitting position on psychomotor performance during exposure to high, sustained +Gsub z acceleration
[FPRC-1362] p0248 N79-27856
The effect of acceleration and seat back angle on performance of a reaction time task
[FPRC-1364] p0248 N79-27857
The influence of seat back angle on acceleration tolerance
[FPRC-1365] p0248 N79-27858

GLANFIELD, E. J.
Automated biowaste sampling system feces monitoring system
[NASA-CR-160301] p0281 N79-30937

GLASER, P. E.
Health maintenance and health surveillance considerations for an SPS space construction base community
[AAS PAPER 78-176] p0099 A79-21273

GLASS, B. C.
An algorithm to ascertain critical regions of human tracking ability
p0163 A79-30218
AAA gunnermodel based on observer theory
p0087 N79-15594

GLAZKOVA, V. A.
Pneumotachographic distinctions of external respiration in man in the presence of excess intrapulmonary pressure on ground level and at high altitudes
p0245 N79-27827

GLEZER, V. D.
Piecewise Fourier analysis of images and the role of occipital, temporal and parietal cortex in visual perception
p0160 A79-29248

GLIATTI, E. L.
Imagery interpreter performance in the comparison of subjective estimates of photographic image quality
p0036 A79-13191

GLICK, D. D.
Night vision goggles and in-flight evaluation of the inside/outside refocusing problems in a UH-1H helicopter
p0063 A79-18215

GLINER, J. A.
Pulmonary function and maximum exercise responses following acute ozone exposure
p0273 A79-49987
Auditory and visual sustained attention during ozone exposure
p0273 A79-49988

GOAVEC, A.
A description of the recent neuropsychological selection of pilots for land forces light aircraft
p0151 N79-19633

GOBUTY, D. E.
TADRAP: A computer-aided technique for reducing aircrew task analysis data
p0150 N79-19628

GODTHELP, J.
The driving simulator developed by the Institute for Perception TNO. A validation study in straight road driving
[IZF-1978-16-PR-1] p0145 N79-18588
Steering behaviour and manual control actions. Part 1: An evaluation of the literature and a research plan
[IZF-1978-3] p0146 N79-18594

GOEL, S. K.
Correlation of binocular vision test results with synaptophore evaluation
p0201 A79-37136

GOETERS, K. M.
The influence of hyperbaric environment in combination with workload and confinement on human information processing
[DLR-FB-78-12] p0280 N79-30926
Personality profiles of divers involved in research activities
[DLR-FB-78-11] p0281 N79-30935
Psychological selection of Spacelab payload specialists: The evaluation of German applicants
[DLR-FB-78-29] p0281 N79-30936

GOGEL, W. C.
The common occurrence of errors of perceived distance
p0100 A79-22775
A comparison of oculomotor and motion parallax cues of egocentric distance
p0305 A79-54253

GOGOLEV, K. I.
Prophylactic effects of intermittent acceleration against physiological deconditioning in simulated weightlessness
p0229 A79-41712
Comparison of physiological effects of head-down tilting and immersion on the human body
p0298 A79-52279
Correction of transcapillary exchange in man under the influence of rotation on a centrifuge while immersed in water
p0110 N79-16533

GOLBECK, J.
Photochemistry and enzymology of photosynthesis
[COO-3326-70] p0239 N79-26763

GOLDBERG, B.
RNAV procedural turn anticipation techniques experiment no. 2, GAT-2A. Phase 3: 2 and 4 nmi offset tracking procedures

[AD-A060501] p0085 N79-15583

GOLDBERG, J. M.
Tolerance of domestic fowl to high sustained +Gz
p0127 A79-24630

GOLDFARB, R. D.
Isolation of a shock-induced circulating cardiodepressant substance
p0257 A79-46967

GOLDMAN, R. F.
Optimal methods for physiologic research on clothing
[AD-A071855] p0319 N79-33852

GOLDSTEIN, E.
Human health damages from mobile source air pollution: A delphi method, volume 1
[PB-288319/7] p0145 N79-18585

GOLDSTEIN, I. L.
Speed and load stress as determinants of performance in a time sharing task
p0068 A79-18999

GOLDSTEIN, R. S.
Absence of effects of hypoxia on small airway function in humans
p0268 A79-47851

GOLIKOVA, N. A.
Quality of water reclaimed from urine as related to pH of initial product
p0313 N79-33807

GOLLNICK, P. D.
Phosphorylase a in human skeletal muscle during exercise and electrical stimulation
p0067 A79-18962

GOLOLOBOV, Y. G.
Comparative study of acetylcholinesterase inactivation in warm-blooded animals and insects with substituted vinyl phosphates
p0121 N79-17527

GOLOVIN, G. V.
Effects of laser radiation on morphology of peripheral blood and bone marrow under experimental and clinical conditions
p0071 N79-14710

GOLOVKIN, L. G.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
p0303 A79-53486
Probability of caisson disease while wearing a space suit when exiting from a spacecraft with an atmosphere close to that of earth
p0244 N79-27826

GOLOVKINA, O. L.
External respiration and gas exchange reactions to exercise during rotation of man on a short-radius centrifuge
p0193 N79-23639
External respiration and gas exchange reactions of man during rotation on a short-arm centrifuge
p0313 N79-33812

GOLUBEVA, L. IU.
Effect of adaptation to high-altitude hypoxia on cardiac adrenoreactivity and the state of the adenylcyclase and phosphodiesterase systems in the myocardium
p0255 A79-46500

GOLUBIC, S.
A biogeochemical study of the Abu Dhabi algal mats - A simplified ecosystem
p0132 A79-26373
Closed regenerative life support systems for space travel - Their development poses fundamental questions for ecological science
p0228 A79-41702

GOMER, F. E.
Evoked potential correlates of display image quality
p0068 A79-18998

GOMEZ-SANCHEZ, C.
Early cardiovascular adaptation to simulated zero gravity
p0162 A79-29727

GONCHARENKO, A. M.
Electrophysiological investigation of sleep during work-shift regime and production-induced emotional stress
p0276 A79-50655

GONCHAROVA, E. I.
Some forms of adaptation to extreme influences in the blood system
p0256 A79-46679

GOODENOUGH, D. R.
Eye torsion in response to a tilted visual stimulus
p0305 A79-54254

GOODFELLOW, R.
A biogeochemical study of the Abu Dhabi algal mats - A simplified ecosystem
p0132 A79-26373

GOODMAN, M.
On investigating the statistical properties of the populous path algorithm by computer simulation - Counterconclusions to those of Tateno and Nei
p0253 A79-45640

GOODPASTURE, J. E.
Tissue gas and blood analyses of human subjects breathing 80% argon and 20% oxygen
p0164 A79-30655

GOODSON, J. E.
Dynamics of an image viewed through a rotating mirror
p0221 A79-36365

GOODWIN, A. E.
Comparison of hormone and electrolyte circadian rhythms in male and female humans
p0004 A79-11948

GOODWIN, P. E.
The loudness of tinnitus
p0246 N79-27837

GOON, M. K.
Visual effects of helicopter maneuvre on weapon aiming performance
p0150 N79-19626

GOPHER, D.
Tracking in two dimensions as a function of dimension priorities and tracking difficulty
p0036 A79-13193

GOPINATH, P. M.
Effect of physical training at moderate altitude /1850 m/ on hypoxic tolerance
p0235 A79-43210

GORCHAKOV, V. IU.
The physiological role of surface-active substances in the lung
p0296 A79-51117

GORDIYENKO, A. P.
Aphotometer for determining the biomass of microorgan from the ATP content
[BLL-RTS-11456] p0141 N79-18555

GORDON, R. M.
Computer quantitation of coronary angiograms
p0293 A79-51030

GORE, D. C.
Extended duration orbiter life support system options
[ASME PAPER 78-ENAS-31] p0008 A79-12580

GORGILADZE, G. I.
Role of the visual system in the compensation of vestibular dysfunction
p0162 A79-29971
Neurophysiological bases of vestibular conditioning
p0013 N79-10699
Role of vestibular system in behavior of animals submitted to prolonged slow rotation
p0074 N79-14734
Effect of restricted activity on vestibular function
p0312 N79-33802

GORRAND, J. M.
Contributions of the retina and of the eye optical system to the modulation lowering of the aerial image
p0100 A79-22771

GORRELL, E. L.
A human engineering specification for legibility of alphanumeric symbology on video monitor displays
[AD-A064960] p0197 N79-23667

GORSHUNOVA, A. I.
Investigation of composition of trace contaminants in the air environment of the Soyuz-22 spacecraft
p0072 N79-14720

GORYACHEVA, L. L.
Biochemical study of proteins of gastric and intestinal mucosa of rats flown aboard the Kosmos-605 biosatellite
p0192 N79-23631

GOSSEL, D.
Biological effects of electromagnetic fields
p0184 A79-33712

GOTO, M.
Analysis of electroencephalogram during psychomotor performance
p0209 A79-38820

GOTO, N.
On the relationship between pilot rating and pilot dynamics. II - An analytical approach
p0066 A79-18475
GOTOH, M.
Frequency analysis of heart rate variability under flight conditions
p0202 A79-37713
GOTTENBOS, J. J.
Aspects of dietary prevention of arteriosclerosis
p0262 N79-29792
GOTTLIEB, G. L.
Directional errors of movements and their correction in a discrete tracking task
p0086 N79-15589
A quasi-linear control theory analysis of timesharing skills
p0120 N79-17520
GOURAS, P.
Enchancement of luminance flicker by color-opponent mechanisms
p0252 A79-44582
GOVARDOVSKII, V. I.
Intrinsic noise, threshold sensitivity, and adaptation of the retina
p0043 A79-14373
GOVINDARAJ, T.
Modeling the human as a controller in a multitask environment
p0087 N79-15595
Analysis of a VTOL hover task with predictor displays using an optimal control model of the human operator
p0088 N79-15605
The human as a detector of changes in variance and bandwidth
p0117 N79-17496
GOVORUKHA, T. N.
The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
p0296 A79-51113
GOVSEYEVA, N. N.
Sterols bound with blood plasma proteins and erythrocyte membranes during hypokinesia
p0193 N79-23636
GOYAL, A. K.
Homomorphic analysis and modeling of ECG signals
p0210 A79-39973
GRAF, P. A.
Photometric methods for the analysis of human kinematic responses to impact environments
[AD-A062006] p0157 N79-19690
GRALL, Y.
The responses of frogs to vestibular and visual stimulation in weightlessness
p0006 A79-12513
An apparatus for studying electroretinographic responses under conditions of space flight
p0006 A79-12517
GRANDOLFO, M.
Problems related to the assessment of safe exposure levels for radio frequency and microwave radiation
[ISS-P-78/7] p0248 N79-27855
GRANT, G. H.
Determination of bound water in biological materials from dielectric measurements
p0082 N79-15557
GRAY, G.
Changes in lung volume, lung density, and distribution of ventilation during hypobaric decompression
p0185 A79-33806
GRAY, S. P.
Minuteman missile crew fatigue and 24-hour alerts
[AD-A056561] p0056 N79-13696
GRAYBIEL, A.
Prevention and treatment of space sickness in Shuttle-Orbiter missions
p0128 A79-24639
Oculogravic illusion in response to straight-ahead acceleration of a CF-104 aircraft
p0164 A79-30660
Rotation at 30 RPM about the Z axis after 6 hours in the 10-deg head-down position - Effect on susceptibility to motion sickness
p0165 A79-30662
Long term pulmonary function patterns in the aviator: The thousand Aviator study
p0028 N79-11708
GREEN, D. L.
Workload and the certification of helicopters for IFR operation
[AD-A072758] p0318 N79-33850
GREEN, P. S.
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-284686/3] p0052 N79-12703
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-286696/0] p0085 N79-15581
GREEN, R. G.
Effect of induced cyclic changes of deep body temperature on task performances
p0202 A79-37708
The psychologist in aircraft accident investigation
p0291 N79-31946
GREENBERG, P. S.
Predicting coronary artery disease with treadmill stress testing Changes in R-wave amplitude compared with ST segment depression
p0186 A79-34284
Predictive accuracy of Q-X/Q-T ratio, Q-Tc interval, S-T depression and R wave amplitude during stress testing
p0225 A79-40464
GREENE, D.
A sample volume tracking unit for pulsed Doppler echocardiography
p0200 A79-36869
GREENLEAF, J. E.
Thresholds for Na/+/ and Ca/++/ effects on thermoregulation
p0045 A79-14774
Plasma volume and electrolyte shifts with heavy exercise in sitting and supine positions
p0161 A79-29336
Effect of sodium and calcium ingestion on thermoregulation during exercise in man
p0163 A79-30624
Limb blood flow - Rest and heavy exercise in sitting and supine positions in man
p0235 A79-43208
Hyperthermia and exercise
p0252 A79-44775
Deconditioning-induced exercise responses as influenced by heat acclimation
p0273 A79-49985
Computer program for calculation of oxygen uptake
[NASA-TM-78585] p0174 N79-21741
GREENLEAF, J. F.
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-284686/3] p0052 N79-12703
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-286696/0] p0085 N79-15581
GREENLEY, D. R.
Water system microbial check valve development
[NASA-CR-151843] p0032 N79-11733
GREENSTEIN, J. S.
A model of human event detection in multiple process monitoring situations
p0092 N79-15632
GRETCHKO, G.
Preliminary results of Cytos experiment flows in Salyut VI - Investigations of Paramechium aurelia
p0229 A79-41709
GRIBANOV, G. A.
Blood lipid changes in hypoxic rats
p0074 N79-14731
GRIBENSKI, A.
The responses of frogs to vestibular and visual stimulation in weightlessness
p0006 A79-12513
GRIFFIN, D.
Development of a specialized head/face protective device for test parachuting operations
p0045 A79-14437
GRIFFIN, J. C.
Study of crew task loading on the C-141A aircraft
[AD-A057346] p0034 N79-11746

GRIFFIN, M. J.
Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance
p0299 A79-52327
The biodynamic response of the human body and its application to standards
p0269 N79-31929
GRIFFITH, E. D.
Energy supply and demand in California
p0242 N79-27603
GRIFFITH, R.
Effect of alcohol and marijuana on eye movements
p0101 A79-23469
GRIGOREV, IU. G.
Radiobiological investigations in Cosmos 782 space flight /Biobloc SF1 experiment/
p0006 A79-12518
GRIGORYEV, A. I.
Effects of hyperhydration on human endurance of orthostatic and LBNP tests
p0072 N79-14721
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819
Fluid-electrolyte metabolism in the crew of Salyut-4
p0311 N79-33792
GRIGORYEV, Y. G.
Radiation lesion to liver DNA of rats exposed to radiation during flight aboard the Kosmos-690 biosatellite
p0014 N79-10702
GRIMM, D. J.
Lung inflation and longitudinal distribution of pulmonary vascular resistance during hypoxia
p0277 A79-50905
GRIN, A. N.
Effects of microwaves on catecholamine metabolism in the brain
p0075 N79-14739
GRINDELAND, R. E.
Studies on the bioassayable growth hormone-like activity of plasma
p0267 A79-47848
Effects of space flight on plasma and glandular concentrations of pituitary hormones
p0021 N79-11664
GRINEVSKAYA, Y. I.
Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
p0313 N79-33813
GRODINS, F. S.
Application of pseudo random binary sequence input to identification of respiratory control dynamics
p0268 A79-48011
GROOD, E.
Knee flail design limits: Background, experimentation and design criteria
[AD-A062384] p0220 N79-25746
GROSSMAN, J. D.
The relative effects of multiple factors on target acquisition
p0267 A79-47765
GROTBERG, J. B.
Lung mechanics: Dynamic response, acoustic generation, and flow limitation
p0017 N79-10727
GROUNDS, D. J.
Transient thermoregulatory model with graphics output
[NASA-CR-160217] p0212 N79-24637
Development of an hypothesis for simulating anti-orthostatic bed rest
[NASA-CR-160200] p0217 N79-25717
Study report on modification of the long term circulatory model for the simulation of bed rest
[NASA-CR-160186] p0218 N79-25727
Study report on interfacing major physiological subsystem models: An approach for developing a whole-body algorithm
[NASA-CR-160232] p0218 N79-25729
User's instructions for the whole-body algorithms
[NASA-CR-160233] p0219 N79-25735
User's guide for the Skylab integrated medical data analysis system
[NASA-CR-160189] p0220 N79-25740
GROVER, R. F.
Exercise ventilation correlates positively with ventilatory chemoresponsiveness
p0066 A79-18954
GRUENAU, S. P.
Cross-adaptive effects of cold, hypoxia, or physical training on decompression sickness in mice
p0268 A79-47855
GRUENER, R.
Evaluation of toxic effects of organic contaminants in recycled water
[PB-291379/6] p0190 N79-22760
GUDAKOVSKII, IU. P.
Experimental determination of maximum permissible exposure to laser radiation of 1.54-micron wavelength
p0002 A79-10648
GUEDRY, F. E., JR.
Motion sickness susceptibility - A retrospective comparison of laboratory tests
p0010 A79-12861
Visual-vestibular interactions. I - Influence of peripheral vision on suppression of the vestibulo-ocular reflex and visual acuity
p0135 A79-27552
GUERIN, M. R.
Mutagenic components of alternate energy sources
[CONF-780636-8] p0280 N79-30923
GUEST, M. M.
Tissue gas and blood analyses of human subjects breathing 80% argon and 20% oxygen
p0164 A79-30655
GUILD, W. R.
Mechanisms of recombination and function of DNA in bacteria
[ORO-3941-33] p0072 N79-14715
GUNDRY, A. J.
Estimated body rotation as a predictor of motion sickness susceptibility
p0273 A79-49990
GUNNARSSON, E.
Physical and mental working environment in a terminal based computer system
[BLL-RTS-11634] p0197 N79-23665
GUNNING, D.
Time estimation as a technique to measure workload
p0062 A79-18203
GUPTA, A. K.
Heat transfer and temperature distribution in the human body
p0041 A79-13612
Simulation and control of a human temperature regulation system
p0041 A79-13613
GUPTA, J. K.
Effects of partial sleep deprivation on psychological performance and behaviour
p0200 A79-37130
Design, fabrication and utility of a flight oriented performance test
p0271 A79-49728
Assessment of spinal disabilities in relation to flying
p0272 A79-49736
GUREVICH, M. I.
Reliability of determining the cardiac output by the method of quadrupole chest impedance rheography
p0098 A79-21243
Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics
p0296 A79-51118
GURNEY, D. J.
Manual landings in Category 3 conditions
p0297 A79-52055
GUROVSKII, N. N.
Medical control in prolonged space flights
[IAF PAPER 78-63] p0003 A79-11226
GURUSIDDAPPA, G.
Functional anatomy of vertebral column with reference to load bearing areas
p0272 A79-49732
Spinal injury pattern due to ejections
p0272 A79-49734
GUSAROV, B. G.
Utilization of the wastes of vital activity
[NASA-TM-75410] p0177 N79-21768

GUSEV, Y. N.
Ultrasonic doppler directional blood flow velocity meter
[RAE-LIB-TRANS-1918] p0279 N79-30920
GUSEVA, Y. V.
Effect of 49-day space flight on parameters of immunological reactivity and protein composition of blood in the crew of Salyut-5
p0107 N79-16515
Studies of microbial flora and immunity of Salyut-3 crew
p0192 N79-23629
Investigation of albumin and globulin composition of blood of the crew of the Salyut-3 orbital station
p0244 N79-27820
GUSEYNOV, F. T.
DNA content of animal organs during space flight on Kosmos-690 satellite
p0073 N79-14728
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
p0311 N79-33796
GUSKI, R.
Aircraft noise and its effect on man: Methods and results of research, consequences for environmental protection
p0162 A79-29763
GUSTAFSON, D. E.
Microprocessor: Based prosthetic control
[PB-286652/3] p0113 N79-16559
GUTIERREZ, G.
A discrete parameter model of the head and neck with neuromuscular feedback
p0211 N79-24627
GUY, A. W.
Microwave and RF dosimetry
p0083 N79-15561
GYORKI, J. R.
Instrumentation for controlling and monitoring environmental control and life support systems
[ASME PAPER 78-ENAS-40] p0009 A79-12587

H

HAAKONSON, N. H.
Between incident and accident
p0292 N79-31953
HAASE, W. C.
Quantitative flow estimation with transcutaneous Doppler ultrasound
p0295 A79-51042
A directional pulsed-Doppler ultrasonic blood flowmeter
p0050 N79-12693
HABERCOM, G. E., JR.
Flight simulator training, volume 2. A bibliography with abstracts
[NTIS/PS-79/0277/8] p0222 N79-25758
HACKNEY, J. D.
Effects of oxides on nitrogen, Carbon monoxide and photochemical oxidants on the ECG during exercise and on cardiopulmonary function
[PB-291595/7] p0177 N79-21763
HADJ-SALEM, R.
Adjustment of an electronic model for electrocardiogram simulation
p0232 A79-42240
HADNI, J.-C.
Psychosis in air force flight personnel during the last 25 years
p0103 A79-23957
HAEGERSTROM-PORTNOY, G.
Contrast effects on smooth-pursuit eye movement velocity
p0104 A79-24068
HAGMANN, M. J.
Electromagnetic absorption in a multilayered model of man
p0226 A79-40650
Some recent results on the deposition of electromagnetic energy in animals and models of man
p0083 N79-15563
Numerical studies of absorption of electro-magnetic energy by man
p0110 N79-16538
HAGY, B.
Intelligence
p0095 N79-15896
HAINES, R. F.
Deconditioning-induced exercise responses as influenced by heat acclimation
p0273 A79-49985
Vision
p0095 N79-15894
HAJJI, M. A.
Improved measurements of shear modulus and pleural membrane tension of the lung
p0236 A79-43702
HALBERG, B. L.
Visual contrast sensitivity functions obtained with colored and achromatic gratings
p0181 A79-32628
HALBREICH, U.
Capillary fragility during air exposure of man to 1-5 ATA and after decompression
p0010 A79-12863
HALCOMB, C. G.
Seating, console and workplace design - Seated operator reach profiles
p0036 A79-13188
Seating, console, and workplace design - Integration of literature and accommodation model
p0036 A79-13189
HALEY, J. L.
The use of mathematical modeling in crashworthy helicopter seating systems
p0287 N79-31923
HALL, A. C.
Helmet weight simulator
[NASA-CASE-LAR-12320-1] p0223 N79-25761
HALL, C. F.
Digital color image compression in a perceptual space
p0136 A79-28013
HALL, R. J.
Human factors design criteria for transilluminated displays
p0036 A79-13187
HALVERSON, C. A.
Temperature-dependent morphological changes in membranes of Bacillus stearothermophilus
p0005 A79-12475
HALVORSON, H. O.
Biological implications of the Viking mission to Mars
p0045 A79-14595
HAMILL, P.
Particle deposition due to turbulent diffusion in the upper respiratory system
p0270 A79-48251
HAMLET, M.
Increased survival in experimental dog heatstroke after reduction of gut flora
p0266 A79-47335
HANCHEY, P.
Responses to crown gall tissue to the space environment: Isozyme patterns
p0020 N79-11656
HANDA, Y.
Frequency analysis of heart rate variability under flight conditions
p0202 A79-37713
HANKIN, N. N.
Measurements of radiofrequency field intensity in buildings with close proximity to broadcast stations
[PB-290944/8] N79-25750
Radiofrequency radiation levels and population exposure in urban areas of the eastern United States
[PB-292855/4] p0241 N79-26779
HANN, R. L.
Refinement of a computer simulation model for evaluating DAIS display concepts
p0038 A79-13209
HANNA, H. H.
Aeromedical aspects of otolaryngology
p0136 A79-27562
HANSEN, R. M.
Quality of retinal image stabilization during small natural and artificial body rotations in man
p0225 A79-40187
HANSON, C. A.
Correlation of choice reaction time performance with biorhythmic criticality and cycle phase
p0102 A79-23471

HARDEN, W. R., III
Temporal relation between onset of cell anoxia and ischemic contractile failure
p0300 A79-52895

HARDIN, J. C.
Monitoring the state of the human airways by analysis of respiratory sound
[IAF PAPER 78-66] p0003 A79-11227

HARDING, J.
Test and evaluation process for life support systems
p0184 A79-33643

HARDY, G. H.
A safety margin and flight reference system and display for powered-lift aircraft
p0090 N79-15614

HARDY, R. H.
Mathematical simulation of the human circulatory system
p0110 N79-16535

HARKEN, A. H.
Temporal relation between onset of cell anoxia and ischemic contractile failure
p0300 A79-52895

HARLAN, A. D.
Developing closed life support systems for large space habitats
[AAS PAPER 78-145] p0099 A79-21260

HARLEN, F.
Protection standards for microwave and radiofrequency radiations
p0300 A79-52878

HARPER, J. A.
Improved airline-type supplied-air plastic suit
[DPSPU-78-30-12] p0282 N79-30943

HARRINGTON, W. W.
An approach to the multi-axis problem in manual control
p0115 N79-17482

HARRIS, D. A.
Pilot performance during flight simulation with peripherally presented visual signals
p0063 A79-18213

HARRIS, G. D.
Detection of coronary artery disease in apparently healthy, asymptomatic aircrew members using thallium-201 myocardial perfusion scintigraphy
p0029 N79-11712

HARRIS, H. P.
Cost analysis of pilot training systems
[SAE PAPER 781005] p0130 A79-25887

HARRIS, L. D.
Distribution of regional volumes and ventilation in excised canine lobes
p0236 A79-43703

HARRIS, R. L., SR.
Advanced transport operation effects on pilot scan patterns
p0295 A79-51098

HARRIS, R. W.
Magnitude estimation as a hearing aid selection procedure
p0246 N79-27838

HARRIS, S. D.
Human performance in concurrent verbal and tracking tasks: A review of the literature
[AD-A060493] p0085 N79-15585
Human performance in time-shared verbal and tracking tasks
[AD-A070275] p0308 N79-32831

HARRIS, W. P.
ARPA authoring system
[AD-A064723] p0190 N79-22762

HARRISON, D. C.
Noninvasive cardiovascular measurements
p0293 A79-51026

HARRISON, E. A.
Eutrophication. Volume 2: A bibliography with abstracts
[NTIS/PS-78/0771/2] p0013 N79-10695
Eutrophication. Volume 3: A bibliography with abstracts
[NTIS/PS-78/0772/0] p0013 N79-10696
Ecosystem models, volume 3. A bibliography with abstracts
[NTIS/PS-78/1146/6] p0054 N79-13678
Ecosystem models, volume 2. A bibliography with abstracts
[NTIS/PS-78/1145/8] p0054 N79-13679
Information processing in humans, volume 2. A bibliography with abstracts
[NTIS/PS-78/1153/2] p0058 N79-13709
Information processing in humans, volume 3. A bibliography with abstracts
[NTIS/PS-78/1154/0] p0058 N79-13710
Stress factors on pilot performance. A bibliography with abstracts
[NTIS/PS-78/1289/4] p0145 N79-18589
Biological effects of laser radiation, volume 2. A Bibliography with abstracts
[NTIS/PS-79/0020/2] p0176 N79-21761
Aircraft sonic boom: Biological effects. A bibliography with abstracts
[NTIS/PS-79/0190/3] p0214 N79-24650
Cardiovascular diseases, volume 3. A bibliography with abstracts
[NTIS/PS-79/0063/2] p0260 N79-28874
Altitude hypoxia, volume 1. A bibliography with abstracts
[NTIS/PS-79/0427/9] p0280 N79-30927
Altitude hypoxia, volume 2. A bibliography with abstracts
[NTIS/PS-79/0428/7] p0280 N79-30928
Biological effects of microwaves, volume 1. A bibliography with abstracts
[NTIS/PS-79/0432/9] p0280 N79-30929
Biological effects of microwaves, volume 2. A bibliography with abstracts
[NTIS/PS-79/0433/7] p0280 N79-30930
Hypothermia. A bibliography with abstracts
[NTIS/PS-79/0533/4] p0308 N79-32830
Hyperbaric oxygenation. A bibliography with abstracts
[NTIS/PS-79/0744/7] p0317 N79-33837

HARRISON, G.
Cosmic ray effects on the eyes of rats flown on COSMOS 782
p0022 N79-11669
Cosmic ray effects on the eyes of stationary and centrifuged rats flown on COSMOS 936, experiment K-207
p0024 N79-11678

HARRISON, G. H.
Temperature uniformity in hyperthermal tumor therapy
p0018 N79-10730

HARRISON, M. H.
Core temperature measurement in man
p0010 A79-12862
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
p0266 A79-47338

HARRISON, W. K.
Age trends in the cardiovascular dynamics of aircrewmen
p0136 A79-27560

HART, F. X.
Space osteoporosis - An electromagnetic hypothesis
p0165 A79-30666

HART, G. B.
Tissue gas and blood analyses of human subjects breathing 80% argon and 20% oxygen
p0164 A79-30655

HART, M. H.
Habitable zones about main sequence stars
p0136 A79-27930

HART, S. G.
Pilot workload during final approach in congested airspace
p0269 A79-48014
Time estimation as a secondary task to measure workload: Summary of research
p0093 N79-15634

HARTER, M. R.
Objective determination of human visual acuity from the visual evoked potential
p0228 A79-41423

HARTMAN, B. O.
Human Factors Aspects of Aircraft Accidents and Incidents
[AGARD-CP-254] p0290 N79-31942

HARTMAN, H.
Synthesis of organic compounds from carbon monoxide and water by UV photolysis
p0099 A79-22077
Speculations of the evolution of the genetic code. II
p0099 A79-22080

HARTMANN, E.
The peripheral critical flicker frequency
p0271 A79-49482
HARTZELL, E. J.
An algorithm to ascertain critical regions of human tracking ability
p0163 A79-30218
A relationship between eye movement patterns and performance in a precognitive tracking task
p0116 N79-17490
HARVEY, J. F.
Component performance of a 360 deg non-programmed visual display
p0137 A79-28163
HARVEY, W. R., JR.
Observation of night shipboard helicopter operations from a 210 foot US Coast Guard cutter
p0151 N79-19637
HARWERTH, R. S.
Stereopsis in monkeys using random dot stereograms - The effect of viewing duration
p0271 A79-49481
HASEGAWA, H.
Evolution of transfer RNA
p0206 A79-37975
HASKELL, E. H.
Effects of sleep at altered ambient temperatures on electrophysiological sleep and thermoregulatory mechanisms in human subjects and in the ground squirrel (Citellus lateralis)
p0216 N79-25709
HATANAKA, H.
Experimental approach to the chemical evolution in the primeval sea. I - Formation of amino acids and amino acid polymers in modified sea mediums
p0203 A79-37935
HATCHER, L.
Development of the Air Force S-1030 full pressure suit assembly
p0044 A79-14433
HAUN, C. C.
Toxicity of high density jet fuel components
[AD-A068596] p0259 N79-28870
HAUT, R. C.
A numerical method of film analysis with differentiation
p0061 A79-17585
HAUTTEMENT, J.-L.
Pulmonary functional tolerance to ionizing radiation - An experimental study
p0256 A79-46601
HAWKINS, H. L.
Time-sharing is not a unitary ability
[AD-A056632] p0019 N79-10739
HAYMAKER, W.
Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798
HAZRA, T. A.
A microangiographic study of the effect of hyperthermia on the rabbit bladder
p0018 N79-10732
HAZUCHA, M.
The effects of H2SO4 on men and H2SO4 and O3 on laboratory animals
p0141 N79-18354
HEARN, N. D.
Impact tests on crash helmets for motor cyclists
[AD-A065966] p0197 N79-24655
HECHTMAN, H. B.
Cardio-pulmonary response to shock
[AD-A065672] p0196 N79-23659
HEFFLEY, R. K.
A safety margin and flight reference system and display for powered-lift aircraft
p0090 N79-15614
HEFT, E. L.
A head-up display for mid-air drone recovery
p0090 N79-15615
HEIDELBAUGH, N. D.
Maximizing storage stability of foods to be used for resupply in a controlled ecological life supply system: Evaluation of research
[NASA-CR-158846] p0260 N79-28880
HEIDMANN, W.
Evolution in open systems - Acquisition and conservation of information in bioids
p0207 A79-37987
HEINEMAN, R. E.
Binocular holographic helmet mounted display
[AD-A062761] p0174 N79-20749
HEINTZEN, P. H.
Computer quantitation of angiocardiographic images
p0293 A79-51028
HEISING, H.
A visual simulator with transformation of the perspective in the raster of television pictures
p0069 A79-19375
HELD, R.
Eye torsion and visual tilt are mediated by different binocular processes
p0256 A79-46651
HELGERSON, S. L.
Relationship between proton motive force and potassium ion transport in Halobacterium halobium envelope vesicles
p0227 A79-40775
HELLMAN, L.
Comparison of plasma and urinary steroids in men with type A and type B behavior patterns
p0028 N79-11704
HELLWIG, J. W.
Development of an electrical energy converter for driving left heart assist blood pumps
[PB-293510/4] p0241 N79-26780
HELM, W. R.
The application of computer aided evaluative techniques to system test and evaluation
p0036 A79-13190
System operability - Concept and measurement in test and evaluation
p0062 A79-18204
HELMREICH, R. L.
Making it in academic psychology: Demographic and personality correlates of eminence
[NASA-CR-162287] p0289 N79-31932
HELMS, C. H.
Prosthetic urinary sphincter
[NASA-CASE-MFS-23717-1] p0077 N79-14756
HEMAMI, H.
Biped stability considerations with vestibular models
p0066 A79-18287
HEMPEL, F. G.
Responses of retinal and visual pathway potentials of the guinea pig to nitrogen and helium at high pressure
p0266 A79-47331
HENDERSON, D. E.
Earth orbital teleoperator systems evaluation
[NASA-CR-150912] p0112 N79-16552
HENDLER, E.
Some human responses to repeated +G sub z pulses
p0288 N79-31928
HENDRICK, H. W.
Physiological biorhythm as a correlate of pilot error accidents and incidents
p0065 A79-18228
HENDRIX, J. E.
Response of crown gall tissue to the space environment: Residual carbohydrates in supporting tissue
p0020 N79-11653
HENKE, R. P.
Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798
Space radiation dosimetry onboard COSMOS 936: US portion of experiment K-206
p0023 N79-11677
HENNEBERRY, T. J.
Selected examples of dispersal of arthropods associated with agricultural crop and animal production
p0148 N79-19595
HENNEY, H. R., JR.
The effect of plasmoidal slime on the metabolism of haploid cells of Physarum flavicomum and the respiration of isolated mitochondria
p0105 A79-24513
Effects of gravity on contractile proteins
[NASA-CR-160303] p0279 N79-30913
HEPPNER, D. B.
Electrochemically regenerable carbon dioxide

absorber
[NASA-CR-152099] p0262 N79-29794

HERIGAULT, R. A.
Effects of chronic changes in hemoglobin-O2 affinity in rats
p0185 A79-33808

HERMAN, J. A.
Contrast enhancement using local area brightness and gain control
p0037 A79-13199

HERN, S. C.
Distribution of phytoplankton in North Carolina lakes
[PB-286387/6] p0084 N79-15573
Distribution of phytoplankton in Arkansas lakes
[PB-292742/4] p0240 N79-26768

HERNANDEZ, J.
Spinal injuries in the F/FB-111 crew escape system
p0274 A79-49996

HERRMANN, R.
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] p0302 A79-53291

HERSHBERGER, M. L.
Contrast enhancement using local area brightness and gain control
p0037 A79-13199
Synthetic aperture radar operator tactical target acquisition research
p0037 A79-13202

HESS, R. A.
A rationale for human operator pulsive control behavior
p0186 A79-34520
A structural model of the adaptive human pilot
[AIAA 79-1784] p0252 A79-45411
A dual-loop model of the human controller
p0115 N79-17480

HETHERINGTON, N. W.
Comparison of circadian rhythms in male and female humans
p0004 A79-11947

HEYBACH, J. P.
Effects of fenfluramine administration on activity of the pituitary-adrenal system in the rat
p0005 A79-12474
Inhibition of the pituitary-adrenal response to stress during deprivation-induced feeding
p0235 A79-43605
Synaptosomal uptake of hypothalamic monoamines and recovery of pituitary-adrenal activity following medial forebrain bundle lesions in rats
p0275 A79-50232

HIATT, F. A.
Distribution of phytoplankton in North Carolina lakes
[PB-286387/6] p0084 N79-15573

HICKMAN, J. R., JR.
Concurrent loss of consciousness and sino-atrial block during +Gz stress
p0202 A79-37714

HICKS, J. A., III
A methodology for conducting human factors evaluations of vehicles in operational field tests
[AD-A061808] p0157 N79-19691

HIDSON, D. J.
Pattern of heat loss from a subject wearing CF temperate-climate combat clothing
[AD-A057746] p0093 N79-15636

HIEGEL, H.
Results of benthic studies at Calvert Cliffs
[PB-294261/3] p0261 N79-29788

HIETALA, S. O.
A microangiographic study of the effect of hyperthermia on the rabbit bladder
p0018 N79-10732

HIGENBOTTAM, C.
Effect of cockpit temperature gradients on the validity of single-point measurements
p0234 A79-43203

HIGGINS, E. A.
Effects of altitude and two decongestant-antihistamine preparations on physiological functions and performance
p0127 A79-24635
Effects of propranolol on Time of Useful Function (TUF) in rats
[AD-A068535/4] p0283 N79-31896

HIGGINS, R.
Measurement of skin temperatures of active subjects by wireless telemetry
p0011 A79-12872

HIGUCHI, M.
Possible contribution of transferable exogenous DNA in prokaryotic evolution
p0205 A79-37971
Possible contribution of transferable exogenous DNA in prokaryotic evolution
p0205 A79-37971

HILADO, C. J.
Statistical studies of animal response data from USF toxicity screening test method
p0066 A79-18305
Two-week studies of survivors from exposures to pyrolysis gases
p0066 A79-18307
Weight control and restraint of laboratory rats
p0133 A79-26584

HILGERT, J. W.
Distribution of phytoplankton in Arkansas lakes
[PB-292742/4] p0240 N79-26768

HILL, H. G.
A literature review-problem definition studies on selected toxic chemicals. Volume 5: Occupational health and safety and environmental aspects of zinc chloride
[AD-A056020] p0025 N79-11687

HILL, I. R.
Injury mechanisms analysis in aircraft accidents
p0286 N79-31913

HILL, J. W.
Two measures of performance in a peg-in-hole manipulation task with force feedback
p0118 N79-17506
Study of modeling and evaluation of remote manipulation tasks with force feedback
[NASA-CR-158721] p0242 N79-26785

HILL, R. C.
Biodynamic effects of canopy loss in the TF-15 aircraft
p0163 A79-30651

HILL, R. E.
Aircrew modularized inflight data acquisition system
[AD-A064725] p0190 N79-22766

HILLMAN, A. L.
MM/1, a man - machine interface: A contribution towards a standard
[NPL-CSU-2/78] p0197 N79-23669

HILLS, B. A.
Effect of decompression per se on nitrogen elimination
p0067 A79-18964
Mechanical vs. ischemic mechanisms for decompression sickness
p0164 A79-30656
The lung as a filter for microbubbles
p0277 A79-50906
Fundamental biophysical aspects of decompression sickness
[AD-A069998] p0315 N79-33827

HILTENBRAND, C.
The electrocardiogram recorded by telemetry during a parachute jump, compared to a trace during stress tests - A preliminary study of 29 cases
p0256 A79-46600

HINSDALE, K.
Masculinity, femininity, androgyny. What really works at work
[AD-A061177] p0156 N79-19683

HINSHAW, L. B.
Effects of methylprednisolone sodium succinate on clearance of living E. coli from peripheral blood of dogs
[AD-A062123] p0169 N79-20717

HINTON, W. M., JR.
F-4J/N instructional system development: Phase 1
[AD-A061098] p0156 N79-19684

HIOTT, B. F.
The interaction of carbon monoxide and altitude on aviator performance: Pathophysiology of exposure to carbon monoxide
[AD-A055212] p0056 N79-13694
The dynamic oxygen-regulator test stand
[AD-A060978] p0125 N79-17560

HIRSCH, D. W.
In-flight toxicology of fixed and rotary wing aircraft crew stations

p0149 N79-19619
HLASTALA, M. P.
Gas exchange under environmental stress
[AD-A058242] p0056 N79-13697
HOBBIE, J. E.
Bacteria in a North Carolina salt marsh. Standing crop and importance in the decomposition of Spartina alterniflora
[PB-288816/2] p0153 N79-19668
HODGES, G.
Aircraft flight simulation of spacelab experiment using an implanted telemetry system to obtain cardiovascular data from the monkey
p0147 N79-19022
HOFFLER, G. W.
Skylab medical data evaluation program (SMEDEP)
[NASA-CR-160279] p0259 N79-28869
HOFFMAN, J. C.
Development of an electrical energy converter for driving left heart assist blood pumps
[PB-293510/4] p0241 N79-26780
HOFFMAN, J. E.
A two-stage model of visual search
p0186 A79-33948
HOFFMAN, M. S.
Multipurpose digital switching and flight control workload
[AD-A069606] p0281 N79-30934
HOFFMANN, H. E.
The limited range of the human eye for optical aircraft acquisition
p0291 N79-31948
HOFMANN, L. G.
Investigation of nonlinear motion simulator washout schemes
p0091 N79-15624
HOFMANN, M. A.
Visual workload of the copilot/navigator during terrain flight
p0038 A79-13206
Visual workload of the copilot/navigator during terrain flight
p0209 A79-38364
HOGGE, J. R.
The effects of alcohol on driver performance in a decision making situation
p0092 N79-15629
HOLDEN, R. D.
The dynamic oxygen-regulator test stand
[AD-A060978] p0125 N79-17560
HOLLAND, A. F.
Results of benthic studies at Calvert Cliffs
[PB-294261/3] p0261 N79-29788
HOLLAND, O. B.
Early cardiovascular adaptation to simulated zero gravity
p0162 A79-29727
HOLLWICH, F.
The physiological significance of light for human beings
[RAE-LIB-TRANS-1976] p0077 N79-14757
HOLMES, R. E.
A 25-inch precision color display for simulator visual systems
p0137 A79-28164
HOLMGREN, M.
Human processing of information and the computerized mode of presentation: Ergonomic parameters
[FOA-C-56018-H9] p0263 N79-29797
HOLMQUIST, R.
Life sciences and space research XVI; Proceedings of the Open Meetings of the Working Group on Space Biology, Tel Aviv, Israel, June 7-18, 1977
p0005 A79-12508
The augmentation algorithm and molecular phylogenetic trees
p0070 A79-20267
Beta-galactosidase and selective neutrality
p0132 A79-26169
Life sciences and space research XVII; Proceedings of the Open Meeting of the Working Group on Space Biology, May 29-June 10, 1978, and Symposium on Gravitational Physiology, Innsbruck, Austria, June 2, 3, 1978
p0228 A79-41701
Molecular phylogenetic trees - On the validity of the Goodman-Moore augmentation algorithm
p0253 A79-45645
HOLSTEIN, G. L.
Whole body response research program. Appendix A: Methodology
[PB-286152/4] p0094 N79-15641
HOLTON, E. M.
Quantitative analysis of selected bone parameters
p0022 N79-11668
Quantitative analysis of selected bone parameters
p0023 N79-11676
HOLZER, G.
Squalenes, phytanes and other isoprenoids as major neutral lipids of methanogenic and thermoacidophilic 'archaebacteria'
p0232 A79-42274
HOLZHAUSEN, K.-P.
Ergonomic problems regarding the interactive touch input via screens in onboard and ground-based flight control
p0061 A79-17695
HOLZMINDEN, W. B.
Solar radiation, light protection and tanning of human skin
[BLL-RTS-11580] p0142 N79-18574
HOMA, J.
Single frequency RF powered ECG telemetry system
p0131 A79-26074
HOON, R. S.
Incidence of cardiovascular problems among flying personnel and their evaluation
p0182 A79-33186
HORDINSKY, J. R.
From the laboratory to the Spacelab - Training program for Spacelab payload experts
[DGLR PAPER 78-182] p0069 A79-20023
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight
[IAF PAPER 79-80] p0301 A79-53288
A new application of LBNP to measure orthostatic tolerance before and after 0-G simulation /water immersion/
[IAF PAPER 79-87] p0302 A79-53290
HORNECK, G.
The Biostack experiment in the U.S. long exposure duration test program
p0227 A79-41230
HORNSETH, J. P.
Two dimensional eye tracking: Sampling rate of forcing function
p0090 N79-15617
Head tracking at large angles from the straight ahead position
p0090 N79-15618
HORNSTRA, G.
Effects of dietary fats on atherosclerosis and thrombosis
p0240 N79-26776
HOROWITZ, J. M.
Thermoregulation in unrestrained rats during and after exposure to 1.5-4 G
p0227 A79-41185
HORRIGAN, D. J.
Tissue gas and blood analyses of human subjects breathing 80% argon and 20% oxygen
p0164 A79-30655
HORVATH, S. M.
Thermoregulation in swimmers and runners
p0227 A79-41186
Response of women mountaineers to maximal exercise during hypoxia
p0234 A79-43201
Pulmonary function and maximum exercise responses following acute ozone exposure
p0273 A79-49987
Auditory and visual sustained attention during ozone exposure
p0273 A79-49988
HORWITZ, A. H.
Effects of magnesium, calcium, and serum on reversion of stable L-forms
p0131 A79-26140
HORWITZ, B. A.
Thermoregulation in unrestrained rats during and after exposure to 1.5-4 G
p0227 A79-41185
HOSMAN, R. J. A. W.
Vestibular models and thresholds of motion perception. Result of tests in a flight simulator
[VTH-LR-265] p0146 N79-18595

HOTTINGER, C. F.
Quantitative flow estimation with transcutaneous Doppler ultrasound
p0295 A79-51042

HOUDAS, Y.
Thermal sweat rate response to an acute short exposure at a simulated altitude of 4,600 m
p0102 A79-23474

HOUGE, J. C.
Portable device for detection of petit mal epilepsy
p0254 A79-46226

HOUK, T. L.
Real-time computerized fluoroscopic cardiac imaging
p0294 A79-51035

HOUSE, K.
Development of a performance criterion for air traffic personnel research through air traffic control simulation
[AD-A058082] p0031 N79-11727

HOWARD, J. H., JR.
Two approaches to category representation in aural classification
[AD-A066705] N79-25754
Predicting individual listener confusions in the classification of complex, steady-state sounds
[AD-A066704] p0222 N79-25755
Classification of amplitude-modulated noise patterns with extended practice
[AD-A066703] p0222 N79-25756

HOWARD, P.
Health effects associated with diesel exhaust emissions, literature review and evaluation
[PB-289817/9] p0171 N79-20727
Human factors in Space vehicles and space stations
p0189 N79-22135

HOWARD, W. H.
In-vivo bone strain telemetry in monkeys /M. nemestrina/
p0002 A79-10608
US experiments flown on COSMOS 782
p0020 N79-11652

HOWELLS, R.
A microangiographic study of the effect of hyperthermia on the rabbit bladder
p0018 N79-10732

HOWES, W. L.
Overall loudness of steady sounds according to theory and experiment
[NASA-RP-1001] N79-25753

HOYLE, F.
Lifecloud: The origin of life in the universe
p0061 A79-17123

HRUBY, T.
Impact of large scale aquatic biomass systems
[PB-282617/0] p0013 N79-19697

HUANG, H. W.
Studying the state of cellular metal ions by the extended X-ray absorption fine structure
[AD-A069799] p0279 N79-30914

HUBBARD, R. P.
Anatomical frames of reference and biomechanics
p0065 A79-18230

HUBEL, D. H.
The visual cortex of normal and deprived monkeys
p0296 A79-51174

HUFFMAN, R. D.
Chemicals identified in human biological media, a pilot literature survey
[PB-290690/7] p0214 N79-24649

HUFFSTETLER, W. J.
Life sciences experiments in the first Spacelab mission
[ASME PAPER 78-ENAS-26] p0008 A79-12575

HUGENHOLTZ, P. G.
Clinical usefulness of radiopaque markers in left ventricular function
p0293 A79-51029

HUGHES, R. G.
Advanced training features: Bridging the gap between in-flight and simulator-based models of flying training
[AD-A068142] p0289 N79-31934

HULL, D. H.
Relaxed +Gz tolerance in healthy men - Effect of age
p0067 A79-18956
Blood pressure variability of the individual in orthostatic testing
p0265 A79-47328
Distinguishing borderline hypertensives from normotensives: A clinical study of 300 aircrewmen
p0027 N79-11699
Effect of age on relaxed +G sub z tolerance of aircrewmen
p0030 N79-11719
Reproducibility of human cardiovascular responses to orthostatic stress
p0030 N79-11720

HUMPHREYS, G.
The fitting of Canadian Forces aircrew helmets - Why the difference
p0184 A79-33645

HUNG, T.-K.
Basic biomechanics equations for cardiovascular flow
p0304 A79-53534

HUNT, H.
Vibration, performance, and personality
p0040 A79-13224

HUNT, S. H.
Temperature effects on shape and function of human granulocytes
[AD-A063750] p0169 N79-22757

HUNT, S. R.
Animal life support transporters for Shuttle/Spacelab
[ASME PAPER 78-ENAS-10] p0006 A79-12559
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] p0302 A79-53294
Automated biowaste sampling system feces monitoring system
[NASA-CR-160301] p0281 N79-30937

HUNTOON, C. L.
Skylab medical data evaluation program (SMEDEP)
[NASA-CR-160279] p0259 N79-28869

HURST, H. W.
Air traffic controller health change study
[FAA-AM-78-39] p0122 N79-17538

HUSTON, R. L.
Multibody dynamics including translation between the bodies, with application to head-neck systems
[AD-A062114] p0174 N79-20747

HUTCHINS, C. W., JR.
The relationship between Air Combat Maneuvering Range (ACMR) output measures and initial visual acquisition performance
[AD-A062134] p0173 N79-20744

HYDEN, H.
A compact low-volume, self-regenerating artificial kidney
[PB-287808/0] p0123 N79-17585

HYMAN, A. I.
Influence of exercise and CO2 on breathing pattern of normal man
p0237 A79-43704

HYMER, W. C.
Purification and cultivation of human pituitary growth hormone secreting cells
[NASA-CR-151853] p0051 N79-12697
Purification and cultivation of human pituitary growth hormone secreting cells
[NASA-CR-160242] p0219 N79-25736

HYNECEK, J.
Single frequency RF powered ECG telemetry system
p0131 A79-26074

I

IAICHNIKOV, I. K.
Characteristics of EEG changes in rabbits in response to local cooling or heating of the central thermosensory area
p0221 A79-36097

IAKHNO, V. P.
Elements of the theory of biological analyzers
p0132 A79-26450

IAKOVLEVA, V. A.
Central and cerebral hemodynamics and metabolism of the healthy man during head-down tilting
p0127 A79-24634

IBRAGIMOV, IU. I.
The response of the microvascular canal to a hypoxic helium-containing medium
p0208 A79-38151

IGNAZI, G.
The use of biostereometry in helicopter cockpit design
p0150 N79-19629

IKEDA, M.
Useful visual field size for pattern perception
p0129 A79-25098
IKELS, K. G.
Molecular sieve oxygen generating system - The argon question /A brief review/
p0274 A79-49994
Human compatibility testing of a 2-man molecular sieve oxygen generator
[AD-A058248] p0053 N79-12710
ILIANOK, V. A.
Reciprocal interaction between the photopic and scotopic systems of the visual analyzer in man
p0296 A79-51327
ILIN, Y. A.
Compensatory reactions of the kidneys to orthostatic factors
p0015 N79-10708
Principal results of experiment with mammals onboard the Kosmos-782 biosatellite
p0073 N79-14726
ILINA-KAKUEVA, E. I.
Ultrasonic investigations of the soleus muscle after space flight on the Biosputnik 936
p0274 A79-49992
ILINA-KAKUYEVA, Y. I.
Effects of physical conditioning and electric stimulation on metabolic processes in the soleus muscle and structure thereof in hypokinetic man
p0192 N79-23634
The combined effect of space flight factors and radiation on rat skeletal muscles
p0244 N79-27821
ILIUKHINA, N. I.
Amino acids in southern Kamchatka hot springs
p0182 A79-33122
ILLE, H.
The electrocardiogram recorded by telemetry during a parachute jump, compared to a trace during stress tests - A preliminary study of 29 cases
p0256 A79-46600
ILLINGER, K. H.
Millimeter wave and far infrared absorption in biological systems
p0082 N79-15554
INCHINA, V. I.
Blood clotting factors of the vascular wall and myocardium of hypokinetic rabbits
p0108 N79-16523
Tissular blood clotting factors of vascular walls and myocardium during hypokinesia
p0194 N79-23644
Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
p0313 N79-33813
INDOVINA, P. L.
ESR studies on different pathological states
[ISS-L-22/9] p0248 N79-27854
ININ, I.
Ergonomics laboratory studies pilots' stability for command
p0121 N79-17529
INOUE, N.
A binocular stereoscopic display system for echocardiography
p0130 A79-26072
Prebiotic synthesis of amino acids by carboxylation of amines in oxidative atmosphere
p0203 A79-37937
IRISH, P. A., III
Subjective motion discrimination in the simulator for air-to-air combat
[AD-A059742] p0079 N79-14770
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view
[AD-A070231] p0308 N79-32832
ISABELLE, D. B.
Mechanism of the formation of phosphenes by X-rays
p0006 A79-12516
ISHAY, J.
Geotropism of hornet comb construction under persistent acceleration
p0006 A79-12514
ISHIGAMI, M.
The origin of the protein synthesis mechanism
p0207 A79-37986
ISHIHARA, K.
The dangerous relation between sunburn and skin cancer
[BLL-RTS-11310] p0142 N79-18573
ISHIMOTO, M.
Sulfate-reducing bacteria and biochemical evolution
p0205 A79-37967
Nitrate fermentation in Clostridium perfringens and significance in metabolic evolution
p0205 A79-37968
ISKANDER, M. F.
An empirical formula for broad-band SAR calculations of prolate spheroidal models of humans and animals
p0278 A79-51015
ISMAILOV, E. S.
Mechanism of effects of microwaves on erythrocyte permeability for potassium and sodium ions
p0075 N79-14743
ISREAL, J.
The event related cortical potential as an index of task workload
p0038 A79-13208
ISWANDHI, G. I.
Adaptive locomotion of a multilegged robot over rough terrain
p0163 A79-30217
ITOKO, T.
Motion cue effects on human pilot dynamics in manual control
p0119 N79-17514
IUFER, E. J.
Biomagnetic instrumentation and measurement
p0295 A79-51083
IUROV, S. S.
Genetic effects of cosmic radiation on bacteriophage T4Br/+/ /On materials of biological experiment Soyuz-Apollo/
p0229 A79-41708
IUSHCHENKO, A. S.
Control systems for robots and manipulators
p0134 A79-27303
IVANIURA, I. A.
Functional changes in the cardiovascular system of machine-tool operators under physical and neurologically stressful loads
p0160 A79-29270
IVANOV, A. A.
Immunological reactivity of rats flown aboard Cosmos-605 and Cosmos-690 biosatellites
p0244 N79-27824
IVANOV, A. N.
Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body
p0073 N79-14725
Concentration of trace contaminants during gas chromatography and chromato-mass spectrometry in biomedical research
p0109 N79-16528
IVANOV, A. V.
Dynamic medical monitoring of flight crews in the course of long-term flights
p0072 N79-14719
IVANOV, K. P.
Regulation and efficiency of sweating in man /Mathematical modeling/
p0097 A79-20622
The bloodflow in skeletal muscle capillaries in normoxia and arterial hypoxemia /Microcinematographic studies/
p0208 A79-38150
IVANOV, V. I.
Concentration of trace contaminants during gas chromatography and chromato-mass spectrometry in biomedical research
p0109 N79-16528
IVASHKEVICH, S. P.
Sterols bound with blood plasma proteins and erythrocyte membranes during hypokinesia
p0193 N79-23636
IVASHKIN, V. T.
Cyclic nucleotides and adaptation of the organism
p0133 A79-26500
IVKOVICH, V. A.
Possibility of quantitative evaluation of the heart's mechanical activity from seismocardiosignals
p0276 A79-50658

J

JACKMAN, K. R.
Telemedicine: An expanding new science on land and sea
p0146 N79-19020

JACKSON, J. K.
Biological specimen holding facilities for Spacelab experiments
[IAF PAPER 78-56]
p0003 A79-11224

JACKSON, W. G., JR.
Reproducibility of +Gz tolerance testing
p0267 A79-47337

JACOBS, H. K.
Role of skin temperature in the control of sweating
p0277 A79-50907

JAEGER, J. J.
Evidence for increased intrathoracic fluid volume in man at high altitude
p0305 A79-54266
Evidence for increased intrathoracic fluid volume in man at high altitude
[AD-A065333]
p0220 N79-25743

JAEGER, R. J.
Directional errors of movements and their correction in a discrete tracking task
p0086 N79-15589

JAFFE, M. J.
A study of the mechanism of thigmomorphogenesis in plants, with special reference to the role of ethylene and its significance to research with plants in space
[NASA-CR-158506]
p0190 N79-23625

JAGACINSKI, R. J.
Secondary visual workload capability with primary visual and kinesthetic-tactual displays
p0064 A79-18220
A comparison of kinesthetic-tactual and visual displays via a critical tracking task
p0162 A79-29720
Evaluation of kinesthetic-tactual displays using a critical tracking task
p0119 N79-17516

JAHNKE, L.
Effects of aeration on formation and localization of the acetyl coenzyme A synthetases of Saccharomyces cerevisiae
p0162 A79-30125

JAMES, D. E.
Radiofrequency radiation levels and population exposure in urban areas of the eastern United States
[PB-292855/4]
p0241 N79-26779

JANICKI, J. S.
The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations
p0300 A79-52894

JARDINE, T. E.
Visual effects of helicopter maneuvre on weapon aiming performance
p0150 N79-19626

JAYASHANKAR, A.
Responses of high altitude natives to a standard cold test at sea level
p0164 A79-30658

JEFFREYS, R. T.
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view
[AD-A070231]
p0308 N79-32832

JELL, R. M.
Visual-vestibular interactions. I - Influence of peripheral vision on suppression of the vestibulo-ocular reflex and visual acuity
p0135 A79-27552

JENKINS, C. D.
Air traffic controller health change study
[FAA-AM-78-39]
p0122 N79-17534

JENNINGS, A. E.
Effects of altitude and two decongestant-antihistamine preparations on physiological functions and performance
p0127 A79-24635
Measurement and scaling of workload in complex performance
p0164 A79-30659
A method to evaluate performance reliability of individual subjects in laboratory research applied to work settings
[FAA-AM-78-37]
p0123 N79-17547
The measurement and scaling of workload in complex performance
[FAA-AM-78-34]
p0125 N79-17558
Time-sharing ability in complex performance: An expanded replication
[FAA-AM-78-33]
p0145 N79-18591

JENNINGS, G. L.
Oculogravic illusion in response to straight-ahead acceleration of a CF-104 aircraft
p0164 A79-30660

JENSEN, R. S.
The effects of prediction, quickening, frequency separation, and percent of pursuit in perspective displays for low-visibility landing
p0063 A79-18210
Judgement evaluation and instruction in civil pilot training
[AD-A057440]
p0019 N79-10737

JESWANI, A. P.
Assessment of spinal disabilities in relation to flying
p0272 A79-49736

JEX, H. R.
Roll tracking effects of G-vector tilt and various types of motion washout
p0091 N79-15622
Progress in measuring and modeling the effects of low frequency vibration on performance
p0288 N79-31930

JOHANNSEN, G.
Arrangement of aircraft flight indicators with the help of optimal theoretical models for man as the controller
[DGLR PAPER 78-149]
p0042 A79-14094
The human operator in the control system: Linear models
p0132 A79-26356
Prospects of a mathematical theory of human behavior in complex man-machine systems tasks
p0088 N79-15599
Analysis of a VTOL hover task with predictor displays using an optimal control model of the human operator
p0088 N79-15605

JOHANSON, D. C.
Some human responses to repeated +G sub z pulses
p0288 N79-31928

JOHNSON, C. C.
Interdisciplinary and international contributions to research on biological effects of electromagnetic waves - Past performances and future challenges
p0129 A79-24878
An empirical formula for broad-band SAR calculations of prolate spheroidal models of humans and animals
p0278 A79-51015

JOHNSON, D. E.
The distribution of cadmium and other metals in human tissues
[PB-285200/2]
p0057 N79-13703

JOHNSON, E. T.
Automated clinical system for chromosome analysis
[NASA-CASE-NPO-13913-1]
p0050 N79-12694

JOHNSON, G. L.
The helmet protects the aviator's head - Or does it
p0044 A79-14429

JOHNSON, G. S.
Thermoregulation in Macaca mulatta - A thermal balance study
p0133 A79-27101

JOHNSON, J. D.
Masculinity, femininity, androgyny. What really works at work
[AD-A061177]
p0156 N79-19683

JOHNSON, J. E.
Training requirements for helicopter operation with night vision goggles
p0153 N79-19650

JOHNSON, J. E., JR.
A study of axonal degeneration in the optic nerves of aging mice
p0005 A79-12123
Senescent changes in the ribosomes of animal cells in vivo and in vitro
p0134 A79-27226

Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798

JOHNSON, J. H.
Life stress, organizational stress, and job satisfaction
[AD-A055153] p0057 N79-13706

JOHNSON, L. W., JR.
Medical and operational factors of accidents in advanced fighter aircraft
p0290 N79-31944

JOHNSON, R. L., JR.
Early cardiovascular adaptation to simulated zero gravity
p0162 A79-29727
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] p0301 A79-53286

JOHNSON, S. L.
Retention and transfer of training on a procedural task interaction of training strategy and cognitive style
[AD-A058966] p0052 N79-12704

JOHNSON, W. E.
Effects of propellant hydrazines on red blood cells: Methemoglobin and Heinz body formation
[AD-A064133] p0189 N79-22755

JOHNSON, W. H.
Oculogravic illusion in response to straight-ahead acceleration of a CF-104 aircraft
p0164 A79-30660

JOHNSTON, P. Y.
Evaluation of fluoropolymer membranes in oxygenators
[PB-286698/6] p0112 N79-16547

JOHNSTON, R. L.
Dose-effect relationships for ultrasound irradiation of brain tissue
p0242 N79-27812

JOHNSTONE, J. R.
Upper-velocity threshold for detection of movement
p0299 A79-52541

JOLDA, J. G.
Aircrew inflight physiological data acquisition system 2
[AD-A055638] p0055 N79-13690

JOLLEY, L., JR.
Improved airline-type supplied-air plastic suit
[DPSPU-78-30-12] p0282 N79-30943

JONES, H. D.
Left Anterior Hemiblock (LAH): Diagnosis and aeromedical risk
p0029 N79-11715

JONES, M. E.
Physiological biorhythm as a correlate of pilot error accidents and incidents
p0065 A79-18228

JONES, J.
Effect of phosphorus supply on algal biomass in a turbid Missouri Reservoir
[PB-293183/0] p0243 N79-27816

JONES, R. B.
Application of computer animation for dynamic display in complex energy systems
p0186 A79-34172

JONES, T. J.
A theoretical investigation of power and control configurations for a high g-onset centrifuge drive system
[AD-A070912] p0309 N79-32841

JONES, W. L.
The role of physical examinations and education in prospective medicine
p0026 N79-11694

JONES, Y. P.
Oculomotor performance of aviators during an autorotation maneuver in a helicopter simulator
p0151 N79-19638
US Army aviation fatigue-related accidents, 1971-1977
[AD-A062486] p0171 N79-20725

JONKOWIEC, T. G.
Spacecraft utensil/hand cleansing fixture
[NASA-CR-151845] p0032 N79-11731
Spacecraft utensil/hand cleansing fixture, addendum
[NASA-CR-151846] p0032 N79-11732

JORDAN, S. W.
Workload and the certification of helicopters for IFR operation
[AD-A072758] p0318 N79-33850

JOUFFRAY, L.
The electrocardiogram recorded by telemetry during a parachute jump, compared to a trace during stress tests - A preliminary study of 29 cases
p0256 A79-46600

JOY, M.
The impact of coronary vascular risk factors on professional aircrew license loss in the United Kingdom
p0031 N79-11724

JUERGENS, J.
An analysis of the saccadic system by means of double step stimuli
p0270 A79-49480

JUKES, T. H.
Biological implications of the Viking mission to Mars
p0045 A79-14595

JUNK, P.
Space Sled - A multipurpose apparatus for vestibular research aboard Spacelab
[DGLR PAPER 78-132] p0042 A79-14083

JUNKER, A. M.
Application of control theory to the investigation of roll motion effects on pilot control behavior
[AD-A054921] p0046 A79-14972
The effects of closed loop tracking on a subjective tilt threshold in the roll axis
p0090 N79-15620
Use of the tilt cue in a simulated heading tracking task
p0091 N79-15621
Roll tracking effects of G-vector tilt and various types of motion washout
p0091 N79-15622
A method motion simulator design based on modeling characteristics of the human operator
p0091 N79-15623
Use of the optimal control model in the design of motion cue experiments
p0118 N79-17510
A model for the pilot's use of motion cues in roll-axis tracking tasks
p0118 N79-17512
The application of control theory to the investigation of roll motion effects on human operator performance
p0288 N79-31931

K

KABUTO, M.
Temporary threshold shift from transportation noise
p0254 A79-46286

KADNYKOV, O. G.
Magnetic field effect on radial processes in biological membranes
p0172 N79-20737

KAKIMOTO, Y.
Measurements of pilot workload during low altitude and high speed maneuvers of F-1 supersonic jet fighter
p0209 A79-38821

KAKURIN, L. I.
Effects of physical conditioning and electric stimulation on metabolic processes in the soleus muscle and structure thereof in hypokinetic man
p0192 N79-23634
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819

KALANDAROV, S.
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
p0311 N79-33798

KALANDAROVA, M. P.
Recovery of hemopoiesis in rats exposed to radiation during space flight
p0014 N79-10701

KALCHEV, L. A.
Obtaining growth hormone from calf blood
[NASA-TM-75326] p0283 N79-31895

KALEPS, I.
Prediction of whole-body response to impact forces in flight environments
p0284 N79-31902

KALINA, G. P.
Microflora of water reclaimed in sealed compartments
p0193 N79-23638

KALINICHENKO, V. I.
Amino acids in southern Kamchatka hot springs
p0182 A79-33122

KALININA, N. K.
The bloodflow in skeletal muscle capillaries in normoxia and arterial hypoxemia /Microcinematographic studies/
p0208 A79-38150

KALITA, N. F.
Effects of LBNP on catecholamines and adrenal cortex
p0110 N79-16532
Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite
p0244 N79-27822

KALLOK, M. J.
Distribution of regional volumes and ventilation in excised canine lobes
p0236 A79-43703

KALMUKOVA, N. D.
Studies of hemodynamics and phase structure of cardiac cycle in the crew of Salyut-4
p0072 N79-14718

KALYUZHIN, V. A.
Changes in calcium ion activity due to magnetization of solution as the possible mechanism of biological action of magnetic fields
p0173 N79-20741

KAMA, W. N.
Real-time reconnaissance systems simulator
p0139 A79-28175

KAMENKOVICH, V. M.
Effect of adaptation level on certain visual functions in man
p0296 A79-51328

KAMENSKAIA, V. G.
Role of the frontal associative region of the cortex in the activity of the auditory and visual sensory systems
p0043 A79-14371

KAMENSKIY, Y. N.
Effects of vibration and noise on some indices of efficiency of MI-4 helicopter crews
p0015 N79-10711

KAMINSKAIA, G. A.
Some forms of adaptation to extreme influences in the blood system
p0256 A79-46679

KAMSHILOV, M. M.
Evolution of the biosphere /2nd enlarged edition/
p0270 A79-48310

KANABUS, E. W.
Apparatus and method of inserting a microelectrode in body tissue or the like using vibration means
[NASA-CASE-NPO-13910-1] p0246 N79-27836

KANTOR, J. E.
Methodology to assess psychological stress and its impact in the air combat environment
[AD-A053474] p0057 N79-13707
Air Force female pilots program: Initial performance and attitudes
[AD-A065641] p0241 N79-26783

KANTOR, S. L.
Hemodynamic indices under orthostatic and vestibular effects
p0098 A79-20692

KAPADIA, A. S.
Medical barofunction testing of aviators with otorhinolaryngologic disease
p0298 A79-52285

KAPLAN, D.
Two primate biological facility module in Spacelab
[IAF PAPER 78-70] p0003 A79-11229

KAPLAN, M.
Firefighters Integrated Response Equipment System
[ASME PAPER 78-ENAS-39] p0009 A79-12586

KAPLAN, I. R.
Biological implications of the Viking mission to Mars
p0045 A79-14595

KAPLANSKIY, A. S.
Effects of space flight on course of radiation lesions in rat lymphoid organs
p0107 N79-16516
Immunobiological reactivity of the body under hyperbaric and hypobaric conditions
p0310 N79-33790

KAPUR, R. R.
Incidence of spinal disability amongst IAF pilots - Follow up of 38 cases
p0201 A79-37133
Assessment of spinal disabilities in relation to flying
p0272 A79-49736

KARAPETIAN, S. K.
Effect of the blockade of hypothalamic adrenergic structures on thermoregulatory reactions
p0167 A79-31950

KARCHEVSKI, P.
Effect of adaptation to high-altitude hypoxia on cardiac adrenoreactivity and the state of the adenylcyclase and phosphodiesterase systems in the myocardium
p0255 A79-46500

KAREL, M.
Mechanisms of deterioration of nutrients
[NASA-CR-160128] p0156 N79-19686
Maximizing storage stability of foods to be used for resupply in a controlled ecological life supply system: Evaluation of research
[NASA-CR-158846] p0260 N79-28880

KARL, A. A.
Determination of cerebral and neck subcutaneous tissue PO2 with 3 and 4 +Gz in M. mulatta
p0234 A79-43205

KARLSEN, E. A.
A study of the effects of six light conditions on caloric induced nystagmus
p0195 N79-23652

KARLSSON, J.
Phosphorylase a in human skeletal muscle during exercise and electrical stimulation
p0067 A79-18962

KARNAUKHOV, V. N.
Coacervate drops - Primitive forms of precells
p0204 A79-37962

KARPINSKII, F. G.
Selecting the program of motions for a biped walking machine
p0166 A79-31490

KARPOVA, L. D.
Evaluation of oxidizability of air in closed areas
p0313 N79-33808

KARPUSHEVA, V. A.
Possibilities of preventing adverse reactions in simulating the acute period of adaptation to weightlessness
p0244 N79-27825

KARTASHEV, A. G.
Changes in calcium ion activity due to magnetization of solution as the possible mechanism of biological action of magnetic fields
p0173 N79-20741

KASATKINA, A. G.
Effects on lipid metabolism in man of some factors that simulate space flight conditions
p0311 N79-33794

KASATKINA, N. V.
Paradoxical reaction of some intracellular antioxidative defense mechanisms during adaptation of the organism to hypoxia
p0165 A79-30696

KASHINTSEV, M. A.
Nonlinear optical susceptibility of the human eye to IR radiation in the 800 to 1355 micron range
p0188 A79-35363
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
p0301 A79-53163

KASUKHIN, L. F.
Comparative study of acetylcholinesterase inactivation in warm-blooded animals and insects with substituted vinyl phosphates
p0121 N79-17527

KATALOV, B. I.
A method of evaluating the pupillary reaction to vestibular stimuli
p0016 N79-10717

KATKOV, V. E.
Central and cerebral hemodynamics and metabolism of the healthy man during head-down tilting

p0127 A79-24634

KATKOV, V. Y.
Effect of brief head-down hypokinesia on pressure in various parts of the healthy man's cardiovascular system
p0245 N79-27831
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
p0311 N79-33797

KATKOVSKIY, B. S.
Effects of hyperhydration on human endurance of orthostatic and LBNP tests
p0072 N79-14721

KATOVICH, M. J.
Time for loss of increased cardiac responsiveness to isoproterenol in cold-acclimated rats after removal from cold
p0128 A79-24636
Relationship between thermogenic drinking and plasma renin activity in the rat
p0235 A79-43211

KATSURA, E.
Sulfate-reducing bacteria and biochemical evolution
p0205 A79-37967

KAUFMANN, K. J.
In vitro duplication of the primary light-induced charge separation in purple photosynthetic bacteria
p0131 A79-26100

KAUFMANN, P. G.
Responses of retinal and visual pathway potentials of the guinea pig to nitrogen and helium at high pressure
p0266 A79-47331

KAUMEYER, K.
Results of benthic studies at Calvert Cliffs
[PB-294261/3] p0261 N79-29788

KAY, F. J.
The development of a whole-body algorithm
[NASA-CR-160214] p0218 N79-25730

KAY, L.
A continuous wave, frequency modulated, ultrasonic device with auditory output for observing the heart
p0045 A79-14602

KAY, T.
Correlation of choice reaction time performance with biorhythmic criticality and cycle phase
p0102 A79-23471
Detection of coronary artery disease in apparently healthy, asymptomatic aircrew members using thallium-201 myocardial perfusion scintigraphy
p0029 N79-11712

KAZANSKAYA, G. S.
Effect of restricted activity on vestibular function
p0312 N79-33802

KAZARIAN, L. E.
Spinal injuries in the F/FB-111 crew escape system
p0274 A79-49996
The validation of biodynamic models
p0286 N79-31914

KAZNACHEYEV, V. P.
New principles of automation of biomedical research
p0078 N79-14763

KEARNS, W.
USAF life support equipment costs
p0043 A79-14402

KEEFE, J. R.
Killifish development in zero-G on COSMOS 782: Fundulus experiment K-104
p0021 N79-11659

KEEN, R.
Determination of the secondary production and population dynamics of the zooplankton of the Lake Champlain ecosystem
[PB-286094/8] p0084 N79-15572

KEIL, L. C.
Effects of space flight on plasma and glandular concentrations of pituitary hormones
p0021 N79-11664

KELLAR, K. J.
Effect of electroconvulsive shock on monoaminergic receptor binding sites in rat brain
p0162 A79-29925

KELLEY, R.
Visually estimating workpiece pose in a robot hand using the feature points method
p0269 A79-48018
General methods to enable robots with vision to acquire, orient, and transport workpieces
[PB-287199/4] p0113 N79-16556

KELLINER, J. C.
Left Anterior Hemiblock (LAH): Diagnosis and aeromedical risk
p0029 N79-11715
The interaction of carbon monoxide and altitude on aviator performance: Pathophysiology of exposure to carbon monoxide
[AD-A055212] p0056 N79-13694

KELLY, D. H.
Motion and vision. I - Stabilized images of stationary gratings
p0278 A79-50986

KELLY, H. B.
The significance of T wave abnormalities
p0029 N79-11713

KELLY, M. A.
Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798

KELTON, A. A.
Biomedical application in space, pilot program in the southern California region
[NASA-CR-160171] p0195 N79-23653

KENDALL, J. W., JR.
Effects of space flight on plasma and glandular concentrations of pituitary hormones
p0021 N79-11664

KENDALL, W. F., JR.
Biodynamic effects of canopy loss in the TF-15 aircraft
p0163 A79-30651

KENDRICK, J. D.
Estimation of aircraft target motion using pattern recognition orientation measurements
p0177 N79-21764

KENNEDY, K. W.
Reach capability of men and women: A three-dimensional analysis
[AD-A060312] p0081 N79-14779

KENNEY, R. A.
Systolic time intervals during combined hand cooling and head-up tilt
p0135 A79-27554
Cardiac response to whole-body heating
p0165 A79-30661

KEOSIAN, J.
The crisis in the problem of the origin of life
p0207 A79-37982

KERSTEN, L.
The proto-type wrist joint assembly TACPAW (Triple Axis Common Pivot Arm Wrist), phase 2
[NASA-CR-150885] p0093 N79-15635

KESSEL, C.
The effects of participatory mode and task workload on the detection of dynamic system failures
p0098 A79-21156
The internal model: A study of the relative contribution of proprioception and visual information to failure detection in dynamic systems
p0087 N79-15596
The effects of participatory mode and task workload on the detection of dynamic system failures
p0116 N79-17487
Development and utilization of internal models in dynamic systems: A comparison of monitors and operators as failure detectors
[AD-A069730] p0282 N79-30942

KESSLER, J. O.
Convective control of long-range coherence in plant growth regulation
p0006 A79-12515

KESSLER, K. M.
Human operator identification model and related computer programs
[NASA-CR-152237] p0112 N79-16551

KESSLER, S.
Quantitative analysis of mating behavior in aging male Drosophila Melanogaster
p0252 A79-44799

KESZTHELYI, L.
Quantitative aspects of the effect of weak

interaction during chemical evolution
p0204 A79-37959

KEVANISHVILI, Z. SH.
Bilateral and interhemispheric asymmetry of acoustic evoked potentials during monoaural acoustic stimulation
p0159 A79-28735
Auditory evoked potentials during short-term auditory stimulation
p0277 A79-50659

KEY, K. F.
Effects of noise frequency on performance and annoyance
[NASA-TM-80107] p0241 N79-26781

KEYSERLING, W. M.
Isometric strength testing in selecting workers for strenuous jobs
p0262 N79-29790

KEYZER, L. S.
Effect of hyperbaric oxygen on peripheral blood neutrophil metabolism
p0245 N79-27830

KHACHIDZE, O. A.
Auditory evoked potentials during short-term auditory stimulation
p0277 A79-50659

KHALIL, T. M.
Depth perception and manual control
p0038 A79-13207

KHANDOGA, V. N.
Functional outcomes of prosthetic cardiac valve replacement
p0076 N79-14746

KHLYNIN, S. M.
Effects of intermittent magnetic field on activity of carbohydrate metabolism enzymes and oxygen uptake in testicular tissue
p0075 N79-14738

KHOKHLOVA, O. S.
Effects on lipid metabolism in man of some factors that simulate space flight conditions
p0311 N79-33794

KHOMAZIUK, A. I.
Neural regulation of coronary circulation
p0208 A79-38148

KHOMUTOVA, I. A.
Regional blood supply under hypoxic hypoxia
p0097 A79-20652

KHOSLA, S. S.
Fluid shifts during initial phase of immersion diuresis in man
p0185 A79-33804

KHVOLES, R. A.
Bilateral and interhemispheric asymmetry of acoustic evoked potentials during monoaural acoustic stimulation
p0159 A79-28735

KIDD, A. L.
Texture contours can facilitate stereopsis by initiating vergence eye movements
p0270 A79-48816

KIERNICKI, J.
Microwave apexcardiography
p0231 A79-41848

KIERNICKI, M.
Microwave apexcardiography
p0231 A79-41848

KIKOLOV, A. I.
Mental work and emotions
p0002 A79-10847

KIKTA, P.
Editing procedure for anthropometric survey data
[AD-A060393] p0093 N79-15639

KIMBALL, K. A.
The assessment of rotary wing aviator precision performance during extended helicopter flights
p0040 A79-13221
Night vision goggles and in-flight evaluation of the inside/outside refocusing problems in a UH-1H helicopter
p0063 A79-18215
An evaluation of perceptual-motor workload during a helicopter hover maneuver
[AD-A058016] p0052 N79-12709
An evaluation of the effects of a stability augmentation system upon aviator performance/workload during a MEDEVAC high hover operation
p0148 N79-19612
Changes in the rotary wing aviator's ability to perform an uncommon low altitude rearward hover maneuver as a function of extended flight requirements and aviator fatigue
p0150 N79-19623
Visual performance/workload of helicopter pilots during instrument flight
p0152 N79-19640
Aviator visual performance: A comparative study of a helicopter simulator and the UH-1 helicopter
p0153 N79-19652

KIME, P. W.
Evolution of the man-machine interface in surveillance radar systems
p0001 A79-10322

KIMZEY, S. L.
Response of the rat erythrocyte to ozone exposure
p0067 A79-18963
Skylab medical data evaluation program (SMEDEP)
[NASA-CR-160279] p0259 N79-28869

KINDER, G.
Effects of brief exposure of domestic fowl to very intense acceleration fields
p0127 A79-24631

KINDRATYEVA, L. G.
Sterols bound with blood plasma proteins and erythrocyte membranes during hypokinesia
p0193 N79-23636

KING-SMITH, P. E.
Detection of coloured stimuli by independent linear systems
p0231 A79-42229

KING, A. I.
Various modeling approaches in biomechanics
p0005 A79-12407
Anatomical coordinate systems for human body segments
p0065 A79-18231
Computation of rigid-body rotation in three-dimensional space from body-fixed linear acceleration measurements
[ASME PAPER 78-WA/BIO-5] p0069 A79-19759
Tolerance of the neck to indirect impact
[AD-A066971] N79-25749
Simulation of head and neck response to -G sub x and +G sub z impacts
p0285 N79-31908

KINKEAD, E. R.
Acute toxicity of a number of chemicals of interest to the Air Force
[AD-A067313] p0220 N79-25742

KINNEY, G. C.
A controller's eye view of color
p0102 A79-23596

KINNEY, J. M.
Influence of exercise and CO2 on breathing pattern of normal man
p0237 A79-43704

KINZLY, R. E.
Predicting aircraft detectability
p0208 A79-38358

KIRILLOVA, Z. A.
Studies of hemodynamics and phase structure of cardiac cycle in the crew of Salyut-4
p0072 N79-14718

KIRKEEIDE, R. L.
Mechanics of blood flow through normal and stenotic coronary arteries
p0154 N79-19676

KIRPOTIN, D. B.
Coacervate drops as a model for precellular structures
p0204 A79-37960

KIRSHBAUM, P. J.
A critally annotated bibliography of the literature on human factors in computer systems
[AD-A058081] p0052 N79-12707

KISELEV, A. A.
New principles of automation of biomedical research
p0078 N79-14763
Current status and prospects of continued refinement of planning and coordination of scientific medical research
p0078 N79-14765
The systems analytic approach to the problem of classification of scientific medical research
p0078 N79-14766

KISELEV, R. I.
Effect of radio waves of a millimeter frequency

range on the body of man and animals
p0172 N79-20735

KISLITSIN, IU. L.
Dynamics of the catalase activity of the blood of athletes under the influence of local decompression
p0271 A79-49699

KISSEN, A. T.
Determination of cerebral and neck subcutaneous tissue PO2 with 3 and 4 +Gz in M. mulatta
p0234 A79-43205

KISSINGER, L. D.
The dependence of the CO2 removal efficiency of LiOH on humidity and mesh size
[ASME PAPER 78-ENAS-5] p0006 A79-12554

KITABATAKE, A.
A binocular stereoscopic display system for echocardiography
p0130 A79-26072

KITAEV, M. I.
Immunophysiological aspects of man's adaptation to highland
p0188 A79-35123

KLASSEN, W.
Radar, Insect Population Ecology, and Pest Management
[NASA-CP-2070] p0147 N79-19592

KLEIN, G.
Cosmic ray effects on the eyes of rats flown on COSMOS 782
p0022 N79-11669

KLEIN, G. A.
Simulator Training Requirements and Effectiveness Study /STRES/
p0063 A79-18216
Life cycle costing of simulated vs actual equipment for intermediate maintenance training
p0064 A79-18217

KLEIN, H. P.
The Viking biological investigations - Review and status
p0100 A79-22083
Effects of aeration on formation and localization of the acetyl coenzyme A synthetases of Saccharomyces cerevisiae
p0162 A79-30125
COSMOS 936, experiment K204: The effects of space flight on some liver enzymes concerned with carbohydrate and lipid metabolism in the rat
p0023 N79-11675

KLEIN, K. E.
Spacelab and beyond - Bioscience problems in the use of space
[DGLR PAPER 78-129] p0041 A79-14081

KLEIN, M. J.
Study of specific effects of hyperfrequencies on the central nervous system. II - Exploratory research on rat /Wistar/ behaviour
p0047 A79-15493

KLEIN, R.
Rhythms in human performance - 1-1/2-hour oscillations in cognitive style
p0210 A79-39601

KLEIN, S.
Direction-selective adaptation with very slow motion
p0265 A79-47118

KLEINER, G. N.
Extended duration Orbiter life support definition
[ASME PAPER 78-ENAS-42] p0009 A79-12588

KLEINMAN, D. L.
Effects of target motion and image on AAA tracking
p0046 A79-14969
Adaptive estimation schemes for minimizing uncertainty in manual control tasks
p0269 A79-48013
Modeling the effects of high-G stress on pilots in a tracking task
p0087 N79-15593
A comparison of motor submodels in the optimal control model
p0087 N79-15597
Closed loop models for analyzing the effects of simulator characteristics
p0087 N79-15598

KLEINSCHUSTER, S. J.
Responses of crown gall tissue to the space environment: Glutamine synthetase activity
p0020 N79-11655

KLEINSTEIN, B. H.
Biological effects of nonionizing electromagnetic radiation. Volume 2, number 4: A digest of current literature
[AD-A055569] p0055 N79-13689

KLEMENTEV, F. M.
Nonparametric model for the detection of signals observed by a human operator on a CRT screen on a noise background
p0159 A79-28565

KLIACHKIN, L. M.
Myocardial infarction in young men
p0188 A79-35137

KLIMOVSKAIA, L. D.
Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations
p0312 N79-33800

KLIMUK, P. I.
The cosmonaut in flight
[NASA-TT-F-17438] p0032 N79-11729

KLINESTIVER, L.
Methodology to assess psychological stress and its impact in the air combat environment
[AD-A053474] p0057 N79-13707

KLINGAMAN, R. L.
Light adaptation in a normal and a rod monochromat - Psychophysical and VEP increment threshold comparisons
p0232 A79-42234

KLINGER, A.
An operator-aiding manipulator control system
p0269 A79-48020

KLINGER, K. P.
Comparative experiments on performance and fatigue effects on pilots using tracking tests and physiological measurement parameters
[RAE-LIB-TRANS-1971] p0080 N79-14774

KLOCEK, T. E.
Human factors evaluation of the AN/UYQ-21 display console
[AD-A056383] p0020 N79-10743

KLOEK, G.
Reproductive adaptation in Drosophila exposed to oxygen-enriched atmospheres
p0164 A79-30657

KLOEZE, J.
Preparation of some prostaglandin E sub 1 omega-homo-prostaglandin E sub 1 esters and their inhibiting properties on rat blood platelet aggregation
p0239 N79-26765

KLUKOWSKI, K.
Preliminary selection of candidates for space flights
[IAF PAPER 79-83] p0302 A79-53289

KNAPIK, J.
Instrumentation and techniques for the measurement of muscular strength and endurance in the human body
[AD-A061023] p0155 N79-19681

KNAPP, C. F.
Cardiac responses of dogs to nonsynchronous and heart synchronous whole-body vibration
p0162 A79-29728
Modification of cardiac function by synchronized oscillating acceleration
p0278 A79-50908
Frequency response of cardiovascular regulation in canines to sinusoidal acceleration at frequencies below 1 Hz (basis for biodynamic modeling)
p0286 N79-31915
The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress
[AD-A069952] p0318 N79-33845

KNAPP, S. C.
Effect of fiber and dye degradation products /FDP/ on burn wound healing
p0298 A79-52277
Operational Helicopter Aviation Medicine
[AGARD-CP-255] p0148 N79-19605
Biomedical constraints on thermal protective flight clothing design: A bioengineering analysis
p0153 N79-19662

A porcine bioassay study of the physiological effects of fiber and dye degradation products (FDP) on burn wound healing
[AD-A066990] N79-25748
Mathematical models of skin burns induced by simulated postcrash fires as aids in thermal protective clothing design and selection
[AD-A066946] p0223 N79-25766

KNELSON, J. H.
The effects of H2SO4 on men and H2SO4 and O3 on laboratory animals
p0141 N79-18354

KNIPLING, E. F.
Strategic and tactical use of movement information in pest management
p0148 N79-19597

KNOCHE, H.
Night rescue operation procedure over sea with bell UH-1D helicopters
p0148 N79-19609
Backache in UH-1D helicopter crews
p0149 N79-19620

KNOOP, P. A.
Survey of human operator modeling techniques for measurement applications
[AD-A058327] p0058 N79-13713

KNOX, F. S., III
Effect of fiber and dye degradation products /FDP/ on burn wound healing
p0298 A79-52277
Bioassay of thermal protection afforded by candidate flight suit fabrics
p0298 A79-52280
Biomedical constraints on thermal protective flight clothing design: A bioengineering analysis
p0153 N79-19662
A porcine bioassay study of the physiological effects of fiber and dye degradation products (FDP) on burn wound healing
[AD-A066990] N79-25748
Evaluation of four thermally protective fabrics using the USAARL bioassay method
[AD-A067351] p0223 N79-25762
Mathematical models of skin burns induced by simulated postcrash fires as aids in thermal protective clothing design and selection
[AD-A066946] p0223 N79-25766

KNYSHOV, G. V.
Functional outcomes of prosthetic cardiac valve replacement
p0076 N79-14746

KO, N. W. M.
Responses of teachers to aircraft noise
p0103 A79-23881

KO, W. H.
Single frequency RF powered ECG telemetry system
p0131 A79-26074

KOBAYASHI, K.
Sulfate-reducing bacteria and biochemical evolution
p0205 A79-37967

KOBAYASHI, Y.
Effects of regional hemoconcentration during LBNP on plasma volume determinations
p0265 A79-47326
Specialized physiological studies in support of manned space flight
[NASA-CR-151876] p0111 N79-16542

KOBIZSKIY, V. I.
Magnetic field effect on radial processes in biological membranes
p0172 N79-20737

KOBOZEV, G. V.
Some forms of adaptation to extreme influences in the blood system
p0256 A79-46679

KOBRICK, J. L.
New inventory for the assessment of symptom occurrence and severity at high altitude
p0273 A79-49991

KOBRINSKII, A. A.
The mechanical properties of manipulation systems
p0231 A79-42017

KOBZEV, Y. A.
Studies of venous circulation in the crew of the Salyut-5 orbital station
p0310 N79-33791

KOBZEVA, L. I.
Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body
p0073 N79-14725
Liberation of carbon monoxide by man when working in protective gear
p0076 N79-14748
Concentration of trace contaminants during gas chromatography and chromato-mass spectrometry in biomedical research
p0109 N79-16528

KOCH, C.
Evaluation of aircrew fatigue during operational helicopter flight mission
p0149 N79-19622

KOCHER, D. C.
Dose-rate conversion factors for external exposure to photon and electron radiation from radionuclides occurring in routine releases from nuclear fuel cycle facilities
[NUREG-CR-0494] p0259 N79-28873

KOCHETOV, A. K.
Some tests used in the practice of aviation medical examination for differential diagnosis of heart diseases
p0188 A79-35136

KODAMA, A. M.
Continuous metabolic and cardiovascular measurements on a monkey subject during a simulated 6-day Spacelab mission
p0229 A79-41713

KOEHLER, S.
Cardiological findings in 115 pilots: Diagnoses and assessment of their flying fitness
p0030 N79-11721

KOJIMA, G. K.
Miniature implantable ultrasonic echosonometer
[NASA-CASE-ARC-11035-1] p0144 N79-18580

KOK, B.
Photochemistry and enzymology of photosynthesis
[COO-3326-70] p0239 N79-26763

KOK, J. J.
Evaluation of models describing human operator control of slowly responding complex systems
p0167 A79-31494
A model of the human supervisor
p0117 N79-17495

KOLBANOV, V. V.
Dynamical characteristics of visual functions
p0276 A79-50656
Restoration of color perception after deadapting flashes
p0193 N79-23640

KOLCHINA, Y. V.
Protein fractions and enzymatic activity thereof in the rat myocardium after the flight on Kosmos-690 biosatellite
p0014 N79-10700
Changes in metabolism of soleus muscle tissue in rats following the flight aboard the Kosmos-690 biosatellite
p0108 N79-16518
Tissular metabolism in mixed type fibers of rat skeletal muscles after flight aboard Cosmos-690 biosatellite
p0244 N79-27823

KOLESINA, N. D.
Microflora of water reclaimed in sealed compartments
p0193 N79-23638

KOLESNIKOV, M. P.
Metal porphyrins in pre-Cambrian deposits as a probable evidence for early photosynthesis
p0165 A79-30695

KOLGANOVA, L. Y.
Ergometric tests in expert medical certification of flight personnel
p0109 N79-16527

KOLGANOVA, N. S.
Protein fractions and enzymatic activity thereof in the rat myocardium after the flight on Kosmos-690 biosatellite
p0014 N79-10700
Changes in metabolism of soleus muscle tissue in rats following the flight aboard the Kosmos-690 biosatellite
p0108 N79-16518
Tissular metabolism in mixed type fibers of rat skeletal muscles after flight aboard Cosmos-690 biosatellite
p0244 N79-27823

KOLIAGIN, V. IA.
Tremometry as a method of evaluating the functional state of the nervous system of a pilot
p0300 A79-53065

KOLOSOV, V. A.
Dynamic medical monitoring of flight crews in the course of long-term flights
p0072 N79-14719

KOLTSOV, A. N.
Tremometry as a method of evaluating the functional state of the nervous system of a pilot
p0300 A79-53065

KOMENDANTOV, G. L.
Third Symposium on Motion Sickness
p0313 N79-33814

KONOCHKOV, M. M.
Atlas of the dose characteristics of external ionizing radiation /Handbook/
p0098 A79-20669

KOMOLOVA, G. S.
Influence of high-altitude conditions on the metabolism of nucleic acids and proteins in the thymocytes of the rat
p0069 A79-19425

3'5'-cyclic AMP content in rat tissues during hypoxic adaptation and gamma irradiation
p0069 A79-19426

Radiation lesion to liver DNA of rats exposed to radiation during flight aboard the Kosmos-690 biosatellite
p0014 N79-10702

DNA content of animal organs during space flight on Kosmos-690 satellite
p0073 N79-14728

Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
p0311 N79-33796

KONDRAKOV, V. M.
Some tests used in the practice of aviation medical examination for differential diagnosis of heart diseases
p0188 A79-35136

Ergometric tests in expert medical certification of flight personnel
p0109 N79-16527

KONDRASHOV, N. G.
Thermal effects during the exposure of ocular fundus tissues to laser radiation
p0234 A79-43057

KONDRATEVA, E. M.
Experiment Chlorella 1 on board of Salyut 6
[IAF PAPER 78-53] p0003 A79-11223

KONDRATEVA, E. N.
The utilisation of organic compounds by purple bacteria in the presence of light
[BLL-RTS-11213] p0141 N79-18556

KONDRATYEV, A. N.
The combined effect of carbon monoxide and normobaric hyperoxia on animals
p0073 N79-14730

KONTOS, H. A.
Responses of pial arterioles after prolonged hypercapnia and hypoxia in the awake rabbit
p0101 A79-23075

KOONCE, J. M.
Predictive validity of flight simulators as a function of simulator motion
p0181 A79-32627

KORBUT, V. L.
Adaptive optimization of exchange of gases in plants in a sealed phytotron
p0313 N79-33806

KORCHAK, G. I.
Microflora of water reclaimed in sealed compartments
p0193 N79-23638

KORDIUM, E. L.
Influence of orbital flight conditions on formation of genitals in Muscari racemosum and Anethum graveolens
p0230 A79-41718

KORDIUM, V. A.
Experiment Chlorella 1 on board of Salyut 6
[IAF PAPER 78-53] p0003 A79-11223

KORENEV, G. V.
Goal-directed mechanics of controlled manipulators
p0275 A79-50447

KORFF, S. A.
Atmospheric neutrons
[NASA-CR-3126] p0211 N79-24631

KORIUKIN, V. E.
Changes in optokinetic, postoptokinetic, and reverse postoptokinetic nystagmus after bilateral labyrinthectomy
p0255 A79-46499

KORN, J.
Visual cues in manual tracking of simulated targets
p0103 A79-23792

Modeling human tracking performance in a high G-stress environment
p0269 A79-48012

Modeling the effects of high-G stress on pilots in a tracking task
p0087 N79-15593

KORNBERG, J. P.
Health maintenance and health surveillance considerations for an SPS space construction base community
[AAS PAPER 78-176] p0099 A79-21273

KOROLENKO, TS. P.
Human psychophysiology in extremal conditions
p0048 A79-15977

KOROLEV, V. V.
Changes in properties of rat femur as a result of crural exarticulation and hypokinesia
p0108 N79-16522

KOROLKOV, V. I.
Compensatory reactions of the kidneys to orthostatic factors
p0015 N79-10708

KORZHENIANTS, V. A.
Changes in properties of rat femur as a result of crural exarticulation and hypokinesia
p0108 N79-16522

KORZHUEV, P. A.
Information on the comparative physiology of digestive enzymes
[BLL-RTS-11203] p0142 N79-18572

KOSHTOYANTS, K. S.
Information on the comparative physiology of digestive enzymes
[BLL-RTS-11203] p0142 N79-18572

KOSTELIANETS, N. B.
Experimental investigation of the visual system using one-dimensional Walsh gratings
p0160 A79-29249

KOSTIS, J. B.
A catheter flow probe for measurement of left ventricular source parameters
p0274 A79-50108

KOTOVSKII, I. P.
Effect of acute hypoxia on some parameters of renal excretory function and renal hemodynamics
p0245 N79-27828

KOTTARCHYK, M.
Accuracy of RGD approximation for computing light scattering properties of diffusing and motile bacteria
p0233 A79-42448

KOU, R. S.
AAA gunnermodel based on observer theory
p0087 N79-15594

KOVACHEVVICH, I. V.
The adrenosympathetic system in the presence of traumatic shock during simulation of effects of weightlessness on the human body
p0192 N79-23633

KOVAL, V. G.
Sterols bound with blood plasma proteins and erythrocyte membranes during hypokinesia
p0193 N79-23636

KOVALENKO, E. A.
Paradoxical reaction of some intracellular antioxidative defense mechanisms during adaptation of the organism to hypoxia
p0165 A79-30696

KOVALEV, E. E.
Atlas of the dose characteristics of external ionizing radiation /Handbook/
p0098 A79-20669

Development capacity of artemia cysts and lettuce seeds flown in Cosmos 936 and directly exposed to cosmic rays
p0127 A79-24632

KOVALEV, N. N.
Effect of cerebrocranial trauma on reactive distinctions of hypothalamic and hippocampal vessels in the presence of hypoxia
p0074 N79-14733

KOVALEV, O. A.
Regional blood supply under hypoxic hypoxia
p0097 A79-20652

KOVALEV, Y. Y.
Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582] p0071 N79-14711

KOVITZ, K. L.
Hemodynamics in teenagers and asthmatic children during exercise
p0133 A79-27102

KOWAL, D. M.
Sustained operations and sleep deprivation - Effects on indices of stress
p0009 A79-12859

Physiological effects of a military training program on males and females
[AD-A062936] p0220 N79-25744

KOWLER, E.
The effect of expectations on slow oculomotor control. I - Periodic target steps. II - Single target displacements
p0225 A79-40185

KOZERENKO, O. P.
Control of vertical position after flights aboard the Salyut-4 orbital station
p0311 N79-33793

KOZHARINOV, V. I.
Analysis of distribution of sequences of R-P intervals in astronauts: Generalized coordinate method
p0015 N79-10707

KOZHEMIAKIN, L. A.
Cyclic nucleotides and adaptation of the organism
p0133 A79-26500

KOZICKI, V. M.
Radio tracking of a fin whale /Balaenoptera physalus/
p0061 A79-18008

KOZLOVA, N. V.
Current conceptions of the mechanism of the effect of chemical stimulus on taste receptors
p0043 A79-14375

KOZYARIN, I. P.
State of process of oxidation phosphorylation of liver mitochondria on exposure to an electric field
p0075 N79-14742

KOZYREVSKAYA, G. I.
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819

Fluid-electrolyte metabolism in the crew of Salyut-4
p0311 N79-33792

KRAFT, C. L.
Windshield quality and pilot performance measurement utilizing computer-generated imagery
p0137 A79-28165

KRAFT, L. M.
Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798

Experiment K-002: Results of histological examination of inguinal lymph nodes, supplementary report
p0021 N79-11662

KRAHENBUHL, G. S.
Stress and simulation in pilot training
[AD-A066670] p0222 N79-25757

KRAMP, K.
Experiences of a payload specialist involved with the simulated Spacelab Mission ASSESS II
[DGLR PAPER 78-183] p0070 A79-20024

KRANDA, K.
Detection of coloured stimuli by independent linear systems
p0231 A79-42229

KRASNOVA, A. I.
Interaction between hypothalamic and bulbar levels of regulating blood circulation
p0098 A79-21242

KRAUSS, R. W.
Closed ecology in space from a bioengineering perspective
p0228 A79-41703

KRAUSE, E. G.
Effect of adaptation to high-altitude hypoxia on cardiac adrenoreactivity and the state of the adenylcyclase and phosphodiesterase systems in the myocardium
p0255 A79-46500

KRAVETS, V.
Salyut-6--Soyuz-29: Our commentary, the crew and the station
[NASA-TM-75393] p0174 N79-20745

KREKELER, H.
Compatibility test of oxygen exposures in the range of 2.2 to 2.8 bar absolute
[DLR-FB-78-10] p0280 N79-30925

KREMEN, M. A.
Psychological aspects of the human-operator's activity while tracking
[RAE-LIB-TRANS-1979] p0079 N79-14768

KRESSIN, J.
Aviation-medicine appraisal as part of the fitness regulations in transportation
p0129 A79-25373

Sources of noise stress on flying personnel
p0227 A79-41169

KRIKORIAN, A. D.
The morphogenetic responses of cultured totipotent cells of carrot (Daucus carota L.) at zero gravity
p0021 N79-11657

KRINKEVICH, E. I.
Circadian rhythm of electrolyte uresis in healthy persons
p0257 A79-46681

KRING, G.
The Spacelab flight unit environmental control/life support system
[ASME PAPER 78-ENAS-14] p0007 A79-12563

KRISHNAMURTHI, S.
Obesity and flying fitness
p0182 A79-33188

KRISHNAMURTI, S.
Aerobiotelemetry from a fighter aircraft
p0200 A79-37131

Influence of Beta-Blockade on asymptomatic ST-T wave changes - A follow up study
p0201 A79-37137

KRIVENKOVA, N. P.
Effects of physical conditioning and electric stimulation on metabolic processes in the soleus muscle and structure thereof in hypokinetic man
p0192 N79-23634

KROEMER, K. H. E.
Human factors analysis of visual distress signaling devices
[AD-A064174] p0190 N79-22765

KRONAUER, R. E.
Apparent saturation of blue-sensitive cones occurs at a color-opponent stage
p0002 A79-10474

KROPP, K. D.
Microflora analysis of a child with severe combined immune deficiency
p0004 A79-11900

KRUEGER, A. G.
Engineering test and evaluation during high G. Volume 3: Anti-G suits
[AD-A059122] p0052 N79-12706

Engineering test and evaluation during high G. Volume 2: Anti-G valves
[AD-A059521] p0081 N79-14780

KRUEGER, G. P.
Oculomotor performance of aviators during an autorotation maneuver in a helicopter simulator
p0151 N79-19638

KRUGER, G. P.
US Army aviation fatigue-related accidents, 1971-1977
[AD-A062486] p0171 N79-20725

KRUGER, R. A.
Real-time computerized fluoroscopic cardiac imaging
p0294 A79-51035

KRUMHAR, K. C.
Developing closed life support systems for large space habitats
[AAS PAPER 78-145] p0099 A79-21260

KRUSZYNA, R.
Hemoglobinemia in rats exposed to high altitude is not due to an overload of catabolic mechanisms
p0101 A79-23467

KRYLOVA, N. V.
On the man's adaptation to the operator's work under stressful conditions of space flight
[IAF PAPER 78-A-56] p0003 A79-11385
Psychological training - One of the most important factors of enhancing the safety of space flights
[IAF PAPER 79-A-24] p0303 A79-53426

KUBAL, W.
Real-time computerized fluoroscopic cardiac imaging
p0298 A79-51035

KUBOZONO, A.
Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions
[IAF PAPER 79-99] p0303 A79-53297

KUDRYASHOVA, Z. M.
Effects of vestibular factors on color-discriminating function of the human eyes following color preadaptation
p0192 N79-23632

KUEHN, L.
Measurement of skin temperatures of active subjects by wireless telemetry
p0011 A79-12872

KUEHN, L. A.
Similarity in the number of lifespan heartbeats among non-hibernating homeothermic animals
p0298 A79-52281

KUHN, C.
Evolution of a genetic code simulated with the computer
p0100 A79-22081

KUHN, H.
Evolution of a genetic code simulated with the computer
p0100 A79-22081

KUHN, W. R.
The response of selected terrestrial organisms to the Martian environment - A modeling study
p0136 A79-27928

KUKULKA, C. G.
Recruitment and discharge properties of motor units in human brachial biceps and adductor pollicis during isometric contractions
p0216 N79-25708

KUKUSHKIN, IU. A.
Tremometry as a method of evaluating the functional state of the nervous system of a pilot
p0300 A79-53065

KULIKOV, G. A.
Role of the frontal associative region of the cortex in the activity of the auditory and visual sensory systems
p0043 A79-14371

KULIKOV, O. B.
Studies of venous circulation in the crew of the Salyut-5 orbital station
p0310 N79-33791

KULIKOV, V.
Medical science in Siberia: Oxygen exchange in the Far North
[NASA-TM-75391] p0211 N79-24630

KULIKOV, V. V.
Nonlinear optical susceptibility of the human eye to IR radiation in the 800 to 1355 micron range
p0188 A79-35363
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
p0301 A79-53163

KUMAR, V.
Effects of partial sleep deprivation on psychological performance and behaviour
p0200 A79-37130
Design, fabrication and utility of a flight oriented performance test
p0271 A79-49728

KUNICK, I.
Uncommon hypersensitivity to contacting cold water and cold air with propagated reflex-like erythema development
[BLL-RTS-11644] p0279 N79-30917

KUNIEWICZ, R.
Serendipitous solution to the problem of culturing Arabidopsis plants in sealed containers for spaceflights of long duration
p0229 A79-41704

KUNZRU, G. N.
Assessment of burns in accident fatalities
p0272 A79-49729
Delayed effects of alcohol ingestion on + Gz tolerance
p0272 A79-49730

KUPCHINSKII, R. A.
Myocardial infarction in young men
p0188 A79-35137

KUPERMAN, A. M.
Experimental investigation of the visual system using one-dimensional Walsh gratings
p0160 A79-29249

KUPERMAN, G. G.
Imagery interpreter performance in the comparison of subjective estimates of photographic image quality
p0036 A79-13191
Refinement of a computer simulation model for evaluating DAIS display concepts
p0038 A79-13209
Real-time reconnaissance systems simulator
p0139 A79-28175

KUPRIIANOV, A. A.
Evaluation of physiological indices during preflight medical examination of pilots
p0188 A79-35138

KURBJUN, M. C.
Flight management research utilizing an oculometer
p0001 A79-10389

KURIHARA, T.
Vigilance and electroencephalogram
p0100 A79-22975
Frequency analysis of heart rate variability under flight conditions
p0202 A79-37713
Analysis of electroencephalogram during psychomotor performance
p0209 A79-38820

KURKINA, L. M.
Changes in metabolism of soleus muscle tissue in rats following the flight aboard the Kosmos-690 biosatellite
p0108 N79-16518
Tissular metabolism in mixed type fibers of rat skeletal muscles after flight aboard Cosmos-690 biosatellite
p0244 N79-27823

KURODA, I.
Frequency analysis of heart rate variability under flight conditions
p0202 A79-37713

KUSTOV, V. V.
The combined effect of carbon monoxide and normobaric hyperoxia on animals
p0073 N79-14730

KUZMIN, M. P.
Antiorthostatic hypokinesia as an approximate model of weightlessness
p0108 N79-16520

KUZNETSOV, P. I.
Mathematical model of the respiration rhythm generation process
p0254 A79-46268

KUZNETSOV, V. N.
Dynamic medical monitoring of flight crews in the course of long-term flights
p0072 N79-14719

KUZNETSOVA, N. A.
Rat behavior in maze after flight aboard Kosmos-690 biosatellite
p0014 N79-10705

KVALSETH, T. O.
Digital man-machine control systems - The effects of preview lag
p0131 A79-26149
Test of the 10 bits/sec channel-capacity hypothesis for human tracking
p0253 A79-45771

KVETNYANSKI, R.
Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite
p0244 N79-27822

L

LABUTSKII, A. K.
Possibility of quantitative evaluation of the heart's mechanical activity from seismocardiosignals
p0276 A79-50658

LACELLE, P. L.
Studies of metabolism, function and mechanism of destruction of red cells
[AD-A070240] p0315 N79-33828

LACHENMAYR, B.
The peripheral critical flicker frequency
p0271 A79-49482

LACKNER, J. R.
Optokinetic motion sickness - Attenuation of visually-induced apparent self-rotation by passive head movements
p0135 A79-27558
Changes in apparent body orientation and sensory localization induced by vibration of postural muscles - Vibratory myesthetic illusions
p0163 A79-30653
Rotation at 30 RPM about the Z axis after 6 hours in the 10-deg head-down position - Effect on susceptibility to motion sickness
p0165 A79-30662

LACOMBE, E. H.
Application of an isolated heart model to investigate blood-oxygen delivery
p0296 A79-51112

LAFFERTY, J. F.
Dynamic response of vertebral elements related to USAF injury
[AD-A059489] p0071 N79-14713

LAHAV, N.
Prebiotic nucleotide oligomerization in a fluctuating environment - Effects of kaolinite and cyanamide
p0162 A79-29938

LAI-FOOK, S. J.
Improved measurements of shear modulus and pleural membrane tension of the lung
p0236 A79-43702
Distribution of regional volumes and ventilation in excised canine lobes
p0236 A79-43703

LAIB, G. R.
Investigation of techniques to reduce electrostatic discharge susceptibility of EED's containing plastic plugs
[AD-A059982] p0093 N79-15638

LAITINEN, L. A.
Scanning and transmission electron microscopy of the blood-bubble interface in decompressed rats
p0266 A79-47333

LAMB, M. J.
U.S. Navy development of an on-board oxygen generation /OBOG/ system
p0183 A79-33634
Environmental test and evaluation of a molecular sieve on-board oxygen generation system
[AD-A061531] p0125 N79-17559
US Navy development of an On-Board Oxygen Generation (OBOG) system
[AD-A063958] p0197 N79-24656

LAMBA, S. S.
Microbial transformation of nucleosides
[NASA-CR-158696] p0197 N79-25704

LAMBDIN, D. L.
Radiofrequency radiation levels and population exposure in urban areas of the eastern United States
[PB-292855/4] p0241 N79-26779
Radiofrequency radiation levels and population exposure in urban areas of the eastern United States
[PB-292855/4] p0241 N79-26779

LAMBERTSEN, C. J.
Acid-base curve nomogram for chimpanzee blood and comparison with human blood characteristics
p0133 A79-27105

LAMBOU, V. W.
Distribution of phytoplankton in Arkansas lakes
[PB-292742/4] p0240 N79-26768

LAMBSON, K. H.
Spine immobilization method and apparatus
[NASA-CASE-ARC-11167-1] p0279 N79-30921

LANCASTER, M. C.
A prospective medicine approach to the problem of ischemic vascular disease in the USAF
p0027 N79-11697
Specific Findings in Cardiology and Pulmonary Function with Special Emphasis on Assessment criteria for Flying
[AGARD-CP-232] p0028 N79-11705
Specific findings in cardiology and pulmonary function with special emphasis on assessment criteria for flying
p0171 N79-20731

LANCASTER, H. F.
Detection of coronary artery disease in apparently healthy, asymptomatic aircrew members using thallium-201 myocardial perfusion scintigraphy
p0029 N79-11712

LANCRAFT, R. E.
A comparison of motor submodels in the optimal control model
p0087 N79-15597

LANDAW, S. A.
Alterations in erythrocyte survival parameters in rats after 19.5 days aboard COSMOS 782
p0021 N79-11663
Effect of weightlessness and centrifugation (LXG) on erythrocyte survival in rats subjected to prolonged space flight
p0023 N79-11674

LANGE, R. D.
Erythropoietic effects of space flight
p0231 A79-42193

LANGERHOLC, J.
Moving phase transitions in laser-irradiated biological tissue
p0228 A79-41478

LANGLEY, C. H.
Are evolutionary rates really variable
p0232 A79-42273

LANGWORTHY, T. A.
Squalenes, phytanes and other isoprenoids as major neutral lipids of methanogenic and thermoacidophilic 'archaebacteria'
p0232 A79-42274

LANYI, J. K.
Coupling of aspartate and serine transport to the transmembrane electrochemical gradient for sodium ions in Halobacterium halobium - Translocation stoichiometries and apparent cooperativity
p0002 A79-10425
Relationship between proton motive force and potassium ion transport in Halobacterium halobium envelope vesicles
p0227 A79-40775
Gating effects in Halobacterium halobium membrane transport
p0268 A79-47849
Light-driven solute transport in Halobacterium halobium
p0270 A79-49194
Energy transduction in Halobacterium halobium
p0300 A79-53000

LAPA, V. V.
Dynamics of impairment of pilot performance in the presence of hypoxia
p0073 N79-14724

LAPAEV, E. V.
Effects of vestibular stimuli on the electrical activity of muscles
p0187 A79-35121

LAPAYEV, E. V.
A method of evaluating the pupillary reaction to vestibular stimuli
p0016 N79-10717

LAPSHINA, N. A.
Studies of hemodynamics and phase structure of cardiac cycle in the crew of Salyut-4
p0072 N79-14718
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819

LAPTEVA, R. I.
Central and cerebral hemodynamics and metabolism of the healthy man during head-down tilting
p0127 A79-24634

LARIN, V. B.
Stabilization of the horizontal motion of a bipedal walking robot
p0251 A79-44081
Stabilization of a biped walking machine with incomplete information on its phase coordinates
p0273 A79-49879

LARIN, V. L.
Regional blood supply under hypoxic hypoxia

p0097 A79-20652
LARKIN, E. C.
Response of the rat erythrocyte to ozone exposure
p0067 A79-18963
LARRY, C.
The effects of pilot age, lighting, and head-down time on visual accomodation
[AD-A064912] N79-25747
LARUSSA, J. A.
The holographic Pancake Window
p0138 A79-28172
LASALA, K. P.
Man-machine reliability - A practical engineering tool
p0047 A79-15400
LASKIN, G. M.
The role of lesser circulation hemodynamic changes in pulmonary gas exchange
p0300 A79-53066
LATEGOLA, M. T.
Cardiorespiratory assessment of decongestant-antihistamine effects on altitude, +Gz, and fatigue tolerances
p0127 A79-24628
A lower body negative pressure box for +Gz simulation in the upright seated position
[AD-A069326] p0259 N79-28868
LATIMER, J. R.
Linearization and sensitivity analysis of model for human eye movements
p0102 A79-23783
LAU, C. G. Y.
Modeling of visual-vestibular interaction and the fast components of nystagmus
p0050 N79-12692
LAUBACH, L. L.
Anthropometric source book. Volume 1: Anthropometry for designers
[NASA-RP-1024] p0032 N79-11734
Anthropometry
p0032 N79-11737
Range of joint motion
p0033 N79-11740
Human muscular strength
p0033 N79-11741
LAUCHLI, A.
Microanalytical identification of barium sulphate crystals in statoliths of Chara Rhizoids
[NASA-TM-75611] p0175 N79-21744
LAUGHLIN, M. H.
Regional coronary blood flow at rest and during high sustained +Gz in a miniature swine with subclinical, ischemic, coronary heart disease due to coronary stenosis
p0010 A79-12865
Concurrent loss of consciousness and sino-atrial block during +Gz stress
p0202 A79-37712
LAURENT, G. J.
Human factor engineering test and evaluation of the US Navy LAMPS helicopter system
p0151 N79-19632
LAUTA, A. D.
The role of the neurohormone system of the hypothalamus in physiology and pathology
p0251 A79-43835
LAVER, M. B.
Effects of chronic changes in hemoglobin-O2 affinity in rats
p0185 A79-33808
LAVERDANT, C.
A new case of autochthonous malaria in the Paris region associated with frequentation of airports - Recommendations of prophylactic procedures
p0104 A79-23958
LAVESON, J. I.
NASA flight management research
p0040 A79-13218
LAVY, S.
Organ blood flow, cardiac output, arterial blood pressure, and vascular resistance in rats exposed to various oxygen pressures
p0135 A79-27557
LAWSON, S. M.
Anatomical coordinate systems for human body segments
p0065 A79-18231
LAWWILL, T.
Mechanisms of retinal damage from chronic laser radiation: Thresholds and mechanisms
[AD-A058449] p0056 N79-13698
LAZZARA, R.
The effects of filtering the His-Purkinje system electrocardiogram
p0130 A79-26073
LE CROISSETTE, D. H.
Signal processing in ultrasound
p0294 A79-51039
LEACH, C. S.
A review of the consequences of fluid and electrolyte shifts in weightlessness
[IAF PAPER 78-50] p0002 A79-11220
LEACHTENAUER, J. C.
Peripheral acuity and photointerpretation performance
p0068 A79-18996
LEAFFER, D.
Cosmic ray effects on the eyes of rats flown on COSMOS 782
p0022 N79-11669
LEANCA, M.
Porphyrin-like compounds genesis under simulated abiotic conditions
p0099 A79-22078
LEATHERWOOD, J. D.
A model for predicting human discomfort response to combined noise and vertical vibration
p0156 N79-19685
Human discomfort response to noise combined with vertical vibration
[NASA-TP-1374] p0190 N79-22761
Discomfort criteria for single-axis vibrations
[NASA-TP-1422] p0196 N79-23662
Effect of helicopter noise on passenger annoyance
[NASA-TM-80106] p0241 N79-26782
LEAV, I.
Increased survival in experimental dog heatstroke after reduction of gut flora
p0266 A79-47335
LEBEDEV, V. M.
Atlas of the dose characteristics of external ionizing radiation /Handbook/
p0098 A79-20669
LEBEDEVA, E. S.
The role of lesser circulation hemodynamic changes in pulmonary gas exchange
p0300 A79-53066
LEBEDEVA, V. A.
Current conceptions of the mechanism of the effect of chemical stimulus on taste receptors
p0043 A79-14375
LEBEL, J. L.
The development of a digital video subtraction system for intravenous angiography
p0294 A79-51033
LECLERC, L. F.
Effects of chronic changes in hemoglobin-O2 affinity in rats
p0185 A79-33808
LECROART, J. L.
Thermal sweat rate response to an acute short exposure at a simulated altitude of 4,600 m
p0102 A79-23474
LEDBETTER, D. C.
Computer quantitation of coronary angiograms
p0293 A79-51030
LEDRU, C.
Thermal sweat rate response to an acute short exposure at a simulated altitude of 4,600 m
p0102 A79-23474
LEE, C. S. F.
A fluid-mechanical study of the closure of heart valves
p0161 A79-29540
LEE, H. K.
Technology advancement of an oxygen generation subsystem
[NASA-CR-152257] p0261 N79-28883
LEE, H. W.
A stochastic model of muscle fatigue in frequent strenuous work cycles
p0261 N79-29789
LEE, P. P. K.
Noninvasive ultrasonic blood flow characterization
p0017 N79-10726
LEE, R.
Cosmic ray effects on the eyes of stationary and centrifuged rats flown on COSMOS 936, experiment

K-207 p0024 N79-11678

LEE, W. D.
Biomedical ultrasonoscope
[NASA-CASE-ARC-10994-2] p0240 N79-26771

LEE, S. S.
Assessment of human exposures to atmospheric benzene
[PB-284203/7] p0051 N79-12701

LEEBEEK, H. J.
Some ergonomic aspects of adapting workrooms with visual display units to the human possibilities
[IZF-1978-1] p0125 N79-17562

LEES, M. A.
The assessment of rotary wing aviator precision performance during extended helicopter flights
p0040 A79-13221
An evaluation of perceptual-motor workload during a helicopter hover maneuver
[AD-A058016] p0052 N79-12709
An evaluation of the effects of a stability augmentation system upon aviator performance/workload during a MEDEVAC high hover operation
p0148 N79-19612
Changes in the rotary wing aviator's ability to perform an uncommon low altitude rearward hover maneuver as a function of extended flight requirements and aviator fatigue
p0150 N79-19623
Visual performance/workload of helicopter pilots during instrument flight
p0152 N79-19640
Aviator visual performance: A comparative study of a helicopter simulator and the UH-1 helicopter
p0153 N79-19652

LEET, D. G.
Procedures used to generate input data sets for the articulated total body model from anthropometric data
p0284 N79-31903

LEFEVER, A.
Simulated EVA operation of a remote connector assembly test report
[NASA-CR-161167] p0156 N79-19687

LEGGE, G. E.
Spatial frequency masking in human vision - Binocular interactions
p0232 A79-42284

LEGUAY, C.
Mitral prolapse and acceleration
p0103 A79-23951

LEGUAY, G.
Selection of astronaut candidates - Contribution of the exercise ECG and spirography
p0047 A79-15489
Conduction difficulties of vagal origin in flight personnel - Significance of intrathoracic data on the bundle of His
p0103 A79-23955
Pneumothorax and flight personnel
p0103 A79-23956
The application of vectorcardiography to aerospace medicine
p0256 A79-46602
Detection and supervision of obstructed respiratory flow in fliers. Advantages of debit-volume graphs
p0028 N79-11707
Cardiac conduction and aptitude problem of fliers. The benefits of endocavital recording of the His-bundles
p0030 N79-11716
The advantages of ultrasonic echocardiography in the cardiological evaluation of fliers
p0030 N79-11718

LEHMANN, E. J.
The toxicology of ozone. A bibliography with abstracts
[NTIS/PS-78/1120/1] p0057 N79-13705

LEHTO, V.-P.
Scanning and transmission electron microscopy of the blood-bubble interface in decompressed rats
p0266 A79-47333

LEIBRECHT, B. C.
Nomest 1: Personality, heart rate, urinary catecholamine, and subjective fatigue measures related to night nap-of-the-earth flying
[AD-A054888] p0055 N79-13692

LEISEY, S. A.
Air Force female pilots program: Initial performance and attitudes
[AD-A065641] p0241 N79-26783

LEISMAN, G.
Perceptual localization, feature identification and ocular motor factors in scanning a visual display
p0064 A79-18218
Oculomotor factors in visual perceptual response efficiency
p0209 A79-38361

LEJEUNE, F. E., JR.
Laryngeal problems in space travel
p0011 A79-12870

LELEKOV, N. G.
Temperature effect of muscular work in the white rat during hypoxia
p0097 A79-20654

LEMAIRE, R.
Increased survival in experimental dog heatstroke after reduction of gut flora
p0266 A79-47335

LENDA, J. A.
Manned maneuvering unit: User's guide
[NASA-CR-151864] p0113 N79-16553

LENNIE, P.
Saccadic eye movements and visual stability
p0035 A79-13075

LENTZ, J. M.
Motion sickness susceptibility - A retrospective comparison of laboratory tests
p0010 A79-12861
Visual-vestibular interactions. I - Influence of peripheral vision on suppression of the vestibulo-ocular reflex and visual acuity
p0135 A79-27552

LEON, H. A.
Alterations in erythrocyte survival parameters in rats after 19.5 days aboard COSMOS 782
p0021 N79-11663
Effect of weightlessness and centrifugation (LXG) on erythrocyte survival in rats subjected to prolonged space flight
p0023 N79-11674

LEONARD, J. I.
Validation of a model for investigating red cell mass changes during weightlessness
[NASA-CR-160188] p0211 N79-24634
User's instructions for the 41-node thermoregulatory model (steady state version)
[NASA-CR-160220] p0212 N79-24638
Systems identification and application systems development for monitoring the physiological and health status of crewmen in space
[NASA-CR-160235] p0212 N79-24642
The application of sensitivity analysis to models of large scale physiological systems
[NASA-CR-160228] p0213 N79-24645
Development of an hypothesis for simulating anti-orthostatic bed rest
[NASA-CR-160200] p0217 N79-25717
Dynamic regulation of erythropoiesis: A computer model of general applicability
[NASA-CR-160203] p0217 N79-25720
Study report on modification of the long term circulatory model for the simulation of bed rest
[NASA-CR-160186] p0218 N79-25727
Improvements and validation of the erythropoiesis control model for bed rest simulation
[NASA-CR-160187] p0218 N79-25728
Study report on interfacing major physiological subsystem models: An approach for developing a whole-body algorithm
[NASA-CR-160232] p0218 N79-25729
User's instructions for the whole-body algorithms
[NASA-CR-160233] p0219 N79-25735
The application of systems analysis and mathematical models to the study of erythropoiesis during space flight
[NASA-CR-160218] p0219 N79-25739

LEONTEVA, G. A.
Genetic effects of cosmic radiation on bacteriophage T4Br/+/ /On materials of biological experiment Soyuz-Apollo/
p0229 A79-41708

LEOPOLD, H. S.
Investigation of techniques to reduce electrostatic discharge susceptibility of EED's

containing plastic plugs
[AD-A059982] p0093 N79-15638

LEPSKIY, A. A.
Studies of hemodynamics and phase structure of cardiac cycle in the crew of Salyut-4 p0072 N79-14718
Investigation of composition of trace contaminants in the air environment of the Soyuz-22 spacecraft p0072 N79-14720

LERNER, E. N.
Diffraction-based characterization of biological tissue with ultrasound p0054 N79-13683

LESHCHENKO, N. M.
Clinical and morphological studies of people in the course of long-term hypokinesia and subsequent readaptation p0015 N79-10709

LESKOV, A. G.
Control systems for robots and manipulators p0134 A79-27303

LEUNG, S.
Human health damages from mobile source air pollution: A delphi method, volume 1
[PB-288319/7] p0145 N79-18585
Human health damages from mobile source air pollution: Additional Delphi data analysis, volume 2
[PB-288320/5] p0145 N79-18586

LEUSHINA, L. I.
Training of visual recognition p0160 A79-29250

LEVASHOV, O. V.
Elements of the theory of biological analyzers p0132 A79-26450

LEVASSEUR, J. E.
Responses of pial arterioles after prolonged hypercapnia and hypoxia in the awake rabbit p0101 A79-23075

LEVER, M. J.
Acid-base curve nomogram for chimpanzee blood and comparison with human blood characteristics p0133 A79-27105

LEVERETT, S. D., JR.
Physiological effect of high, sustained +Gz forces on man p0229 A79-41711

LEVINE, M. S.
Changes in apparent body orientation and sensory localization induced by vibration of postural muscles - Vibratory myesthetic illusions p0163 A79-30653

LEVINE, S. H.
An Air Combat Effectiveness Study /ACES/ program p0040 A79-13222

LEVISON, W. H.
Application of control theory to the investigation of roll motion effects on pilot control behavior
[AD-A054921] p0046 A79-14972
A model for the pilot's use of roll-axis motion cues in steady-state tracking tasks
[AD-A059504] p0079 N79-14772
Evaluation of display and control concepts for a terminal configured vehicle in final approach in a windshear environment p0090 N79-15616
Use of the tilt cue in a simulated heading tracking task p0091 N79-15621
Use of the optimal control model in the design of motion cue experiments p0118 N79-17510
A model for the pilot's use of motion cues in roll-axis tracking tasks p0118 N79-17512
The application of control theory to the investigation of roll motion effects on human operator performance p0288 N79-31931

LEVKOVICH, YU. I.
The bloodflow in skeletal muscle capillaries in normoxia and arterial hypoxemia /Microcinematographic studies/ p0208 A79-38150
A cinematographic technique for investigating some aspects of visual recognition p0300 A79-53067

LEVY, J.
Polyglutaraldehyde - A new reagent for coupling proteins to microspheres and for labeling cell-surface receptors p0274 A79-50230

LEWINE, E. B.
The child in coma p0094 N79-15890
The control and prevention of seizures in children, a developmental and environmental approach p0094 N79-15892

LEWIS, C. H.
Mechanisms of the effects of vibration frequency, level and duration on continuous manual control performance p0299 A79-52327
The biodynamic response of the human body and its application to standards p0288 N79-31929

LEWIS, C. J. G.
Light weight solid state helmet symbol display and position system p0046 A79-15177

LEWIS, G. W.
Multifunctional transducer
[NASA-CASE-NPO-14329-1] p0219 N79-25737
Hemispheric asymmetry as related to pilot and radar intercept officer performance
[AD-A068087] p0289 N79-31935

LEWIS, J. L., JR.
Operator performance and localized muscle fatigue in a simulated space vehicle control p0214 N79-24653
Operator performance and localized muscle fatigue in a simulated space vehicle control task
[NASA-TM-58220] p0259 N79-28867

LEWIS, M. A.
A comparison of three models for determining test fairness
[AD-A066586] N79-25751
The development of the ATC selection battery: A new procedure to make maximum use of available information when correcting correlations for restriction in range due to selection
[FAA-AM-78-36] N79-25752
The selection of air traffic control specialists: Two studies demonstrating methods to insure an accurate validity coefficient for selection devices
[AD-A068581] p0281 N79-30932

LEWIS, M. F.
Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators p0297 A79-52276

LEWIS, R. A.
Adaptive control of a robotic manipulator p0046 A79-15001

LEWYCKYJ, J. Z.
Development of integrated tubing fabric for liquid conditioning undergarments p0044 A79-14415
Development of the CWU-48/P high temperature resistant aramid knit flyer's coverall
[AD-A059128] p0059 N79-13716

LIBERT, J. P.
Human skin wettedness and evaporative efficiency of sweating p0162 A79-29726
Effect of rate of change in skin temperature on local sweating rate p0268 A79-47853

LICHTMAN, M. A.
Studies of metabolism, function and mechanism of destruction of red cells
[AD-A070240] p0315 N79-33828

LIEBERMAN, J. R.
Applications of chlorophyll fluorescence transient measurements to the functional analysis of photosynthetic processes p0243 N79-27813

LIEBERMEISTER, C.
Investigations about the quantitative changes of carbon dioxide production in humans. Report 2: Carbon dioxide production during fever and its relationship with heat production
[NASA-TM-75452] p0211 N79-24632

LIGHT, E. S.
Atmospheric neutrons
[NASA-CR-3126] p0211 N79-24631

LIN, C. Y.
COSMOS 936, experiment K204: The effects of space flight on some liver enzymes concerned with carbohydrate and lipid metabolism in the rat
p0023 N79-11675

LIN, J. C.
Microwave apexcardiography
p0231 A79-41848
Studies on the microwave-induced auditory effect
[PB-290598/2] p0213 N79-24648

LIN, M.-T.
Studies on thermoregulation in the rat
p0162 A79-30019

LIN, Y. C.
Doppler detection of thresholds for decompression-induced venous gas emboli in the awake rat
p0202 A79-37707

LINDBERG, E. K.
An adaptive controller which displays human operator limitations for a fighter type aircraft
p0177 N79-21767
An adaptive controller which displays human operator limitations for a fighter type aircraft
[AD-A066193] p0223 N79-25763

LINDSTROEM, G.
Method and arrangement for the preparation of solid foodstuffs for long-term storage
[BLL-RTS-11445] p0145 N79-18590

LINEHAN, J. H.
Lung inflation and longitudinal distribution of pulmonary vascular resistance during hypoxia
p0277 A79-50905

LINN, W. S.
Effects of oxides on nitrogen, Carbon monoxide and photochemical oxidants on the ECG during exercise and on cardiopulmonary function
[PB-291595/7] p0177 N79-21763

LINNIK, L. A.
Thermal effects during the exposure of ocular fundus tissues to laser radiation
p0234 A79-43057

LINTERN, G.
Transfer of landing skill after training with supplementary visual cues
p0138 A79-28167

LINTON, P. M.
Human factor engineering test and evaluation of the US Navy LAMPS helicopter system
p0151 N79-19632

LINZER, M.
Ultrasonic tissue characterization II
[PB-296356/9] p0316 N79-33836

LIONETTI, F. J.
Temperature effects on shape and function of human granulocytes
[AD-A063750] p0189 N79-22757

LIPPAY, A. L.
Manned simulations of the SRMS in SIMFAC
p0089 N79-15611
Multi-axis hand controller for the shuttle remote manipulator system
p0117 N79-17503

LISHCHUK, V. A.
The role of computer technology mathematical models in treatment of patients following heart surgery
p0170 N79-20721

LISHER, B. J.
The effect of a reclined sitting position on psychomotor performance during exposure to high, sustained +Gsub z acceleration
[FPRC-1362] p0248 N79-27856
The effect of acceleration and seat back angle on performance of a reaction time task
[FPRC-1364] p0248 N79-27857

LISS-SUTER, D.
A literature review-problem definition studies on selected toxic chemicals. Volume 1: Occupational health and safety aspects of diesel fuel and white smoke generated from it
[AD-A056018] p0025 N79-11686
A literature review-problem definition studies on selected toxic chemicals. Volume 8: Environmental aspects of diesel fuel and fog oils SGF number 1 and SGF number 2 and smoke screens generated from them
[AD-A056021] p0025 N79-11688

LITOV, R. E.
Effects of exercise, vitamin E, and ozone on pulmonary function and lipid peroxidation
p0067 A79-18965

LITSOV, A. N.
Effects of prolonged unidirectional shift of sleeping-waking cycle on physiological functions, mental productivity and sleep of man
p0109 N79-16526

LITTKE, W.
The growth of single crystals from proteins in gravity-free space
[AIAA PAPER 79-0311] p0069 A79-19665

LITVINOVA, E. G.
Atlas of the dose characteristics of external ionizing radiation /Handbook/
p0098 A79-20669

LIU, G.-G.
Studies on thermoregulation in the rat
p0162 A79-30019

LIU, K.-C.
Minute tubular forms in soil
p0297 A79-51698

LIUBINSKII, I. A.
Elements of the theory of biological analyzers
p0132 A79-26450

LIVANOVA, I. A.
Genetic effects of cosmic radiation on bacteriophage T4Br/+/ /On materials of biological experiment Soyuz-Apollo/
p0229 A79-41708

LIVINGSTONE, S. D.
Skin temperature changes in paradoxical sleep in man in the cold
p0201 A79-37706
Similarity in the number of lifespan heartbeats among non-hibernating homeothermic animals
p0298 A79-52281

LIVSHITS, N. N.
Rat behavior in maze after flight aboard Kosmos-690 biosatellite
p0014 N79-10705

LLOYD, A. J.
Honest 1: Personality, heart rate, urinary catecholamine, and subjective fatigue measures related to night nap-of-the-earth flying
[AD-A054888] p0055 N79-13692

LOAN, P.
Value and limits of the electrocardiogram in aviation medicine evaluations
p0048 A79-15495

LOECKER, T. H.
Detection of coronary artery disease in apparently healthy, asymptomatic aircrew members using thallium-201 myocardial perfusion scintigraphy
p0029 N79-11712

LOEPPKY, J. A.
Blood volume and cardiorespiratory responses to lower body negative pressure
p0010 A79-12864
Effects of regional hemoconcentration during LBNP on plasma volume determinations
p0265 A79-47326
Specialized physiological studies in support of manned space flight
[NASA-CR-151876] p0111 N79-16542

LOERCHER, L.
Serendipitous solution to the problem of culturing Arabidopsis plants in sealed containers for spaceflights of long duration
p0229 A79-41704

LOFTUS, G. R.
Short-term memory factors in ground controller/pilot communication
p0181 A79-32626

LOHMANN, R. A.
Binocular holographic helmet mounted display
[AD-A062761] p0174 N79-20749

LOKALOVA, N. P.
The inhibitory trace effect as a manifestation of the integrative activity of the human brain in performing voluntary motor acts
p0159 A79-28737

LOMOV, B. F.
Experimental and psychological investigations in aviation and astronautics
p0041 A79-13998
Eye movements and visual perception
p0267 A79-47429

LONDON, J. E.
A preliminary toxicological study of silastic 386 foam elastomer: catalyst
[LA-7366-MS] p0071 N79-14714

LONDON, R. M.
Effects of information processing requirements on reaction time of the eye
p0064 A79-18219
Effects of information processing requirements on reaction time of the eye
[AD-A060099] p0080 N79-14778

LONG, S. A. T.
Hyperthermia as an Antineoplastic Treatment Modality
[NASA-CP-2051] p0017 N79-10728

LONGRIDGE, T. M., JR.
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view
[AD-A070231] p0308 N79-32832

LOOMIS, L. L.
Time estimation as a secondary task to measure workload: Summary of research
p0093 N79-15634

LOPESDASILVA, F. L.
General activities related to medical research
[TNO-MFI-PR-6] p0262 N79-29793

LOS, I. P.
Determination of a generalized output index of a biological experiment after multiple tests
p0076 N79-14744

LOTENS, W. A.
Criteria for maximum tolerable heat stress. A proposal
[IZF-1978-13] p0144 N79-18583

LOTH, D.
The responses of frogs to vestibular and visual stimulation in weightlessness
p0006 A79-12513

LOUCKS, A. B.
Response of women mountaineers to maximal exercise during hypoxia
p0234 A79-43201

LOUGHNANE, M. H.
The use of synchronous demodulation for the measurement of eye movements by means of an ocular magnetic search coil
p0210 A79-39974

LOUVIERE, A. J.
Man and machine design for space flight
p0300 A79-52696

LOVE, P. E.
Engineering test and evaluation during high G. Volume 3: Anti-G suits
[AD-A059122] p0052 N79-12706
Engineering test and evaluation during high G. Volume 2: Anti-G valves
[AD-A059521] p0081 N79-14780

LOVESEY, E. J.
Human factors evaluations of today's helicopters as an aid to future systems design
p0150 N79-19627

LOWE, W. F.
Visual requirements for the helicopter pilot
p0151 N79-19636

LOWENSOHN, H. S.
Exercise performance and hemodynamics during dietary potassium depletion in dogs
p0067 A79-18959

LOWER, R. S.
A prediction model of arm push strength in the transverse plane
p0037 A79-13195

LOZAR, C. C.
Establishing habitability factors for the design of office environments
[AD-A056463] p0020 N79-10744

LOZINSKIY, V. S.
Effect of psychophysiological self-regulation on emotional stability of aviation cadets in flight and on effectiveness of assimilation of flight training program
p0074 N79-14735

LU, S. T.
Metabolic and physical scaling in microwave/radiofrequency bioeffects studies
[UR-3490-1561] p0316 N79-33831

LUCHI, R. J.
The evolutionary pattern of exercise-induced ST segment depression
p0251 A79-44166

LUCHININA, N. A.
Effect of intermittent hypoxia on functional activity of peripheral blood neutrophils
p0074 N79-14732

LUCIA, H. L.
Renal damage in mice following exposure to the pyrolysis products of polytetrafluoroethylene
p0066 A79-18306

LUCKER, G. W.
Making it in academic psychology: Demographic and personality correlates of eminence
[NASA-CR-162287] p0289 N79-31932

LUEDERS, H. O.
A computer system for statistical analysis of EEG transients
p0216 N79-25707

LUFT, U. C.
Blood volume and cardiorespiratory responses to lower body negative pressure
p0010 A79-12864
Effects of regional hemoconcentration during LBNP on plasma volume determinations
p0265 A79-47326
Specialized physiological studies in support of manned space flight
[NASA-CR-151876] p0111 N79-16542

LUH, J.
Advanced industrial robot control systems
[PB-287273/7] p0113 N79-16558

LUKASH, A. I.
Increased hemoglobin and content of rat blood serum as a result of decreased resistance of erythrocyte membranes to hyperbaric oxygenation, and the protective effect of urea
p0193 N79-23637

LUM, R. W.
Calibration of three year old child dummies
[PB-288961/6] p0157 N79-19692

LUND, D. J.
Extrapolation of pulsed light data in scanned displays
p0138 A79-28170

LUND, G. F.
An inductively powered telemetry system for temperature, EKG, and activity monitoring
p0228 A79-41424
Subcutaneous channeling probe
[NASA-CASE-ARC-11091-1] p0025 N79-11684
Improved subcutaneous electrode structure
[NASA-CASE-ARC-11117-1] p0084 N79-15576
A long-range and long-life telemetry data-acquisition system for heart rate and multiple body temperatures from free-ranging animals
[NASA-TM-78590] p0239 N79-26762

LUNDGREN, P. R.
Effects of weightlessness on the embryonic development and aging of Drosophila
p0022 N79-11670

LUSAS, E. W.
A technology assessment of vegetable substitutes for animal protein in human food. Volume 1: The study
[PB-284681/4] p0059 N79-13719
A technology assessment of vegetable substitutes for animal protein in human food. Volume 2: Appendices
[PB-284682/2] p0059 N79-13720

LUSTICK, L.
Multiaxis dynamic response of the human head and neck to impact acceleration
p0284 N79-31906

LUTSENKO, N. M.
Biochemical study of proteins of gastric and intestinal mucosa of rats flown aboard the Kosmos-605 biosatellite
p0192 N79-23631

LUZHBIN, N. A.
Psychophysiological forecasting of efficiency
p0010 A79-12867

LYMAN, J.
An operator-aiding manipulator control system
p0269 A79-48020

LYNE, P. J.
Cardiorespiratory assessment of decongestant-antihistamine effects on altitude, +Gz, and fatigue tolerances
p0127 A79-24628

LYNEV, R.
Effects of vibration on the human organism
p0249 N79-27862

LYONS, J. M.
Enhancing biological production of ammonia from atmospheric nitrogen and soil nitrate
[PB-286515/2] p0083 N79-15571

LYSENKO, IU. V.
Nystagmographic characterization of responses to rotation of persons with different vestibular-vegetative stability
p0188 A79-35122

M

MACELROY, R. D.
The response of selected terrestrial organisms to the Martian environment - A modeling study
p0136 A79-27928
An approach to the origin of self-replicating system. I - Intermolecular interactions
p0204 A79-37948

MACEWEN, J. D.
Toxicity of high density jet fuel components
[AD-A068596] p0259 N79-28870

MACHADO, A. M.
Statistical studies of animal response data from USP toxicity screening test method
p0066 A79-18305

MACHINSKII, G. V.
Rehabilitation measures used to restore physical fitness of man after long-term restriction of movement
p0110 N79-16534

MACINTYRE, N. R.
Long term pulmonary function patterns in the aviator: The thousand Aviator study
p0028 N79-11708

MACK, A.
Smooth pursuit eye movements - Is perceived motion necessary
p0139 A79-28375

MACOVSKI, A.
Iodine imaging using spectral analysis
p0294 A79-51034

MADSEN, J. C.
Apparent saturation of blue-sensitive cones occurs at a color-opponent stage
p0002 A79-10474
Direction-selective adaptation with very slow motion
p0265 A79-47118

MAGARGEE, D. L.
Life support systems for biological specimens in the Shuttle/Spacelab
[ASME PAPER 78-ENAS-38] p0009 A79-12585

MAGDALENO, R. E.
Roll tracking effects of G-vector tilt and various types of motion washout
p0091 N79-15622
Progress in measuring and modeling the effects of low frequency vibration on performance
p0288 N79-31930

MAGER, M.
Heat- and exercise-induced hyperthermia - Effects on high-energy phosphates
p0266 A79-47332

MAGNUS, P. M.
Changes in the circadian rhythm of performance and mood in healthy young men exposed to prolonged, heavy physical work, sleep deprivation, and caloric deficit
p0234 A79-43202

MAGUIRE, B.
Closed regenerative life support systems for space travel - Their development poses fundamental questions for ecological science
p0228 A79-41702

MAH, R. W.
Vestibular Function Research aboard Spacelab
[ASME PAPER 78-ENAS-25] p0007 A79-12574

MAHER, J. T.
Evidence for increased intrathoracic fluid volume in man at high altitude
p0305 A79-54266

MAHLER, L. M.
Development of an electrical energy converter for circulatory device
[PB-286738/0] p0111 N79-16545

MAHON, K.
Responses of crown gall tissue to the space environment: Glutamine synthetase activity
p0020 N79-11655

MAIEFSKI, R.
Radio tracking of a fin whale /Balaenoptera physalus/
p0061 A79-18008

MAILLE, M.
The value of measuring ocular tonus as a test for detecting glaucoma in flight personnel
p0104 A79-23959

MAINS, R. C.
Continuous metabolic and cardiovascular measurements on a monkey subject during a simulated 6-day Spacelab mission
p0229 A79-41713

MAISTRAKH, E. V.
Automatic control of physiological functions of the human organism in pathology
p0132 A79-26350

MAJEWSKI, P. L.
Medical qualification procedures for hazardous-duty aeromedical research
p0026 N79-11695
Transient intraventricular conduction defects observed during experimental impact in human subjects
p0285 N79-31907

MAJIC, V.
Biomagnetism and artificial magnetic stimulation of living structures
[IAF PAPER 78-52] p0002 A79-11222

MAJOR, C. S.
Manual alignment of structural components in space
[AIAA PAPER 79-0535] p0129 A79-25855

MAKARCHENKO, A. F.
The role of the neurohormone system of the hypothalamus in physiology and pathology
p0251 A79-43835

MAKEEVA, V. F.
3'5'-cyclic AMP content in rat tissues during hypoxic adaptation and gamma irradiation
p0069 A79-19426

MAKEYEVA, V. F.
Radiation lesion to liver DNA of rats exposed to radiation during flight aboard the Kosmos-690 biosatellite
p0014 N79-10702

MAKRA, S.
Some advances in astronaut radiation dosimetry
[IAF PAPER 78-67] p0003 A79-11228

MAKSIMOV, I. V.
Pneumotachographic distinctions of external respiration in man in the presence of excess intrapulmonary pressure on ground level and at high altitudes
p0245 N79-27827

MAKSIMOV, V. A.
Clinical and morphological studies of people in the course of long-term hypokinesia and subsequent readaptation
p0015 N79-10709

MALCOLM, R. E.
Oculogravic illusion in response to straight-ahead acceleration of a CF-104 aircraft
p0164 A79-30660

MALHOTRA, A.
Effect of exercise on collateral development in dogs with normal coronary arteries
p0067 A79-18960

MALLORY, K. M., JR.
Life sciences in the Shuttle era
[ASME PAPER 78-ENAS-34] p0008 A79-12582

MALTSEV, V. G.
Self-regulation of cerebral circulation under orthostatic influences
p0221 A79-36098

MALTSEV, V. N.
Intestinal autoflora as an indicator of severity of radiation lesion
p0121 N79-17530

MALUF, S.
The application of remote sensors to a model for fish mapping
[INPE-1379-PE/176] p0071 N79-14712

MANDEL, A. D.
Effect of space flight on cell-mediated immunity
p0021 N79-11661

MANENT, P. J.
The value of measuring ocular tonus as a test for detecting glaucoma in flight personnel
p0104 A79-23959

MANGSETH, G. R.
Plasma volume and electrolyte shifts with heavy exercise in sitting and supine positions
p0161 A79-29336
Effect of sodium and calcium ingestion on thermoregulation during exercise in man
p0163 A79-30624

MANISON, W. A.
Improvements in the man-machine interface for data acquisition, display and control
p0224 N79-25983

MANN, W. A.
Compact artificial hand
[NASA-CASE-NPO-13906-1] p0214 N79-24652

MANNS, R. A.
USAF life support equipment costs
p0043 A79-14402

MANSELL, A.
Changes in lung volume, lung density, and distribution of ventilation during hypobaric decompression
p0185 A79-33806

MANTIPLY, E. D.
Radiofrequency radiation levels and population exposure in urban areas of the eastern United States
[PB-292855/4] p0241 N79-26779

MARA, S. J.
Assessment of human exposures to atmospheric benzene
[PB-284203/7] p0051 N79-12701

MARCHAL, L.
Adaptation to chronic hyperoxia in the rat - A study of pulmonary surfactant, tissue levels of superoxide dismutases and histology
p0256 A79-46603

MARCINIAK, M.
Stereological ultrastructural analysis of the axonal endings in the neuromuscular junction of rats after a flight on biosputnik 782
p0101 A79-23468
Ultrasonic investigations of the soleus muscle after space flight on the Biosputnik 936
p0274 A79-49992

MARCUSON, R.
Clinical importance of directional statistics for electrocardiographic differentiation of smoking habits
p0098 A79-21246

MARCUSSEN, W. H.
Two-week studies of survivors from exposures to pyrolysis gases
p0066 A79-18307

MARENNYI, A. M.
Radiobiological investigations in Cosmos 782 space flight /Biobloc SP1 experiment/
p0006 A79-12518
Genetic effects of cosmic radiation on bacteriophage T4Br/+/ /On materials of biological experiment Soyuz-Apollo/
p0229 A79-41708

MARGEL, S.
Polyglutaraldehyde - A new reagent for coupling proteins to microspheres and for labeling cell-surface receptors
p0274 A79-50230
Design of polymeric immunomicrospheres for cell labelling and cell separation
p0275 A79-50234

MARGOLIS, L. A.
Decreased activity of palladium catalyst during processing of excreta .
p0016 N79-10716

MARGULIS, L.
Biological implications of the Viking mission to Mars
p0045 A79-14595
An ultraviolet light induced bacteriophage in Beneckea gazogenes
p0254 A79-46463

MARINO, A. A.
Space osteoporosis - An electromagnetic hypothesis
p0165 A79-30666

MARKS, M.
Hemolynamics in teenagers and asthmatic children during exercise
p0133 A79-27102

MARKS, V. J.
User's instructions for the whole-body algorithms
[NASA-CR-160233] p0219 N79-25735
User's guide for the Skylab integrated medical data analysis system
[NASA-CR-160189] p0220 N79-25740

MARMOLIN, H.
Perceived quantization error. Effect of quantization function, reconstruction function and number of levels
[FOA-C-56015-H9] p0124 N79-17556

MAROTTE, H.
Special test for astronaut selection - Tests of tolerance in the centrifuge and in flight
p0047 A79-15491
Special tests for astronaut selection - Muscular exercise test
p0047 A79-15492

MARQUIS, J. A.
Frequency response of cardiovascular regulation in canines to sinusoidal acceleration at frequencies below 1 Hz (basis for biodynamic modeling)
p0286 N79-31915

MARR, D.
Bandpass channels, zero-crossings, and early visual information processing
[AD-A062338] p0170 N79-20724

MARRAS, W. S.
Human factors analysis of visual distress signaling devices
[AD-A064174] p0190 N79-22765

MARSHAK, W.
Mutual repulsion between moving visual targets
p0275 A79-50473

MARSHALL, R. D.
Electrochemically regenerable carbon dioxide absorber
[NASA-CR-152099] p0262 N79-29794

MARSHALL, W. J.
Nonionizing radiation protection special study: Infrared radiation hazard evaluation of the rotary forge, Watervliet Arsenal, Watervliet, New York, March - April 1978
[AD-A055643] p0055 N79-13691

MARSILI, M.
Increased survival in experimental dog heatstroke after reduction of gut flora
p0266 A79-47335

MARTIN, B. J.
Exercise ventilation correlates positively with ventilatory chemoresponsiveness
p0066 A79-18954
CO2 and exercise tidal volume
p0133 A79-27104

MARTIN, D. A.
Extended duration orbiter life support system options
[ASME PAPER 78-ENAS-31] p0008 A79-12580

MARTIN, W. L.
Imagery interpreter performance in the comparison of subjective estimates of photographic image quality
p0036 A79-13191

MARTINEZ, J. A.
Development of information theory concepts and equations for human mental processing
[AD-A068606] p0260 N79-28877

MARTZ, H. F., JR.
Estimating percentiles of nonnormal anthropometric populations - Final report
p0065 A79-18226
Estimating percentiles of nonnormal anthropometric populations
[AD-A061151] p0122 N79-17535

MARWAHA, S. C.
Positive pressure breathing as a protective technique in +Gz acceleration
p0201 A79-37132

MARZEYEV, A. N.
Investigation of the activity of some enzymatic systems in response to a super-high frequency electromagnetic field
p0074 N79-14737

MASHINSKII, A. L.
Influence of orbital flight conditions on formation of genitals in Muscari racemosum and Anethum graveolens

p0230 A79-41718
MASKREY, M.
Responses of conscious rabbits to CO2 at ambient temperatures of 5, 20, and 35 C
p0277 A79-50904
MASON, J. L.
A continuous wave, frequency modulated, ultrasonic device with auditory output for observing the heart
p0045 A79-14602
MASON, R.
A literature review-problem definition studies on selected toxic chemicals. Volume 1: Occupational health and safety aspects of diesel fuel and white smoke generated from it
[AD-A056018] p0025 N79-11686
MASSING, D. E.
Performance evaluation of test dummies with flesh parts produced with substitute foaming compounds
[PB-289951/6] p0179 N79-21776
MASSOUDI, H.
An empirical formula for broad-band SAR calculations of prolate spheroidal models of humans and animals
p0278 A79-51015
MATALON, S. V.
Cardiopulmonary readjustments in passive tilt
p0277 A79-50901
MATHER, J. T.
Evidence for increased intrathoracic fluid volume in man at high altitude
[AD-A065333] p0220 N79-25743
MATHEW, L.
Responses of high altitude natives to a standard cold test at sea level
p0164 A79-30658
Effect of physical training at moderate altitude /1850 m/ on hypoxic tolerance
p0235 A79-43210
MATSEN-TWISDALE, J. A.
Pulmonary function and maximum exercise responses following acute ozone exposure
p0273 A79-49987
Auditory and visual sustained attention during ozone exposure
p0273 A79-49988
MATSININ, V. V.
Mechanisms of the effect of oxygen toxicity on the energy metabolism
p0160 A79-29275
MATSNEV, E. I.
Antiorthostatic hypokinesia as an approximate model of weightlessness
p0108 N79-16520
MATTALIANO, R. J.
Temperature effects on shape and function of human granulocytes
[AD-A063750] p0189 N79-22757
MATTHEWS, C. N.
HCN did not condense to give heteropolypeptides on the primitive earth
p0133 A79-26542
MATTHEWS, G.
Thermal activation of the visual transduction mechanism in retinal rods
p0230 A79-41746
MATTHEWS, K. A.
Making it in academic psychology: Demographic and personality correlates of eminence
[NASA-CR-162287] p0289 N79-31932
MATZ, B. J.
Acoustic attitude orientation
p0314 N79-33816
MAUCORT, P.
The value of measuring ocular tonus as a test for detecting glaucoma in flight personnel
p0104 A79-23959
MAVLOV, L.
Elicited acoustic responses to meaningful and meaningless verbal stimuli
p0276 A79-50654
MAXWELL, J. R.
A biogeochemical study of the Abu Dhabi algal mats - A simplified ecosystem
p0132 A79-26373
MAYET, M. H.
Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
p0305 A79-54267
MAYHEW, J. E. W.
Texture contours can facilitate stereopsis by initiating vergence eye movements
p0270 A79-48816
MAYS, J. A.
A 25-inch precision color display for simulator visual systems
p0137 A79-28164
MAYS, L. E.
The use of synchronous demodulation for the measurement of eye movements by means of an ocular magnetic search coil
p0210 A79-39974
MAZNEVA, G. Y.
Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body
p0073 N79-14725
Liberation of carbon monoxide by man when working in protective gear
p0076 N79-14748
MAZON, S.
Attempt to describe a class of man-machine dialogue systems based on a natural language
p0251 A79-44057
MAZUR, P.
Biological implications of the Viking mission to Mars
p0045 A79-14595
MC-CAHAN, G. R., JR.
Effect of fiber and dye degradation products /FDP/ on burn wound healing
p0298 A79-52277
MCAFOOSE, D. A.
Blood pressure variability of the individual in orthostatic testing
p0265 A79-47328
Distinguishing borderline hypertensives from normotensives: A clinical study of 300 aircrewmen
p0027 N79-11699
MCARTHUR, W. J.
A Canadian approach to high altitude protection
p0045 A79-14435
MCCAFFREY, T. V.
Role of skin temperature in the control of sweating
p0277 A79-50907
MCCAHAN, G. R., JR.
Bioassay of thermal protection afforded by candidate flight suit fabrics
p0298 A79-52280
A porcine bioassay study of the physiological effects of fiber and dye degradation products (FDP) on burn wound healing
[AD-A066990] N79-25748
Evaluation of four thermally protective fabrics using the USAARL bioassay method
[AD-A067351] p0223 N79-25762
MCCAMBRIDGE, J. J.
USAF life support system 412A - 1978 corporate report
p0183 A79-33602
MCCONVILLE, J. T.
Anthropometric source book. Volume 1: Anthropometry for designers
[NASA-RP-1024] p0032 N79-11734
Anthropometry
p0032 N79-11737
Anthropometry in sizing and design
p0033 N79-11742
Guidelines for fit testing and evaluation of USAF personal-protective clothing and equipment
[AD-A065901] p0197 N79-23668
Analysis of body size measurements for US Navy women's clothing and pattern design
[AD-A068600] p0290 N79-31939
MCCRACKEN, J. W.
Effect of age on relaxed +G sub z tolerance of aircrewmen
p0030 N79-11719
MCCULLOUGH, R. E.
Exercise ventilation correlates positively with ventilatory chemoresponsiveness
p0066 A79-18954
MCCUTCHEON, E. P.
Cardiac responses of dogs to nonsynchronous and heart synchronous whole-body vibration
p0162 A79-29728
Continuous metabolic and cardiovascular measurements on a monkey subject during a

simulated 6-day Spacelab mission
p0229 A79-41713

Modification of cardiac function by synchronized oscillating acceleration
p0278 A79-50908

Aircraft flight simulation of spacelab experiment using an implanted telemetry system to obtain cardiovascular data from the monkey
p0147 N79-19022

MCDANIEL, G. A.

A wide aperture focussed ultrasound system for detection of breast carcinoma by ultrasonic attenuation
p0142 N79-18577

MCDOWELL, E. D.

The development and evaluation of objective frequency domain based pilot performance measures in ASUPT
[AD-A059477] p0080 N79-14776

MCELHENNEY, J. R.

An inflatable restraint system
p0044 A79-14408

MCELLIGOTT, J. G.

The use of synchronous demodulation for the measurement of eye movements by means of an ocular magnetic search coil
p0210 A79-39974

MCENULTY, R. E.

Generalized environmental control and life support system computer program (G1894), phase 3
[NASA-CR-151836] p0019 N79-10741

MCFADDEN, E. B.

The objective evaluation of aircrew protective breathing equipment. III - Improved types of mask/goggles combinations. IV - Fullface masks and hoods suitable for flight attendant use
p0184 A79-33638

Oxygen equipment and rapid decompression studies
[AD-A070285] p0289 N79-31937

MCFARLAND, A. L.

Human factors considerations in establishing aircraft collision avoidance system alert thresholds
p0045 A79-14438

MCFARLANE, T.

Air Force female pilots program: Initial performance and attitudes
[AD-A065641] p0241 N79-26783

MCFARLANE, T. A.

Methodology to assess psychological stress and its impact in the air combat environment
[AD-A053474] p0057 N79-13707

MCGANNON, W. J.

Intraocular pressure reduction and regulation system
[NASA-TM-79187] p0260 N79-28881

MCGATHA, E. A.

A real-world assessment of noise exposure
[AD-A061692] p0155 N79-19680

MCGHEE, R. B.

Adaptive locomotion of a multilegged robot over rough terrain
p0163 A79-30217

MCGOURTY, J.

Cosmic ray effects on the eyes of stationary and centrifuged rats flown on COSMOS 936, experiment K-207
p0024 N79-11678

MCGRATH, D.

Orientation relative to the retina determines perceptual organization
p0299 A79-52539

MCHEDLISHVILI, G. I.

Use of the systems analytic approach for organization and coordination of complex biomedical research
p0079 N79-14767

MCINTYRE, M.

In-flight measures of stress reduction due to wearing expandable foam earplugs
p0273 A79-49986

MCKENZIE, J. M.

Effects of altitude and two decongestant-antihistamine preparations on physiological functions and performance
p0127 A79-24635

Assessment of factors possibly contributing to the susceptibility of sickle trait erythrocytes to mild hypoxia. Volume 1: Design considerations and research protocol
[AD-A059412] p0084 N79-15577

Stress in air traffic controllers: A restudy of 32 controllers 5 to 9 years later
[FAA-AM-78-40] p0144 N79-18581

Effects of propranolol on Time of Useful Function (TUF) in rats
[AD-A068535/4] p0283 N79-31896

MCKETTY, M. H. P.

The design and construction of a miniature dosimeter for the study of the effects of air cavities in radiation therapy
p0176 N79-21757

MCMANUS, M. L.

Dispersal of forest insects
p0148 N79-19596

MCMILLIN, C. R.

Physical testing of polymers use in circulatory assist devices
[PB-286129/2] p0084 N79-15579

MCMURRAY, R. G.

Thermoregulation in swimmers and runners
p0227 A79-41186

MCMURRY, R. L.

Two dimensional eye tracking: Sampling rate of forcing function
p0090 N79-15617

Head tracking at large angles from the straight ahead position
p0090 N79-15618

MCNEE, R. C.

Tracking-task performance during heat stress simulating cockpit conditions in high-performance aircraft
p0236 A79-43675

Mathematical modeling of arterial oxygen saturation and eye-level blood pressure during +G sub Z stress
p0286 N79-31916

MCNEIL, R. J.

The effect of Nap-of-the-Earth (NOE) helicopter flying on pilot blood and urine biochemicals
[AD-A055204] p0055 N79-13693

MCPHERSON, D.

Time estimation as a secondary task to measure workload: Summary of research
p0093 N79-15634

MCRUER, D. T.

Driver steering dynamics measured in car simulator under a range of visibility and roadmaking conditions
p0117 N79-17493

MECKLENBURG, D. J.

Effects of filtering electroencephalic signals on auditory evoked brain stem responses
p0176 N79-21758

MEDVEDEV, V. I.

Dynamical characteristics of visual functions
p0276 A79-50656

MEDVEDEV, V. S.

Control systems for robots and manipulators
p0134 A79-27303

MEEKER, L. J.

Engineering test and evaluation during high G. Volume 3: Anti-G suits
[AD-A059122] p0052 N79-12706

Engineering test and evaluation during high G. Volume 2: Anti-G valves
[AD-A059521] p0081 N79-14780

MEERBAUM, S.

Multifunctional transducer
[NASA-CASE-NPO-14329-1] p0219 N79-25737

MEERSON, F. Z.

Effect of adaptation to high-altitude hypoxia on cardiac adrenoreactivity and the state of the adenylcyclase and phosphodiesterase systems in the myocardium
p0255 A79-46500

MEESTER, G. T.

Clinical usefulness of radiopaque markers in left ventricular function
p0293 A79-51029

MEIER-DOERNBERG, K. E.

Reference parameters for shock inputs and shock tolerance limits
p0284 N79-31905

MEIER-KOLL, A.

Experimental and theoretical investigations concerning a frequency filter behavior of the human retina regarding electric pulse currents

[NASA-TM-75372] p0314 N79-33822

MEINDL, J. D.
Quantitative flow estimation with transcutaneous Doppler ultrasound p0295 A79-51042

MEINERS, C. O.
The physiological significance of light for human beings [RAE-LIB-TRANS-1976] p0077 N79-14757

MEISTER, D.
Subjective data in human reliability estimates p0046 A79-15398

MELESHKO, G. I.
Experiment Chlorella 1 on board of Salyut 6 [IAF PAPER 78-53] p0003 A79-11223

MELLSEN, S. B.
A general model for the transfer of vapour through clothed skin from liquid on and in clothing [AD-A071577] p0319 N79-33853

MELNIKOV, L.
Light and color on a manned spacecraft p0059 N79-13996

MELNIKOVA, E. V.
Coacervate drops - Primitive forms of precells p0204 A79-37962

MELTON, C. E.
Stress in air traffic controllers: A restudy of 32 controllers 5 to 9 years later [FAA-AM-78-40] p0140 N79-18581

MELVIN, J.
Joint testing of the RAF high altitude protective ensemble p0044 A79-14434

MELVIN, J. W.
Whole body response research program [PB-286151/6] p0093 N79-15640
Whole body response research program. Appendix A: Methodology [PB-286152/4] p0094 N79-15641

MELZIG, H. D.
Balance training of the equilibrium organ and its effect on flight strategy p0242 N79-27074
Man, dummy, test vehicle: A comparison of test results for escape systems with the 3 different test methods p0287 N79-31924

MENDELL, R. B.
Atmospheric neutrons [NASA-CR-3126] p0211 N79-24631

MENGUY, C.
The responses of frogs to vestibular and visual stimulation in weightlessness p0006 A79-12513
An apparatus for studying electroretinographic responses under conditions of space flight p0006 A79-12517

MEOT-NER, M.
Ion-molecule condensation reactions - A mechanism for organic synthesis in ionized reducing atmospheres p0099 A79-22079

MEREDITH, P.
Development of an electrical energy converter for driving left heart assist blood pumps [PB-293510/4] p0241 N79-26780

MERJANIAN, S. V.
An operator-aiding manipulator control system p0269 A79-48020

MERKER, M.
Atmospheric neutrons [NASA-CR-3126] p0211 N79-24631

MERSEREAU, R. M.
Speech quality measurement [AD-A056272] p0033 N79-11745

MERTENS, H.
The response of a realistic computer model for sitting humans to different types of shocks p0288 N79-31927

MERTENS, H. W.
Pilot performance during simulated approaches and landings made with various computer-generated visual glidepath indicators p0297 A79-52276

MERTZ, A. G.
A preliminary investigation of aural input/output systems for in-flight information retrieval [AD-A063174] p0178 N79-21770

MERTZ, H.
Eye torsion in response to a tilted visual stimulus p0305 A79-54254

MERZON, A. K.
Changes in human renal function in passive head-up and head-down positions p0072 N79-14722

MESHCHERIAKOV, I. P.
Engineering-psychological study of information imaging systems p0099 A79-21404

METGES, P. J.
Radiological examination of the Rachis and fitness for employment as a helicopter pilot p0151 N79-19634
Vertebral pains in helicopter pilots p0153 N79-19656

MEYER-ERKELENZ, J. D.
Mechanics of breathing during graded exercise measured with the bodyplethysmograph p0029 N79-11709

MEYER, W. W.
A numerical method of film analysis with differentiation p0061 A79-17585

MEYNIEL, G.
Mechanism of the formation of phosphenes by X-rays p0006 A79-12516

MEYZEROV, Y. S.
Rat behavior in maze after flight aboard Kosmos-690 biosatellite p0014 N79-10705

MICHAEL, P. R.
Visual effects of helicopter manoeuvre on weapon aiming performance p0150 N79-19626

MICHAUD, R. B.
Urine collection apparatus [NASA-CASE-MSC-18381-1] p0195 N79-23657

MICHEL, P.
Adaptation to chronic hyperoxia in the rat - A study of pulmonary surfactant, tissue levels of superoxide dismutases and histology p0256 A79-46603

MICHELS, D. B.
Distribution of pulmonary ventilation and perfusion during short periods of weightlessness p0068 A79-18967
Radiographic comparison of human lung shape during normal gravity and weightlessness p0305 A79-54269

MICHELSON, S. M.
Metabolic and physical scaling in microwave/radiofrequency bioeffects studies [UR-3490-1561] p0316 N79-33831

MIKHAYLOV, V. M.
Central and cerebral hemodynamics and metabolism of the healthy man during head-down tilting p0127 A79-24634

MIKHAILOVA, G. P.
The bloodflow in skeletal muscle capillaries in normoxia and arterial hypoxemia /Microcinematographic studies/ p0208 A79-38150

MIKHAYLIK, N. F.
Dynamic medical monitoring of flight crews in the course of long-term flights p0072 N79-14719

MIKHAYLOV, V. M.
Effects of hyperhydration on human endurance of orthostatic and LBNP tests p0072 N79-14721
Antiorthostatic hypokinesia as an approximate model of weightlessness p0108 N79-16520
Effect of brief head-down hypokinesia on pressure in various parts of the healthy man's cardiovascular system p0245 N79-27831
Control of vertical position after flights aboard the Salyut-4 orbital station p0311 N79-33793

MIKOS, K. N.
Investigation of composition of trace contaminants in the air environment of the Soyuz-22 spacecraft p0072 N79-14720

MILEKHINA, E. I.
Amino acids in southern Kamchatka hot springs p0182 A79-33122

MILES, D. S.
Cardiovascular, metabolic, and respiratory responses of sedentary females to equal metabolic workloads on the bicycle ergometer and treadmill
p0024 N79-11681

MILGRAM, D. L.
Region extraction using convergent evidence
[AD-A061591] p0124 N79-17552

MILHAUD, C. L.
Two primate biological facility module in Spacelab
[IAF PAPER 78-70] p0003 A79-11229
Study of specific effects of hyperfrequencies on the central nervous system. II - Exploratory research on rat /Wistar/ behaviour
p0047 A79-15493

MILIC-EMILI, J.
Influence of exercise and CO2 on breathing pattern of normal man
p0237 A79-43704

MILLER, D. C.
Development of human performance models for man-machine system simulation
[AD-A069879] p0282 N79-30980

MILLER, D. P.
A comparison of kinesthetic-tactual and visual displays via a critical tracking task
p0162 A79-29720
Evaluation of kinesthetic-tactual displays using a critical tracking task
p0119 N79-17516

MILLER, E. A.
Time for loss of increased cardiac responsiveness to isoproterenol in cold-acclimated rats after removal from cold
p0128 A79-24636

MILLER, F.
The effects of H2SO4 on men and H2SO4 and O3 on laboratory animals
p0141 N79-18354

MILLER, H. A.
Noninvasive cardiovascular measurements
p0293 A79-51026

MILLER, J. N.
Human Factors Society, Annual Meeting, 22nd, Detroit, Mich., October 16-19, 1978, Proceedings
p0062 A79-18201

MILLER, R. A.
A formal model of the adaptive and discrete control behaviors of human operators
[AD-A059039] p0059 N79-13717

MILLER, R. L.
Human compatibility testing of a 2-man molecular sieve oxygen generator
[AD-A058248] p0053 N79-12710

MILLER, S. D.
Hemodynamics in teenagers and asthmatic children during exercise
p0133 A79-27102

MILLHORN, D. E.
Evidence for the neural regulation of respiration during low intensity exercise in man
p0144 N79-18578

MILLINGTON, W. R.
Low tryptophan diet decreases brain serotonin and alters response to apomorphine
p0226 A79-40672

MILLS, F. C.
Thermodynamic studies on the oxygenation and subunit association of human hemoglobin
p0142 N79-18576

MIN, B.-G.
A catheter flow probe for measurement of left ventricular source parameters
p0274 A79-50108

MINUT-SOROKHTINA, O. P.
Neurophysiology of thermal reception
p0043 A79-14374

MIOTTI, R.
The lymph nodes and lymph vessels of the white rat
[BLL-RTS-11309] p0141 N79-18554

MIQUEL, J.
A study of axonal degeneration in the optic nerves of aging mice
p0005 A79-12123
Senescent changes in the ribosomes of animal cells in vivo and in vitro
p0134 A79-27226
Analysis of population mortality kinetics with application to the longevity followup of the Navy's '1,000 aviators'
p0234 A79-43207
Quantitative analysis of mating behavior in aging male Drosophila Melanogaster
p0252 A79-44799
A simple technique for evaluation of vitality loss in aging mice, by testing their muscular coordination and vigor
p0274 A79-50205
Effects of weightlessness on the embryonic development and aging of Drosophila
p0022 N79-11670
Effects of weightlessness on the genetics and aging process of drosophila melanogaster
p0023 N79-11673

MIRANDA, R.
Aircraft flight simulation of spacelab experiment using an implanted telemetry system to obtain cardiovascular data from the monkey
p0147 N79-19022

MIRANDA, R. F.
A long-range and long-life telemetry data-acquisition system for heart rate and multiple body temperatures from free-ranging animals
[NASA-TM-78590] p0239 N79-26762

MIROLYUBOV, G. P.
Significance of the vibration component to the deleterious effect of impact accelerations
p0312 N79-33801

MIROSHNIKOVA, E. B.
Studies of amino acid metabolism in the muscles of rats flown aboard the biosatellite Cosmos 782
p0230 A79-41714

MIRRAKHIMOV, M. M.
Immunophysiological aspects of man's adaptation to highland
p0188 A79-35123

MISHCHENKO, V. F.
Prospects of using Japanese quail in biological life support systems
p0109 N79-16531
Effect of combination of hypoxia and hypercapnia on survival of Japanese quail
p0194 N79-23641

MISTRETTA, C. A.
Real-time computerized fluoroscopic cardiac imaging
p0294 A79-51035

MISTROT
Evaluation of the amount of exposure to vibrations transmitted to the whole body case of vibrations due to a loader mounted on catapillar tracks, a fork-lift truck and a hydraulic excavator
[RAE-LIB-TRANS-1930] p0080 N79-14773

MITAL, N. K.
Computation of rigid-body rotation in three-dimensional space from body-fixed linear acceleration measurements
[ASME PAPER 78-WA/BIO-5] p0069 A79-19759
Tolerance of the neck to indirect impact
[AD-A066971] N79-25749
Simulation of head and neck response to -G sub x and +G sub z impacts
p0285 N79-31908

MITCHELL, E. D.
Radio tracking of a fin whale /Balaenoptera physalus/
p0061 A79-18008

MITCHELL, G. S.
Regulation of the carbon dioxide tension in arterial blood during inhalation of carbon dioxide in birds and mammals
p0169 N79-20713

MITCHELL, J.
Influences of physical conditioning and deconditioning on coronary vasculature of dogs
p0067 A79-18955

MITCHELL, J. H.
Early cardiovascular adaptation to simulated zero gravity
p0162 A79-29727
Cardiac changes during behavioral stress in dogs
p0200 A79-36575
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] p0301 A79-53286

MITCHELL, R. E.
Long term pulmonary function patterns in the aviator: The thousand Aviator study
p0028 N79-11708

MITKIN, A. A.
Eye movements and visual perception
p0267 A79-47429

MITRIKAS, V. G.
Atlas of the dose characteristics of external ionizing radiation /Handbook/
p0098 A79-20669

MITSUI, A.
Nitrogen fixation with photosynthetic marine microorganisms
[PB-286000/5] p0083 N79-15570
Nitrogen fixation with photosynthetic marine microorganisms
[PB-287590/4] p0120 N79-17525

MIXON, R. W.
Advanced transport operation effects on pilot scan patterns
p0295 A79-51098

MIZUMOTO, C.
Transient changes in arterial blood gases and heart rate during and after acutely induced hypoxia and hyperoxia to rabbits
p0134 A79-27120

MLINAR, A.
Application of learning curves of aircraft produced at more than one location to the F-16 lightweight fighter
[AD-A065881] p0196 N79-23664

MNAYER, B.
The evolutionary pattern of exercise-induced ST segment depression
p0251 A79-44166

MOCHARNUK, J. B.
An Air Combat Effectiveness Study /ACES/ program
p0040 A79-13222
Visual target acquisition and ocular scanning performance
p0069 A79-19000
Visual search for complex targets
p0208 A79-38357

MOCKBEE, J.
The role of physical examinations and education in prospective medicine
p0026 N79-11694

MODELL, H. I.
Gas exchange under environmental stress
[AD-A058242] p0056 N79-13697

MOGILNAYA, G. M.
Biochemical study of proteins of gastric and intestinal mucosa of rats flown aboard the Kosmos-605 biosatellite
p0192 N79-23631

MOHLER, S. R.
Current role of alcohol as a factor in civil aircraft accidents
p0136 A79-27561

MOHLMAN, H. T.
Photometric methods for the analysis of human kinematic responses to impact environments
[AD-A062006] p0157 N79-19690

MOHR, J. N.
Human operator identification model and related computer programs
[NASA-CR-152237] p0112 N79-16551

MOISE, J.
Development of an electrical energy converter for driving left heart assist blood pumps
[PB-293510/4] p0241 N79-26780

MOISEEVA, N. I.
Structure of biorhythms as one of the criteria for physiological adaptability of the human organism
p0097 A79-20653

MOKHOV, L. A.
Evaluation of oxidizability of air in closed areas
p0313 N79-33808

MOLINA, T. C.
Microflora analysis of a child with severe combined immune deficiency
p0004 A79-11900

MONESI, F.
Evaluation of aircrew fatigue during operational helicopter flight mission
p0149 N79-19622

MONEY, K. E.
Oculogravic illusion in response to straight-ahead acceleration of a CF-104 aircraft
p0164 A79-30660

MONK, D. L.
Two dimensional eye tracking: Sampling rate of forcing function
p0090 N79-15617
Head tracking at large angles from the straight ahead position
p0090 N79-15618

MONTELLESE, S.
Changes in critical duration during dark-adaptation
p0304 A79-54252

MONTGOMERY, L. D.
Effect of sodium and calcium ingestion on thermoregulation during exercise in man
p0163 A79-30624
Limb blood flow - Rest and heavy exercise in sitting and supine positions in man
p0235 A79-43208

MOONEY, V.
Prosthesis coupling
[NASA-CASE-KSC-11069-1] p0240 N79-26772

MOORE, B.
Closed regenerative life support systems for space travel - Their development poses fundamental questions for ecological science
p0228 A79-41702

MOORE, G. E.
A systematic approach to computer analysis of pulmonary vascular patterns
p0176 N79-21756

MOORE, G. W.
On investigating the statistical properties of the populous path algorithm by computer simulation - Counterconclusions to those of Tateno and Nei
p0253 A79-45640

MORA, R.
Porphyrin-like compounds genesis under simulated abiotic conditions
p0099 A79-22078

MORELLI, F.
Microbiological evaluation of the mobile biological isolator system
[NASA-CR-162293] p0307 N79-32822

MOREY, E. R.
Spaceflight and bone turnover - Correlation with a new rat model of weightlessness
p0182 A79-33049

MORGAN, M. J.
Perception of continuity in stroboscopic motion - A temporal frequency analysis
p0186 A79-34375

MORGAN, T.
Joint testing of the RAF high altitude protective ensemble
p0044 A79-14434

MORGAN, T. R.
An assessment of the RAE Type 'B' full pressure suit automatic head enclosure
p0044 A79-14432

MORIHISA, H.
On the relationship between pilot rating and pilot dynamics. I - An experimental approach
p0066 A79-18474

MORISHITA, H.
Control by episome on salt-resistance in bacteria
p0205 A79-37969

MORONEY, W. F.
Human factors considerations in the design and evaluation of a helmet mounted display using a light emitting diode matrix
p0063 A79-18214

MOROWITZ, H. J.
Closed regenerative life support systems for space travel - Their development poses fundamental questions for ecological science
p0228 A79-41702

MOROZOV, B. V.
A complex system for planning scientific medical research
p0078 N79-14761

MOROZOV, L.
Mirror symmetry breaking in biochemical evolution
p0254 A79-46462

MOROZOV, Y. A.
Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency
[CONF-780541-1] p0307 N79-32827

MOROZOVA, N. P.
Animal endurance to recurrent impact accelerations
p0246 N79-27833
MORRIS, F. A.
Distribution of phytoplankton in Arkansas lakes
[PB-292782/8] p0240 N79-26768
MORRIS, M. K.
Distribution of phytoplankton in North Carolina lakes
[PB-286387/6] p0084 N79-15573
Distribution of phytoplankton in Arkansas lakes
[PB-292782/8] p0240 N79-26768
MORRISSEY, S. J.
Effects of vibration on humans - Performance decrements and limits
p0035 A79-13185
A composite view of task performance in hot environments
p0036 A79-13186
MORROW, J. R.
Man-machine analysis of translation and work tasks of Skylab films
[NASA-CR-151879] p0146 N79-18592
MORSE, J. T.
Plasma volume and electrolyte shifts with heavy exercise in sitting and supine positions
p0161 A79-29336
Effect of sodium and calcium ingestion on thermoregulation during exercise in man
p0163 A79-30628
MOSGOVAYA, I. Y.
Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582] p0071 N79-14711
MOSKOWITZ, H.
Effect of alcohol and marijuana on eye movements
p0101 A79-23469
MOSSER, E. L.
The prediction of the existence or nonexistence of coronary artery disease using routine clinical laboratory measurement
p0020 N79-11703
MOSSMAN, P. B.
Effect of impermeable clothing and respirator on work performance. Part 1: Laboratory studies
[SAND-77-2132] p0034 N79-11748
MOUNTFORD, N. K.
Results of benthic studies at Calvert Cliffs
[PB-294261/3] p0261 N79-29788
MOURIK, J.
Binding of biologically active agents to plasma proteins
[CL-1977-22] p0261 N79-29787
MOYERS, C. V.
A system for sterilizing objects
[NASA-CASE-KSC-11055-1] p0318 N79-33848
MOYNIHAN, B. W.
Development of a specialized head/face protective device for test parachuting operations
p0085 A79-14837
MOZGOVAIA, I. E.
Biological experiments carried out aboard the biological satellite Cosmos-936
p0230 A79-41717
MOZO, B. T.
The effective acoustic environment of helicopter crewmen
p0152 N79-19645
MUELLER-LIMMROTH, W.
Comparative experiments on performance and fatigue effects on pilots using tracking tests and physiological measurement parameters
[RAE-LIB-TRANS-1971] p0080 N79-14778
MUELLER, R.
Spacelab's payload specialists, their selection and duties on-board
p0226 A79-40720
MUELLER, T. J.
Application of numerical methods to physiological flows
p0146 N79-18985
MUHOBERAC, B. B.
Analysis of visible spectra and thermodynamic parameters in hemeprotein systems
p0144 N79-18579
MUKERJEE, S. K.
Disability pattern amongst civil aircrew
p0182 A79-33192
MUKHIN, L. M.
Amino acids in southern Kamchatka hot springs
p0182 A79-33122
A review of recent concepts of the problem of the origin of life
p0221 A79-36041
MUKHOPADHYAY, P.
Simulation and control of a human temperature regulation system
p0041 A79-13613
MULLEN, S. R.
Effects of altitude and two decongestant-antihistamine preparations on physiological functions and performance
p0127 A79-24635
Effects of propranolol on Time of Useful Function (TUF) in rats
[AD-A068535/8] p0283 N79-31896
MUNCH, D. F.
A study of some of the factors influencing the left ventricular diastolic pressure-volume relationship and myocardial metabolism
p0154 N79-19674
MURALI, N. S.
Some electrophysiological concepts of the U wave of ECG
p0201 A79-37138
MURALIDHARAN, R.
Closed loop models for analyzing the effects of simulator characteristics
p0087 N79-15598
Combined monitoring, decision and control model for the human operator in a command and control desk
p0092 N79-15631
A decision, monitoring and control model of the human operator applied to an RPV control problem
[AD-A069880] p0282 N79-30939
Development of human performance models for man-machine system simulation
[AD-A069879] p0282 N79-30940
MURATORE, R.
Pursuit after-nystagmus
p0271 A79-49484
MURATOV, V. R.
Experimental determination of maximum permissible exposure to laser radiation of 1.54-micron wavelength
p0002 A79-10648
MURPHY, G. L.
Biological specimen holding facilities for Spacelab experiments
[IAF PAPER 78-56] p0003 A79-11224
Selection, training, and health care of working specialists for Shuttle/Spacelab and future space station missions
[IAF PAPER 79-99] p0303 A79-53297
MURPHY, M. R.
Coordinated crew performance in commercial aircraft operations
p0040 A79-13219
MURRAY, R. G.
ST isopotential precordial surface maps in patients with acute myocardial infarction
p0098 A79-21285
Early cardiovascular adaptation to simulated zero gravity
p0162 A79-29727
MURRAY, R. W.
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] p0302 A79-53294
MURTHY, I. S. N.
Homomorphic analysis and modeling of ECG signals
p0210 A79-39973
MURZIN, A. G.
Experimental determination of maximum permissible exposure to laser radiation of 1.54-micron wavelength
p0002 A79-10648
MUSACCHIA, X. J.
Intestinal transport of hexoses in the rat following chronic heat exposure
p0236 A79-43701
MUTKE, H. G.
Equipment for surgical interventions and childbirth in weightlessness
[IAF PAPER 79-97] p0302 A79-53296

MYASNIKOV, V. I.
Control of vertical position after flights aboard the Salyut-4 orbital station
p0311 N79-33793

MYERS, P. C.
Microwave thermography: Physical principles and diagnostic applications
p0083 N79-15567

MYHRE, L. G.
Tracking-task performance during heat stress simulating cockpit conditions in high-performance aircraft
p0236 A79-43675

MYLES, W. S.
The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces
[AD-A069865] p0316 N79-33829

N

NAAB, K. N.
Performance evaluation of test dummies with flesh parts produced with substitute foaming compounds
[PB-289951/6] p0179 N79-21776

NACHEV, L.
Possibility of improving assessment of cardio-pulmonary function by submaximal exercise on a bicycle ergometer
[BLL-RTS-11657] p0279 N79-30918

NADEL, L. D.
An investigation of the pulse-scatter imaging technique for medical ultrasonic imaging and tissue characterization
p0217 N79-24628

NADON, R.
Carbohydrate metabolism of the stimulated diaphragm muscle
p0050 N79-12689

NAGANO, K.
The origin of the protein synthesis mechanism
p0207 A79-37986

NAGASAWA, Y.
Vigilance and electroencephalogram
p0100 A79-22975
Frequency analysis of heart rate variability under flight conditions
p0202 A79-37713

NAHMIAS, C.
Changes in lung volume, lung density, and distribution of ventilation during hypobaric decompression
p0185 A79-33806

NAIDEL, A. V.
Mechanism for the regulation of human posture during movements of the foot
p0276 A79-50651

NAKAMURA, H.
Membranous evolution in the primitive cell
p0206 A79-37977

NAKAPKIN, O. A.
Automatic audiometry in the practice of flight-personnel examination
p0295 A79-51084

NAKATANI, H.
A binocular stereoscopic display system for echocardiography
p0130 A79-26072

NAKAYA, M.
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
[IAF PAPER 79-76] p0301 A79-53285

NAKAYACHI, M.
Intelligence
p0095 N79-15896

NAKHLA, S. S.
Tolerance of the neck to indirect impact
[AD-A066971] N79-25749
Simulation of head and neck response to -G sub x and +G sub z impacts
p0285 N79-31908

NANDI, P. K.
Interaction between inositol hexaphosphate and carbobenzoxy peptide - A model for nucleic acid - Nonhistone chromosomal protein interaction
p0100 A79-22082

NANOBASHVILI, Z. I.
Origin of neuron responses of the superior colliculus to light flashes
p0233 A79-42294

NATOCHIN, Y. V.
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819

NAVON, D.
Tracking in two dimensions as a function of dimension priorities and tracking difficulty
p0036 A79-13193

NAVROT, J.
Chemical fingerprints of life in terrestrial soils and their possible use for the detection of life on Mars and other planets
p0136 A79-27929

NAZAR, M. Y.
New combined aspirator for sampling developed
p0170 N79-20722

NAZARENKO, A. I.
The effect of normobaric hyperoxia on brain and liver tissue respiration in albino rats with different resistances to hypoxia
p0296 A79-51113

NAZAROV, N. M.
Effects of different values of urine pH during long-term storage on microflora composition
p0194 N79-23643
Quality of water reclaimed from urine as related to pH of initial product
p0313 N79-33807

NEAL, A. S.
Human Factors Society, Annual Meeting, 21st, San Francisco, Calif., October 17-20, 1977, Proceedings
p0035 A79-13181

NEAL, L.
A simple model of fluid flow and electrolyte balance in the body
[NASA-CR-160205] p0217 N79-25722

NEBOIT, M.
Selection and techniques for analysis of indices of visual data reception. II
p0047 A79-15494
Choice and techniques of analysis of indices for the perception of visual information. III
p0103 A79-23954

NECAS, J.
Experiment Chlorella 1 on board of Salyut 6
[IAF PAPER 78-53] p0003 A79-11223

NECHAEV, A. P.
Engineering-psychological study of information imaging systems
p0099 A79-21404

NEFEDOV, I. G.
Preliminary results of Cytos experiment flows in Salyut VI - Investigations of Paramechium aurelia
p0229 A79-41709

NEFEDOV, Y. G.
Investigation of composition of trace contaminants in the air environment of the Soyuz-22 spacecraft
p0072 N79-14720

NEI, M.
Goodman et al.'s method for augmenting the number of nucleotide substitutions
p0253 A79-45639
Augmentation algorithm - A reply to Holmquist
p0253 A79-45644

NEIDERHEISER, W.
Microbiological evaluation of the mobile biological isolator system
[NASA-CR-162293] p0307 N79-32822

NEKHAYEV, A. S.
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819
Studies of venous circulation in the crew of the Salyut-5 orbital station
p0310 N79-33791

NEKRASOVA, V. M.
Mathematical model of the respiration rhythm generation process
p0254 A79-46268

NELSEN, T. S.
Quantitative flow estimation with transcutaneous Doppler ultrasound
p0295 A79-51042

NELSON, C. L.
Effects of information processing requirements on reaction time of the eye
p0064 A79-18219
Effects of information processing requirements on reaction time of the eye
[AD-A060099] p0080 N79-14778
NELSON, C. V.
Application of an isolated heart model to investigate blood-oxygen delivery
p0296 A79-51112
NELSON, M. A.
Visual contrast sensitivity functions obtained with colored and achromatic gratings
p0181 A79-32628
NELSON, W. G.
ECLSS definition for a low cost space construction base
[ASME PAPER 78-ENAS-15] p0007 A79-12564
NEMSADZE, N. D.
Effect of paradoxical sleep deprivation on the acquisition of sound discrimination
p0167 A79-31988
NESTEROV, V. P.
Effects of space flight factors on electrolyte composition of rat skeletal muscles
p0109 N79-16530
Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite
p0311 N79-33795
NEUBERT, J.
Ultrastructural development of the vestibular system under conditions of simulated weightlessness
p0298 A79-52284
Ultrastructural development of the vestibular system of frog larvae in 0g simulation
[IAF PAPER 79-78] p0301 A79-53287
NEUDER, S. M.
Electromagnetic fields in biological media. Part 1: Dosimetry - a primer on bioelectromagnetics
[PB-285793/6] p0078 N79-14759
NEUHAEUSER, G.
From the laboratory to the Spacelab - Training program for Spacelab payload experts
[DGLR PAPER 78-182] p0069 A79-20023
NEUMAN, T.
Quantification and validation of percept-genetic defense mechanism. A hierarchical analysis of behavior of pilots under stress
[FOA-C-55020-H6] p0124 N79-17555
NEUMYVAKIN, I. P.
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819
NEVEROV, V. P.
Changes in optokinetic, postoptokinetic, and reverse postoptokinetic nystagmus after bilateral labyrinthectomy
p0255 A79-46499
NEVILLE, E. D.
In vivo response of ornithine decarboxylase activity to growth hormone as demonstrated by oxidation of L-ornithine-1-/C-14/ in hypophysectomized rats
p0005 A79-12400
Insulin-like effect of bovine growth hormone in vivo as demonstrated by oxidation of C/14/-U-glucose in diabetic rats
p0252 A79-44797
NEVZGODINA, L. V.
Radiobiological investigations in Cosmos 782 space flight /Biobloc SF1 experiment/
p0006 A79-12518
Development capacity of artemia cysts and lettuce seeds flown in Cosmos 936 and directly exposed to cosmic rays
p0127 A79-24632
NEWGARD, P. M.
A study of noninvasive blood pressure measurement techniques
p0294 A79-51036
NEWMAN, R. A.
Discrimination of density and clustering on four versions of a stochastic display
p0036 A79-13192
NEWMAN, R. L.
A head-up display for mid-air drone recovery
p0090 N79-15615
NEWSON, B. D.
Aircraft flight simulation of spacelab experiment using an implanted telemetry system to obtain cardiovascular data from the monkey
p0147 N79-19022
NICHOL, P. M.
Effects of endurance training on left ventricular dimensions in healthy men
p0237 A79-43706
NICHOLSON, A. N.
Beta-adrenoceptor antagonists: Central effects
p0027 N79-11702
NICOL, S. C.
Responses of conscious rabbits to CO2 at ambient temperatures of 5, 20, and 35 C
p0277 A79-50904
NIGAM, A. K.
Development and evaluation of instrument systems for noninvasive detection, characterization and quantification of atherosclerotic lesions
[PB-286851/1] p0085 N79-15582
NIKOLOV, I. T.
Obtaining growth hormone from calf blood
[NASA-TM-75326] p0283 N79-31895
NIKONOVA, K. V.
Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency
[CONF-780541-1] p0307 N79-32827
NILSSON, B. O.
A mechanism for high-frequency electromagnetical field-induced biological damage
p0231 A79-41847
NISHIDA, S.
Electromagnetic power absorption in cylindrical tissue models excited by a loop antenna
p0136 A79-27959
NISHIMURA, S.
Structure-stability relationship of thermophile tRNA - A model for biological adaptation and limit of life at high temperature
p0206 A79-37976
NITAMI, M.
Transient changes in arterial blood gases and heart rate during and after acutely induced hypoxia and hyperoxia to rabbits
p0134 A79-27120
NIWA, K.
A study of progress in flying performance revealed from daily check sheets in a primary flight training course. III - Comparison of progress between two courses
p0134 A79-27119
Personality characteristics of pilots on EPPS, MPI and DOSEFU test. II - Comparison among pilots, non-pilot officers and aviation students
p0210 A79-38822
NIXON, J. V.
Early cardiovascular adaptation to simulated zero gravity
p0162 A79-29727
Early cardiovascular adaptation to zero gravity simulated by head-down tilt
[IAF PAPER 79-77] p0301 A79-53286
NOBLE, B. E.
Air Force female pilots program: Initial performance and attitudes
[AD-A065641] p0241 N79-26783
NODA, H.
Origin of life; Proceedings of the Second ISSOL Meeting and Fifth ICOL Meeting, Kyoto, Japan, April 5-10, 1977
p0203 A79-37919
NOGUCHI, K.
On the relationship between pilot rating and pilot dynamics. I - An experimental approach
p0066 A79-18474
NOLAN, R. W.
Evaluation of British and Canadian conductive rubber heating elements for handwear: Preliminary report
[AD-A052826] p0093 N79-15637
NOONER, D. W.
Prebiotic condensation reactions using cyanamide
p0203 A79-37932

NORGREN, R.
Non-invasive information on the P-R segment of the cardiac cycle - An assessment of the clinical potential of the electric and magnetic methods
p0295 A79-51045
NORMAN, A.
Effect of ultrasonic irradiation on mammalian cells and chromosomes in vitro
p0134 A79-27239
NORMAN, D.
Recent developments and plans for pilot training devices
[SAE PAPER 781007] p0130 A79-25889
NORMAN, R. W.
Aircrew helmet protection against potential cerebral concussion in low-magnitude impacts
p0201 A79-37705
NORTH, R. A.
Task functional demands as factors in dual-task performance
p0039 A79-13214
Human performance in time-shared verbal and tracking tasks
[AD-A070275] p0308 N79-32831
NORTON, R. D.
Development opportunities in the space environment
p0095 N79-15897
NOSOVA, T. A.
Protein fractions and enzymatic activity thereof in the rat myocardium after the flight on Kosmos-690 biosatellite
p0014 N79-10700
Changes in metabolism of soleus muscle tissue in rats following the flight aboard the Kosmos-690 biosatellite
p0108 N79-16518
Tissular metabolism in mixed type fibers of rat skeletal muscles after flight aboard Cosmos-690 biosatellite
p0244 N79-27823
NOVAK, G. R.
Autoradiographic enhancement of mammograms
p0227 A79-40773
NOVAK, J. T.
Effect of phosphorus supply on algal biomass in a turbid Missouri Reservoir
[PB-293183/0] p0243 N79-27816
NOVAK, V. J. A.
Subcellular organisms and evolution of cell structure
p0206 A79-37978
NOVIKOV, P. P.
Detection of conflict states in air traffic control of airport zones
p0166 A79-31181
NOVIKOV, V. N.
Utilization of the wastes of vital activity
[NASA-TM-75410] p0177 N79-21768
NOVIKOVA, N. N.
Nonparametric model for the detection of signals observed by a human operator on a CRT screen on a noise background
p0159 A79-28565
Information-handling capacity of a human operator in detection of signals against a noisy background
p0081 N79-14989
NOVOSELTSEV, V. N.
Control theory and biosystems: Analysis of homeostatic properties
p0186 A79-34506
NOYES, F.
Knee flail design limits: Background, experimentation and design criteria
[AD-A062384] p0220 N79-25746
NUDELMAN, S.
The development of a digital video subtraction system for intravenous angiography
p0294 A79-51033
NUNNELEY, S. A.
Physiological requirements for design of environmental control systems - Control of heat stress in high-performance aircraft
[ASME PAPER 78-ENAS-22] p0007 A79-12571
Fighter index of thermal stress /FITS/ - guidance for hot-weather aircraft operations
p0202 A79-37715
Effect of cockpit temperature gradients on the validity of single-point measurements
p0234 A79-43203
Tracking-task performance during heat stress simulating cockpit conditions in high-performance aircraft
p0236 A79-43675
Heat and acute dehydration effects on acceleration response
p0237 A79-43705
Fighter index of thermal stress: Development of interim guidance for hot-weather USAF operations
[AD-A053471] p0056 N79-13699
Fighter index of thermal stress: Relation to weather conditions at ATC and TAC bases
[AD-A062713] p0174 N79-20748
NUZHNYI, V. P.
Norepinephrine uptake by the isolated heart of rats adapted and deadapted to hypoxia
p0097 A79-20621

O

OBERMAN, A.
Long term pulmonary function patterns in the aviator: The thousand Aviator study
p0028 N79-11708
OBLER, H. D.
Apparatus for supplying conditioned air at a substantially constant temperature and humidity
[NASA-CASE-GSC-12191-1] p0156 N79-19688
OCHIAI, E.-I.
The evolution of the environment and its influence on the evolution of life
p0099 A79-22076
OCHIAI, T.
Experimental approach to the chemical evolution in the primeval sea. I - Formation of amino acids and amino acid polymers in modified sea mediums
p0203 A79-37935
ODDOU, C.
Specific problems in cardiovascular fluid dynamics measurements
p0210 A79-39506
ODOM, D. G.
Prebiotic nucleotide oligomerization in a fluctuating environment - Effects of kaolinite and cyanamide
p0162 A79-29938
ODONNELL, R. D.
Contributions of psychophysiological techniques to aircraft design and other operational problems
[AGARD-AG-244] p0290 N79-31941
ODOWD, F.
Serendipitous solution to the problem of culturing Arabidopsis plants in sealed containers for spaceflights of long duration
p0229 A79-41708
OESTREICHER, H. L.
Unsteady-state response of the vascular system to transient and sustained aerospace acceleration profiles
p0286 N79-31917
OGAWA, T.
Experimental approach to the chemical evolution in the primeval sea. I - Formation of amino acids and amino acid polymers in modified sea mediums
p0203 A79-37935
OGORODNIKOVA, L. G.
Helium-oxygen mixture and the organism hyperbaric aspect
p0243 N79-27818
OHAREK, F. J.
Component performance of a 360 deg non-programmed visual display
p0137 A79-28163
OHNISHI, K.
Some characteristic features of the origin and evolution of the amino acid composition of proteins - A theoretical consideration
p0206 A79-37973
OKADA, T.
Object-handling system for manual industry
p0101 A79-23464
OKAUE, M.
A study of progress in flying performance revealed from daily check sheets in a primary flight training course. III - Comparison of progress between two courses
p0134 A79-27119
Personality characteristics of pilots on EPPS, MPI and DOSEFU test. II - Comparison among pilots,

non-pilot officers and aviation students
p0210 A79-38822

OKIHANA, H.
Polymers produced by heating an amino acid mixture in sea water enriched with transition elements
p0254 A79-46461

OLAFSON, B. D.
A molecular description of oxygen binding to hemoglobin
p0194 N79-23646

OLEINIK, B. F.
Functional changes in the cardiovascular system of machine-tool operators under physical and neurologically stressful loads
p0160 A79-29270

OLIFSON, L. Y.
Orenburg symposium on mycotoxins
p0175 N79-21749

OLINGER, C. P.
Development and evaluation of instrument systems for noninvasive detection, characterization and quantification of atherosclerotic lesions
[PB-286851/1] p0085 N79-15582

OLOFF, C. M.
A subhuman primate restraint system
[AD-A069607] p0279 N79-30915

OLREE, H. D.
Isokinetic exercise: A review of the literature
[NASA-CR-151841] p0051 N79-12695

OLSEN, C. C.
Effects of phase manipulation on speech intelligibility through communication headsets
p0164 A79-30654

OLSON, J. E.
Biological effects of laser irradiation on nerve cells
p0247 N79-27840

OLSON, R. D.
Cardiovascular studies of reducing and oxidizing agents
p0049 N79-12682

OLSSON, R. A.
Exercise performance and hemodynamics during dietary potassium depletion in dogs
p0067 A79-18959

OLTMAN, P. K.
Eye torsion in response to a tilted visual stimulus
p0305 A79-54254

OLZAK, L. A.
Target-terrain classification and detection performance
p0065 A79-18225

OMELYANETS, N. I.
Microflora of water reclaimed in sealed compartments
p0193 N79-23638

ONARAL, B.
Metal bioelectrode polarization: A frequency and time domain analysis
p0176 N79-21755

ONO, H.
Axiomatic summary and deductions from Hering's principles of visual direction
p0228 A79-41421

ONSTOTT, E. D.
Prediction, evaluation, and specification of flying qualities by means of step target tracking
p0088 N79-15604
Error rate information in attention allocation pilot models
p0115 N79-17483
Prediction of pilot reserve attention capacity during air-to-air target tracking
p0116 N79-17488

OPARIN, A. I.
Coacervate drops as a model for precellular structures
p0204 A79-37960
The study of the origin of life - Results and prospects
p0206 A79-37981

OPPENHEIMER, J. M.
Killfish development in zero-G on COSMOS 782: Fundulus experiment K-104
p0021 N79-11659

OPSTAD, P. K.
Changes in the circadian rhythm of performance and mood in healthy young men exposed to prolonged, heavy physical work, sleep deprivation, and caloric deficit
p0234 A79-43202

ORESTENKO, Y. N.
Effect of cerebrocranial trauma on reactive distinctions of hypothalamic and hippocampal vessels in the presence of hypoxia
p0074 N79-14733

ORLOVA, A. V.
Effect of different doses of centimeter-band electromagnetic oscillations of biochemiluminescence of central nervous system and liver tissues
p0172 N79-20738

ORLOVA, T. A.
Dynamics of Cosmonauts' blood biochemistry during space missions
p0072 N79-14717

ORLOVSKII, A. F.
Coacervate drops as a model for precellular structures
p0204 A79-37960

ORMEROD, P. S.
A system of training in aviation physiology and human factors for Army and Navy helicopter aircrew
p0151 N79-19635

ORNE, D.
In-vivo bone strain telemetry in monkeys /M. nemestrina/
p0002 A79-10608

ORO, J.
Prebiotic condensation reactions using cyanamide
p0203 A79-37932
Squalenes, phytanes and other isoprenoids as major neutral lipids of methanogenic and thermoacidophilic 'archaebacteria'
p0232 A79-42274

OROURKE, J.
A spherical representation of a human body for visualizing movement
p0301 A79-53096

OSADA, H.
Effects of dietary composition on nutritional state in rats during exposure to high altitude
p0134 A79-27118

OSADCHII, L. I.
Cardiac and vascular components of the systemic response of blood circulation to orthostatic influence
p0097 A79-20651

OSAWA, T.
A study of the effect of forcing function characteristics on human operator dynamics in manual control
p0086 N79-15590

OSER, H.
The European life sciences experiments onboard the first Spacelab mission
[ASME PAPER 78-ENAS-24] p0007 A79-12573
The European life sciences experiments onboard the first Spacelab mission
p0100 A79-22254

OSHIMA, R. J.
The impact of sulfur dioxide on vegetation: A sulfur dioxide-ozone response model
[PB-283604/7] p0049 N79-12686

OSHIMA, T.
Structure-stability relationship of thermophile tRNA - A model for biological adaptation and limit of life at high temperature
p0206 A79-37976

OSTBERG, O.
Physical and mental working environment in a terminal based computer system
[BLL-RTS-11634] p0197 N79-23665

OSTER, C. A.
Review of unfolding methods used in the US and their standardization for dosimetry
[BNWL-SA-6503] p0307 N79-32828

OSTROFSKY, B.
Application of a structured decision process for proper inclusion of human resources in the design of a power unit support stand
[AD-A069978] p0309 N79-32840

OSTROVSKII, M. A.
Photochemical transformations of the visual pigment rhodopsin
p0181 A79-32319

OTOOLE, B. I.
The tilt illusion - Length and luminance changes of induction line and third /disinhibiting/ line

p0228 A79-41422

OTTO, D. A.
Carbon monoxide and human time discrimination - Failure to replicate Beard-Wertheim experiments
p0102 A79-23472

OU, L.-C.
Hemoglobinemia in rats exposed to high altitude is not due to an overload of catabolic mechanisms
p0101 A79-23467

OVCHAROV, V.
The Meduza experiment: An orbital complex ten weeks in flight
[NASA-TM-75394] p0169 N79-20714

OVECHKIN, V. G.
Characteristics of vestibular nystagmus in rats
p0016 N79-10714

OVITT, T. W.
The development of a digital video subtraction system for intravenous angiography
p0294 A79-51033

OWENS, J. M.
Human performance in time-shared verbal and tracking tasks
[AD-A070275] p0308 N79-32831

OWENS, L. J.
Prosthesis coupling
[NASA-CASE-KSC-11069-1] p0240 N79-26772

OXBORROW, G. S.
Thermal resistance of naturally occurring airborne bacterial spores
p0131 A79-26147

OYAMA, J.
Studies on the erythron and the ferrokinetic responses in beagles adapted to hypergravity
p0010 A79-12869

RBC-/Cr-51/ half-life and albumin turnover in growing Beagle dogs during chronic radial acceleration
p0135 A79-27553

OZEROV, IU. P.
Nystagmographic characterization of responses to rotation of persons with different vestibular-vegetative stability
p0188 A79-35122

P

PABON, H. J. J.
Preparation of some prostaglandin E sub 1 omega-homo-prostaglandin E sub 1 esters and their inhibiting properties on rat blood platelet aggregation
p0239 N79-26765

PACE, N.
Continuous metabolic and cardiovascular measurements on a monkey subject during a simulated 6-day Spacelab mission
p0229 A79-41713

Aircraft flight simulation of spacelab experiment using an implanted telemetry system to obtain cardiovascular data from the monkey
p0147 N79-19022

PACHELLA, R. G.
The development of integrated multidimensional displays
p0187 A79-34990

PADGAONKAR, A. J.
Anatomical coordinate systems for human body segments
p0065 A79-18231

PAINE, G.
Event-driven displays for manipulator control
p0089 N79-15610

PAK, V. G.
The problem of optimally fast response as solved by the nerve cell
p0166 A79-31179

PALACIOS, I.
Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle
p0296 A79-51111

PALASEK, R. F.
Human Factors Society, Annual Meeting, 21st, San Francisco, Calif., October 17-20, 1977, Proceedings
p0035 A79-13181

PALMER, H. E.
The use of Na-22 as a tracer for long-term bone mineral turnover studies.
p0265 A79-47327

Determination of muscle mass changes in legs from K-40 measurements
p0274 A79-49997

Kinetic measurements of bone mineral metabolism: The use of Na-22 as a tracer for long-term bone mineral turnover studies
[NASA-CR-151868] p0111 N79-16544

PALMER, R. F.
The use of Na-22 as a tracer for long-term bone mineral turnover studies.
p0265 A79-47327

PALOS, L. A.
Effect of hypoxia on the development of Drosophila melanogaster /Meigen/
p0165 A79-30667

PANCHENKO, V. S.
Possibilities of preventing adverse reactions in simulating the acute period of adaptation to weightlessness
p0244 N79-27825

PANFILOV, V. E.
Comparison of physiological effects of head-down tilting and immersion on the human body
p0298 A79-52279

PANIN, L. E.
Energetic aspects of adaptation
p0167 A79-31906

PANJABI, M. M.
A three-dimensional mathematical analogue of the spine structure: A comprehensive approach
p0285 N79-31909

PANKOVA, A. S.
Comparative analysis of causes of animal deaths during chronic exposure to gamma radiation and the aftereffect period
p0016 N79-10718

PANOV, A. N.
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
p0299 A79-52475

PANT, J. N.
Photochemical synthesis of amino acids from aqueous solutions of ethyl alcohol, ammonia/nitrogen under varied conditions
p0105 A79-24520

PANTLE, A.
Factors controlling the competing sensations produced by a bistable stroboscopic motion display
p0104 A79-24067

PAOLUCCI, G.
The information in aircraft accidents investigation
p0291 N79-31947

PAPAGIANNIS, M. D.
The importance of the physical laws on the origin and evolution of life
p0207 A79-37983

PAPIN, J. P.
Selection and techniques for analysis of indices of visual data reception. II
p0047 A79-15494

Choice and techniques of analysis of indices for the perception of visual information. III
p0103 A79-23954

PAPKOV, H. G.
Paroxysmal disorders of consciousness due to flight factors
p0161 A79-29300

PARFENOV, G. P.
Biological experiments carried out aboard the biological satellite Cosmos-936
p0230 A79-41717

Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582] p0071 N79-14711

PARISI, A. F.
Coronary calcification in the diagnosis of coronary artery disease
p0226 A79-40465

PARKER, R. E.
The pulmonary circulation: Studies on alveolar hypoxia and vascular smooth muscle metabolism
p0195 N79-23650

PARKEY, R. W.
ST isopotential precordial surface maps in patients with acute myocardial infarction
p0098 A79-21245

PARLOW, A. F.
Effects of space flight on plasma and glandular concentrations of pituitary hormones
p0021 N79-11664
PARMENOV-TRIFILOV, D. I.
Diagnostics of initial deficiency in cerebral circulation
p0166 A79-31164
PARMENTIER, G.
The effects of strong shock waves on mortality rates and percentages of pulmonary lesions in rats as a function of the number of exposures
[NASA-TM-75598] p0053 N79-13676
PAROLLA, D.
Organ blood flow, cardiac output, arterial blood pressure, and vascular resistance in rats exposed to various oxygen pressures
p0135 A79-27557
PARRISH, L. D.
The next decade - Development, training, supervision
p0102 A79-23584
PARSONS, K. C.
The biodynamic response of the human body and its application to standards
p0288 N79-31929
PASSARELLO, C. E.
Multibody dynamics inclnding translation between the bodies, with application to head-neck systems
[AD-A062114] p0174 N79-20747
PATHAK, C. K.
Photochemical synthesis of amino acids from aqueous solutions of ethyl alcohol, ammonia/nitrogen under varied conditions
p0105 A79-24520
PATHAK, H. D.
Photochemical synthesis of amino acids from aqueous solutions of ethyl alcohol, ammonia/nitrogen under varied conditions
p0105 A79-24520
PATON, W. D. M.
Detection of bubbles in decompression sickness
p0041 A79-13573
PATTERSON, J. L., JR.
Monitoring the state of the human airways by analysis of respiratory sound
[IAF PAPER 78-66] p0003 A79-11227
Responses of pial arterioles after prolonged hypercapnia and hypoxia in the awake rabbit
p0101 A79-23075
PATTERSON, R. R.
Exercise performance and hemodynamics during dietary potassium depletion in dogs
p0067 A79-18959
PAUL, R.
Advanced industrial robot control systems
[PB-287273/7] p0113 N79-16558
PAULING, L.
Orthomolecular enhancement of human development
p0095 N79-15895
PAVLOV, G. I.
Effects of vestibular stimuli on the electrical activity of muscles
p0187 A79-35121
A method of evaluating the pupillary reaction to vestibular stimuli
p0016 N79-10717
PCHELINOV, V. P.
Deductive derivation of a mathematical model for spectral sensitivity of the human organ of sight. I, II
p0166 A79-31178
PEARCY, M. J.
A failure criterion for human, vertebral, cancellous bone
p0285 N79-31912
PEARSON, W. H.
Multipurpose digital switching and flight control workload
[AD-A069606] p0281 N79-30934
PECHYNEKOEVES, K.
Gel-electrophoresis studies for the taxonomic characterization of soil microorganisms
[NBC/CNR-TT-1924] p0120 N79-17521
PEDLEY, T. J.
Mechanics of arterial blood flow
p0247 N79-27846
Mechanics of the microcirculation
p0247 N79-27847
PEELER, J. T.
Thermal resistance of naturally occurring airborne bacterial spores
p0131 A79-26147
PELI, E.
Latency of peripheral saccades
p0278 A79-50987
PELLIN, M. J.
In vitro duplication of the primary light-induced charge separation in purple photosynthetic bacteria
p0131 A79-26100
PELTIER, W.
Methods for measuring the acute toxicity of effluents to aquatic organisms
[PB-289605/8] p0170 N79-20719
PENGELLY, L. D.
Contribution of rib cage and abdomen-diaphragm to tidal volume during CO2 rebreathing
p0185 A79-33805
PENN, J. W.
Electrical parameter values of some human tissues in the radiofrequency radiation range
[AD-A064202] p0189 N79-22754
PENPARGKUL, S.
Effect of exercise on collateral development in dogs with normal coronary arteries
p0067 A79-18960
Effect of physical conditioning on cardiac mitochondrial function
p0068 A79-18966
PEQUIGNOT, J. M.
Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
p0305 A79-54267
PEREVALOV, G. M.
Dynamics of the impulse activity of the neurons in the posterior hypothalamus upon exposure to microwaves
p0188 A79-35918
PEREZ-POVEDA, D. A.
The effect of Nap-of-the-Earth (NOE) helicopter flying on pilot blood and urine biochemicals
[AD-A055204] p0055 N79-13693
PERMIAKOV, D. V.
Nystagmographic characterization of responses to rotation of persons with different vestibular-vegetative stability
p0188 A79-35122
PERNOD, J.
Mitral prolapse and acceleration
p0103 A79-23951
Conduction difficulties of vagal origin in flight personnel - Significance of intrathoracic data on the bundle of His
p0103 A79-23955
Cardiac conduction and aptitude problem of fliers. The benefits of endocavital recording of the His bundles
p0030 N79-11716
The advantages of ultrasonic echocardiography in the cardiological evaluation of fliers
p0030 N79-11718
PERRENOUD, J.-F.
The electrocardiogram recorded by telemetry during a parachute jump, compared to a trace during stress tests - A preliminary study of 29 cases
p0256 A79-46600
PERSIDSKII, IU. V.
Circadian rhythm of electrolyte uresis in healthy persons
p0257 A79-46681
PERVUSHIN, V. I.
Effects of physical conditioning and electric stimulation on metabolic processes in the soleus muscle and structure thereof in hypokinetic man
p0192 N79-23634
PESHOCK, R. M.
ST isopotential precordial surface maps in patients with acute myocardial infarction
p0098 A79-21245
PESQUIES, P. C.
Two primate biological facility module in Spacelab
[IAF PAPER 78-70] p0003 A79-11229
PESQUIES, P.-C.
The electrocardiogram recorded by telemetry during a parachute jump, compared to a trace during stress tests - A preliminary study of 29 cases
p0256 A79-46600

PETERSEN, R. J.
Evaluation of fluoropolymer membranes in oxygenators
[PB-286698/6] p0112 N79-16547
PETERSIK, J. T.
Factors controlling the competing sensations produced by a bistable stroboscopic motion display
p0104 A79-24067
PETERSON, D. D.
Space radiation dosimetry onboard COSMOS 936: US portion of experiment K-206
p0023 N79-11677
PETERSON, J. J.
Some Bayesian inference procedures for use in developing an impact acceleration injury prediction model
[AD-A067228] p0220 N79-25741
PETERSON, K.
Method and arrangement for the preparation of solid foodstuffs for long-term storage
[BLL-RTS-11445] p0145 N79-18590
PETERSON, R. W.
Some considerations of hazards in the use of lasers for artistic displays
[PB-294513/7] p0281 N79-30931
PETLENKO, B. I.
Voice communication in artificial atmospheres
p0048 A79-16500
PETRENKO, V. S.
Comparative study of acetylcholinesterase inactivation in warm-blooded animals and insects with substituted vinyl phosphates
p0121 N79-17527
PETRES, J.
Uncommon hypersensitivity to contacting cold water and cold air with propagated reflex-like erythema development
[BLL-RTS-11644] p0279 N79-30917
PETROFSKY, J. S.
Frequency and amplitude analysis of the EMG during exercise on the bicycle ergometer
p0297 A79-52022
PETROVSKIY, A. B.
Problem-oriented program approach to planning and management of medicine
p0078 N79-14762
The systems analytic approach to the problem of classification of scientific medical research
p0078 N79-14766
PETTERSSON, L. E.
A mechanism for high-frequency electromagnetical field-induced biological damage
p0231 A79-41847
PETTIJOHN, F. S.
Left Anterior Hemiblock (LAH): Diagnosis and aeromedical risk
p0029 N79-11715
The interaction of carbon monoxide and altitude on aviator performance: Pathophysiology of exposure to carbon monoxide
[AD-A055212] p0056 N79-13694
PETUKHOVA, G. N.
Effect of acute hypoxia on some parameters of renal excretory function and renal hemodynamics
p0245 N79-27828
PEW, R. W.
Development of human performance models for man-machine system simulation
[AD-A069879] p0282 N79-30940
PEYRIN, L.
Metabolic adrenergic changes during submaximal exercise and in the recovery period in man
p0305 A79-54267
PEZOLDT, V. J.
Arousal from sleep by emergency alarms: Implications from the scientific literature
[PB-284044/5] p0051 N79-12700
PEZZACK, J. C.
Aircrew helmet protection against potential cerebral concussion in low-magnitude impacts
p0201 A79-37705
PFHOL, R.
Radiobiological investigations in Cosmos 782 space flight /Biobloc SP1 experiment/
p0006 A79-12518
PHELAN, J. M.
The effects of temperature, salinity, and other factors on the growth and formation of UV-absorbing substances by the fungus Aspergillus
p0005 A79-12512
PHILLIPS, J. M.
Developing closed life support systems for large space habitats
[AAS PAPER 78-145] p0099 A79-21260
PHILLIPS, N. S.
Application of biodynamic models to the analysis of F-16 canopy birdstrike
p0285 N79-31911
PHILP, R. P.
Organic geochemical studies on kerogen precursors in recently deposited algal mats and oozes
p0001 A79-10419
PHILPOTT, D. E.
A study of axonal degeneration in the optic nerves of aging mice
p0005 A79-12123
Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798
Cosmic ray effects on the eyes of rats flown on COSMOS 782
p0022 N79-11669
Effects of weightlessness on the embryonic development and aging of Drosophila
p0022 N79-11670
Effects of weightlessness on the genetics and aging process of drosophila melanogaster
p0023 N79-11673
Cosmic ray effects on the eyes of stationary and centrifuged rats flown on COSMOS 936, experiment K-207
p0024 N79-11678
PHINNEY, D. E.
Meteorological limits on the growth and development of screwworm populations
[NASA-CR-151873] p0107 N79-16512
PIANEZZI, B.
Radiobiological investigations in Cosmos 782 space flight /Biobloc SP1 experiment/
p0006 A79-12518
Development capacity of artemia cysts and lettuce seeds flown in Cosmos 936 and directly exposed to cosmic rays
p0127 A79-24632
PICCIOLO, G. L.
Determination of antimicrobial susceptibilities on infected urines without isolation
[NASA-CASE-GSC-12046-1] p0076 N79-14750
PIEHL, K.
Phosphorylase a in human skeletal muscle during exercise and electrical stimulation
p0067 A79-18962
PIERCE, B.
Linear modelling of attentional resource allocation
p0091 N79-15626
PIERGALLINI, J. R.
Heat transfer principles in personal protection applications
p0043 A79-14405
Thermal conduction effects in human skin
p0265 A79-47329
Thermal conduction effects in human skin. 1: Experimental data acquisition
[AD-A068479] p0259 N79-28871
Thermal conduction effects in human skin. 3: Influence of epidermal thickness and exposure time
[AD-A068481] p0259 N79-28872
PIERRYNOWSKI, M. R.
Aircrew helmet protection against potential cerebral concussion in low-magnitude impacts
p0201 A79-37705
PIJANOWSKI, G. J.
The relationship between adult articular cartilage thickness and dynamic loads of a uniaxial joint
p0154 N79-19671
PIJOUN, M.
Measuring systolic time intervals at rest and under stress by external methods. Advantages in the evaluation of fliers
p0030 N79-11717
PILIPYUK, Z. I.
Effect of hypokinesia on animal resistance to chemical agents
p0109 N79-16524
PIMENOVA, L. A.
The systems analytic approach to the problem of classification of scientific medical research

PIMENOVA, L. Y.
Current status and prospects of continued refinement of planning and coordination of scientific medical research
p0078 N79-14765

PINCUS, J. H.
Study of pharmaceutical industrial problems
[NASA-CR-160267] p0248 N79-27852

PINEGIN, B. V.
Intestinal autoflora as an indicator of severity of radiation lesion
p0121 N79-17530

PINSKI, M. S.
The objective evaluation of aircrew protective breathing equipment. III - Improved types of mask/goggles combinations. IV - Fullface masks and hoods suitable for flight attendant use
p0184 A79-33638

PIPER, C. F.
The interaction of carbon monoxide and altitude on aviator performance: Pathophysiology of exposure to carbon monoxide
[AD-A055212] p0056 N79-13694

PIPKO, D.
Antiradiation suit and other special clothing at industrial safety exhibition
p0114 N79-16793

PIRONE, L. A.
Application of an isolated heart model to investigate blood-oxygen delivery
p0296 A79-51112

PIRTLE, R.
Test and evaluation of head restraints, seat backs, and anchorages in vehicles subjected to rear impact collision
[PB-289779/1] p0178 N79-21773

PIRTSKHALAVA, A. V.
Characteristics of serious carbon monoxide poisoning
p0167 A79-32100

PISOTSKA, N. V.
Comparative study of acetylcholinesterase inactivation in warm-blooded animals and insects with substituted vinyl phosphates
p0121 N79-17527

PISTOLE, T. G.
Increased survival in experimental dog heatstroke after reduction of gut flora
p0266 A79-47335

PITT, B. R.
The effects of carbon monoxide and cyanide on the brain
p0024 N79-11682

PITTS, M. L.
The effect of Nap-of-the-Earth (NOE) helicopter flying on pilot blood and urine biochemicals
[AD-A055204] p0055 N79-13693

PLAKHUTA-PLAKUTINA, G. I.
State of spermatogenesis in rats flown aboard Kosmos-690 biosatellite
p0014 N79-10704

Spermatogenesis in dogs during many years of chronic exposure to gamma radiation and in the aftereffect period
p0073 N79-14727

Morphological distinctions of the rat thyroid and parathyroid following long-term space flights
p0246 N79-27835

PLANEL, H.
Radiobiological investigations in Cosmos 782 space flight /Biobloc SP1 experiment/
p0006 A79-12518

Genetic effects of balloon flight in Drosophila melanogaster
p0006 A79-12520

Development capacity of artemia cysts and lettuce seeds flown in Cosmos 936 and directly exposed to cosmic rays
p0127 A79-24632

Space biology and aerospace medicine
p0226 A79-40734

Preliminary results of Cytos experiment flows in Salyut VI - Investigations of Paramechium aurelia
p0229 A79-41709

PLANK, G. R.
Review of chest deflection measurement techniques and transducers
[PB-283654/2] p0051 N79-12702

Effects of deceleration and rate of deceleration on live seated human subjects
[PB-284653/3] p0057 N79-13702

PLANTEGENEST, M. T.
Contributions of the retina and of the eye optical system to the modulation lowering of the aerial image
p0100 A79-22771

PLAS, F.
Measuring systolic time intervals at rest and under stress by external methods. Advantages in the evaluation of fliers
p0030 N79-11717

PLATONOVA, R. N.
Biological experiments carried out aboard the biological satellite Cosmos-936
p0230 A79-41717

Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582] p0071 N79-14711

PLEASANT, L. G.
Publications of the planetary biology program for 1977: A special bibliography
[NASA-TM-80338] p0179 N79-21777

Publications of the planetary biology program for 1978: A special bibliography
[NASA-TM-80745] p0319 N79-33854

PLEUNE, J.
Smooth pursuit eye movements - Is perceived motion necessary
p0139 A79-28375

PLONSEY, R.
The eccentric spheres model as the basis for a study of the role of geometry and inhomogeneities in electrocardiography
p0226 A79-40649

Fundamentals of electrical processes in the electrophysiology of the heart
p0304 A79-53532

PLOWMAN, S. A.
Response of women mountaineers to maximal exercise during hypoxia
p0234 A79-43201

PLUMMER, R. P.
Speech as a pilot input medium
p0119 N79-17519

PLYUSHCH, R. A.
Changes in calcium ion activity due to magnetization of solution as the possible mechanism of biological action of magnetic fields
p0173 N79-20741

PNUELI, D.
Thermal bounds to the time of stay of human beings in enclosures
p0231 A79-41770

PODVIGINA, T. T.
Tissular respiration of the brain after exposure of rats to hypertoxic helium and oxygen mixtures at atmospheric and elevated pressure
p0015 N79-10712

POGGIO, T.
Bandpass channels, zero-crossings, and early visual information processing
[AD-A062338] p0170 N79-20724

POGODAYEV, G. V.
A complex system for planning scientific medical research
p0078 N79-14761

POGORELYI, V. E.
Self-regulation of cerebral circulation under orthostatic influences
p0221 A79-36098

POHLMANN, L. D.
Air-to-air combat skills: Contribution of platform motion to inertial training
[AD-A062738] p0173 N79-20783

POIRIER, J. L.
Cardiac reactions in tests on the wearing of the Yankee Escape System harness during minus G accelerations in the z direction
p0103 A79-23953

POIRIER, J.-L.
Special tests for astronaut selection - Study of cardiovascular reactions by the orthostatism test
p0047 A79-15490

POIROT
Evaluation of the amount of exposure to vibrations transmitted to the whole body case of vibrations

due to a loader mounted on catapillar tracks, a fork-lift truck and a hydraulic excavator
[RAE-LIB-TRANS-1930] p0080 N79-14773

POLA, J.
The role of perceived motion in smooth pursuit eye movements
p0225 A79-40184

POLIAKOV, B. I.
Nystagmographic characterization of responses to rotation of persons with different vestibular-vegetative stability
p0188 A79-35122

POLIS, B. D.
Molecular determinants for the prediction and survival of ischemic anoxic stress pathology
p0027 N79-11700

POLIVODA, L. V.
Experiment Chlorella 1 on board of Salyut 6
[IAF PAPER 78-53] p0003 A79-11223

POLLAK, V.
Thermally induced retina injury due to high doses of optical radiation
p0278 A79-50974

POLLARD, G. D.
In-flight toxicology of fixed and rotary wing aircraft crew stations
p0149 N79-19619

PONNAMPERUMA, C.
Prebiotic molecular evolution
p0203 A79-37928
Synthesis of amino acids under primitive earth conditions in the presence of clay
p0203 A79-37930
Abundance of organic compounds photochemically produced in the atmospheres of the Outer Planets
p0210 A79-39075

PONOMARENKO, V. A.
Experimental and psychological investigations in aviation and astronautics
p0041 A79-13998

POPE, D. H.
Effects of low temperature on in vivo and in vitro protein synthesis in Escherichia coli and Pseudomonas fluorescens
p0131 A79-26141

POPOV, S.
Elicited acoustic responses to meaningful and meaningless verbal stimuli
p0276 A79-50654

POPOV, V. I.
Radiobiological investigations in Cosmos 782 space flight /Biobloc SP1 experiment/
p0006 A79-12518
Genetic effects of cosmic radiation on bacteriophage T4Br/+/ /On materials of biological experiment Soyuz-Apollo/
p0229 A79-41708

POPOVA, A. F.
Influence of orbital flight conditions on formation of genitals in Muscari racemosum and Anethum graveolens
p0230 A79-41718

POPOVA, L. A.
Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body
p0073 N79-14725

POPP, R. L.
Clinical applications of new echocardiographic techniques
p0295 A79-51040

PORTERFIELD, J. L.
Two dimensional eye tracking: Sampling rate of forcing function
p0090 N79-15617
Head tracking at large angles from the straight ahead position
p0090 N79-15618

PORTUGALOV, V. V.
Principal results of experiment with mammals onboard the Kosmos-782 biosatellite
p0073 N79-14726
Effects of space flight on course of radiation lesions in rat lymphoid organs
p0107 N79-16516
Effects of physical conditioning and electric stimulation on metabolic processes in the soleus muscle and structure thereof in hypokinetic man
p0192 N79-23634

The combined effect of space flight factors and radiation on rat skeletal muscles
p0244 N79-27821

POSPELOV, N. I.
The influence of SHF electromagnetic fields on the secretory function of the stomach
p0173 N79-20740

POSTNIKOV, V. S.
Ultrasonic doppler directional blood flow velocity meter
[RAE-LIB-TRANS-1918] p0279 N79-30920

POSTON, A. M.
A survey of existing computer programs for aircrew workload assessment
[AD-A058518] p0059 N79-13718
A photometric and legibility assessment of Aerospace Optics, Incorporated Vivisun 20/20 display
[AD-A067668] p0242 N79-26786

POSTOYENKO, Y. K.
New principles of automation of biomedical research
p0078 N79-14763

POTAPOV, IU. V.
Atlas of the dose characteristics of external ionizing radiation /Handbook/
p0098 A79-20669

POTASH, M.
Determination of the secondary production and population dynamics of the zooplankton of the Lake Champlain ecosystem
[PB-286094/8] p0084 N79-15572

POTEMKIN, E. L.
Atlas of the dose characteristics of external ionizing radiation /Handbook/
p0098 A79-20669

POTTIER, A.
Selection and techniques for analysis of indices of visual data reception. II
p0047 A79-15494
Choice and techniques of analysis of indices for the perception of visual information. III
p0103 A79-23954

POWELL, W. J., JR.
Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle
p0296 A79-51111

POWERS, W. E.
Clinical importance of directional statistics for electrocardiographic differentiation of smoking habits
p0098 A79-21246

POWLES, A.
Changes in lung volume, lung density, and distribution of ventilation during hypobaric decompression
p0185 A79-33806

POZHAROV, V. P.
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
p0296 A79-51114

POZHARSKIY, G. O.
Characteristics of bacterial aerosol in airtight rooms occupied by humans
p0016 N79-10715

POZIN, N. V.
Elements of the theory of biological analyzers
p0132 A79-26450

PRAH, J. D.
Carbon monoxide and human time discrimination - Failure to replicate Beard-Wertheim experiments
p0102 A79-23472

PREISS, H.
Medical characteristics of the Spacelab life support system
[DGLR PAPER 78-130] p0041 A79-14082

PREVOST, R. J.
The distribution of cadmium and other metals in human tissues
[PB-285200/2] p0057 N79-13703

PRILUTSKII, B. I.
Biomechanical properties of muscles and the efficiency of movement
p0276 A79-50652

PRINS, H. W.
Cu-content of the liver of young mice in relation to a defect in the Cu-metabolism
[IRI-133-77-02] p0239 N79-26764

Results of a 64Cu-loading test applied to patients with an inherited defect in their Cu-metabolism (Menkes' disease)
[IRI-133-77-04] p0240 N79-26774

PRINZ, W.
Locus of the effect of specific practice in continuous visual search
p0129 A79-25099

PRITCHARD, G. C.
Safety evaluation tests of personal protective equipment for ordnance operations
[AD-A058987] p0053 N79-12712

PRIVITZER, E.
Refinement and validation of a mathematical model of the human torso
p0247 N79-27841
A three dimensional discrete element dynamic model of the spine, head and torso
p0285 N79-31910
Refinement and validation of a three-dimensional head-spin model
[AD-A062502] p0307 N79-32826

PROHL, J.
Standardized examination methods in ergometry
p0029 N79-11710

PROHOFSKY, E. W.
Microwave frequencies and the structure of the double helix
p0082 N79-15559

PROKHVATILO, E. V.
Decrease in the functional abilities of the heart as a result of exposure of an organism to an electromagnetic field of industrial frequency
p0172 N79-20733

PROUST, J.
Genetic effects of balloon flight in Drosophila melanogaster
p0006 A79-12520

PRUDENT, J.
The use of biostereometry in helicopter cockpit design
p0150 N79-19629

PRUDHOMMEAU, C.
Genetic effects of balloon flight in Drosophila melanogaster
p0006 A79-12520

PRUETT, R.
A nonlinear mapping approach to discrimination of sleep stages from the human electroencephalogram
p0314 N79-33817

PRUSHIK, S.
Recurrent training/supernumerary system
p0041 A79-13283

PRUTHI, U. S.
Accident injuries and flying fitness
p0182 A79-33189

PSHENNIKOVA, N. G.
Effect of adaptation to high-altitude hypoxia on cardiac adrenoreactivity and the state of the adenylcyclase and phosphodiesterase systems in the myocardium
p0255 A79-46500

PUINEAN-CHIEZE, J. P.
Selection and techniques for analysis of indices of visual data reception. II
p0047 A79-15494
Choice and techniques of analysis of indices for the perception of visual information. III
p0103 A79-23954

PULEO, J. R.
Thermal resistance of naturally occurring airborne bacterial spores
p0131 A79-26147

PUMA, S. C.
Test and evaluation in the acquisition process - A look at the PLZT goggle
p0184 A79-33642

PURCELL, D.
Communications management by the remote system - An adaptive approach
p0041 A79-13226

PURINIA, B. A.
Investigation of blood subjected to volume tension
p0275 A79-50261

PURKAYASTHA, S. S.
Responses of high altitude natives to a standard cold test at sea level
p0164 A79-30658

PURSHOTTAM, T.
Plasma electrolytes in relation to altitude tolerance in rats
p0163 A79-30652

PUTHOFF, H.
Development of techniques to enhance man/machine communication
[NASA-CR-157886] p0032 N79-11730

PUTNAM, D. F.
Microbial Check Valve for Shuttle
[ASME PAPER 78-ENAS-27] p0008 A79-12576
Water system microbial check valve development
[NASA-CR-151843] p0032 N79-11733

PUTNAM, T. W.
Flight test evaluation of an RAF high altitude partial pressure protective assembly
[NASA-TM-72864] p0214 N79-24654

PUTZ, V. R.
The effects of carbon monoxide on dual-task performance
p0161 A79-29716

PYTLEWSKI, L. L.
Mechanisms of activated carbon degradation by perspiration
[AD-A059872] p0080 N79-14777

Q

QUEVEDO, C. E.
Basic biomechanics equations for cardiovascular flow
p0304 A79-53534

R

RABB, R. L.
The role of insect dispersal and migration in population processes
p0147 N79-19593

RABOZIN, V. N.
Studies of hemodynamics and phase structure of cardiac cycle in the crew of Salyut-4
p0072 N79-14718

RADCHENKO, N. D.
Fluid-electrolyte metabolism in the crew of Salyut-4
p0311 N79-33792

RADKE, H.
A method for semi-automatic analysis of eye movements
[DLR-MITT-79-02] p0283 N79-30946

RADMER, R. J.
Photochemistry and enzymology of photosynthesis
[COO-3326-70] p0239 N79-26763

RAPPLER, H.
Cell biology basis for the life of an organism in the radiation field
[ANL-TRANS-1152] p0261 N79-29786

RAHLMANN, D. F.
Continuous metabolic and cardiovascular measurements on a monkey subject during a simulated 6-day Spacelab mission
p0229 A79-41713

RAI, K.
Delayed effects of alcohol ingestion on + Gz tolerance
p0272 A79-49730
Spinal injury pattern due to ejections
p0272 A79-49734

RAIBERT, M. H.
A model for sensorimotor control and learning
p0005 A79-12122

RAINEY, R. C.
Possible impact of radar on pest management operations
p0148 N79-19599

RAITSIN, L. M.
Biomechanical properties of muscles and the efficiency of movement
p0276 A79-50652

RAIZNER, A. E.
The evolutionary pattern of exercise-induced ST segment depression
p0251 A79-44166

RALCHEV, K. K.
Obtaining growth hormone from calf blood
[NASA-TM-75326] p0283 N79-31895

RAMACCI, C. A.
Normal and pathological cardiovascular findings in applicants to the Air Force service
p0031 N79-11722

RAMACHANDRAN, N.
Effects of partial sleep deprivation on psychological performance and behaviour
p0200 A79-37130
Design, fabrication and utility of a flight oriented performance test
p0271 A79-49728
RAMANNA, R.
Aviation and radiation hazards
p0271 A79-49727
RAMBAUT, P. C.
Prolonged weightlessness and calcium loss in man
[IAF PAPER 78-48] p0002 A79-11219
RAMBLER, M.
An ultraviolet light induced bacteriophage in Beneckea gazogenes
p0254 A79-46463
RAMOS, M. U.
Instrumentation and techniques for the measurement of muscular strength and endurance in the human body
[AD-A061023] p0155 N79-19681
RAMSEY, H. R.
A critally annotated bibliography of the literature on human factors in computer systems
[AD-A058081] p0052 N79-12707
RAMSEY, J. D.
A composite view of task performance in hot environments
p0036 A79-13186
RAMSEY, S. D., JR.
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-286696/0] p0085 N79-15581
RANADE, A.
Analysis of inert gas exchange in the middle ear
p0017 N79-10723
RAND, P. W.
Application of an isolated heart model to investigate blood-oxygen delivery
p0296 A79-51112
RANDALL, D. R.
Frequency response of cardiovascular regulation in canines to sinusoidal acceleration at frequencies below 1 Hz (basis for biodynamic modeling)
p0286 N79-31915
The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress
[AD-A06[illegible]] p0318 N79-33845
RANGARAJ, [illegible]
Homomorphic analysis and modeling of ECG signals
p0210 A79-39973
RAO, G. U. V.
Autoradiographic enhancement of mammograms
p0227 A79-40773
RAO, P. K.
Adaptive estimation schemes for minimizing uncertainty in manual control tasks
p0269 A79-48013
RAPOPORT, I. A.
Role of n-aminobenzoic acid in repairing UV and gamma radiation damage
p0301 A79-53211
RAPPAPORT, W. H.
Telehealth handbook: A guide to telecommunications technology for rural health care
[PB-292557/6] p0241 N79-26778
RAPUTO, A. G.
Detection of conflict states in air traffic control of airport zones
p0166 A79-31181
RASHEVSKAIA, D. A.
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
p0299 A79-52475
RASMUSSEN, P. G.
Visual acuity of the aging hyperopic eye in the intermediate range
p0037 A79-13198
Aeromedical implications of the X-Chrom lens for improving color vision deficiencies
p0135 A79-27556
Visual performance assessment through clear and sunscreen-treated windows
[AD-A059750] p0080 N79-14775
The optical properties of smoke-protective devices
[FAA-AM-78-41] p0242 N79-26784
RASMUSSEN, R. E.
Direct exposure of monolayers of mammalian cells to airborne pollutants in a unique culture system
[AD-A069822] p0283 N79-31897
RASSOW, B.
The retinal resolving power measured by laser interference fringes
p0304 A79-54091
RASSVETAYEV, V. V.
Dynamic medical monitoring of flight crews in the course of long-term flights
p0072 N79-14719
RATLIFF, F. R.
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology
[AD-A069983] p0308 N79-32833
RATLIFF, J. D.
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology
[AD-A069983] p0308 N79-32833
RATTNER, B. A.
Cross-adaptive effects of cold, hypoxia, or physical training on decompression sickness in mice
p0268 A79-47855
RAUFMANN, D.
Effect of electromagnetic fields in long-, medium-, and short-wave ranges on biological objects
p0185 A79-33713
RAULIN, F.
Incorporation of sulphur in chemical evolution
p0203 A79-37938
Abundance of organic compounds photochemically produced in the atmospheres of the Outer Planets
p0210 A79-39075
RAY, G. C.
Radio tracking of a fin whale /Balaenoptera physalus/
p0061 A79-18008
RAY, L. L.
Citric acid enhancement of copper sulfate toxicity to blue-green algae and other nuisance organisms
[PB-289490/5] p0170 N79-20718
Citric acid enhancement of copper sulfate toxicity to the blue-green algae ""aphanizomenon flos-aquae'' and ""microcystis aeruginosa''
[PB-291637/7] p0189 N79-22751
RAY, W. J.
Evaluation of biofeed therapy
[PB-287777/7] p0123 N79-17543
Evaluation of clinical biofeedback
[PB-287776/9] p0123 N79-17544
RAZYULITE, R. I.
Effects of electromagnetic field induction on development of the green algae, scenedesmus quadricauda (Turbpin) Breb. and composition of free amino acids in its biomass and medium
p0075 N79-14740
READER, D. C.
Head acceleration and psychomotor performance
p0135 A79-27559
Pilot incapacity in flight
p0291 N79-31950
REALS, J. F.
The use of aviation pathology and aviation medicine as proof of liability and damage
p0100 A79-22704
REALS, W. J.
The use of aviation pathology and aviation medicine as proof of liability and damage
p0100 A79-22704
REAM, A. K.
Telemetry of intracranial pressure
p0227 A79-41400
REASON, J. T.
Voluntary movement control and adaptation to cross-coupled stimulation
p0009 A79-12860
REBOULET, R. C.
Photometric methods for the analysis of human kinematic responses to impact environments

[AD-A062006] p0157 N79-19690
REBUCK, A. S.
Contribution of rib cage and abdomen-diaphragm to tidal volume during CO2 rebreathing
p0185 A79-33805
Absence of effects of hypoxia on small airway function in humans
p0268 A79-47851
RECHNITZER, P. A.
Effects of endurance training on left ventricular dimensions in healthy men
p0237 A79-43706
REDDICK, E. J.
Evaluation of the helicopter in aeromedical transfers
p0128 A79-24638
REDDY, B. R. S.
Aerobiotelemetry from a fighter aircraft
p0200 A79-37131
REED, J. C.
Air-to-air combat skills: Contribution of platform motion to inertial training
[AD-A062738] p0173 N79-20743
REED, L. D.
Skin temperature changes in paradoxical sleep in man in the cold
p0201 A79-37706
REEPS, S. M.
Development of integrated tubing fabric for liquid conditioning undergarments
p0044 A79-14415
Development of the CWU-48/P high temperature resistant aramid knit flyer's coverall
[AD-A059128] p0059 N79-13716
REEVES, J. T.
Noninvasive assessment of pulmonary hypertension
[PB-285121/0] p0057 N79-13701
REGAN, D.
The visual perception of motion in depth
p021[illegible] A79-39087
REGELSON, W.
The combined effects of pulsed magnetic radiation (diapulse) and chemotherapy on tumor bearing mice. The measurement of rodent palatal explants as a device for measurement of the biologic effects of nonionic radiation (EMR)
p0018 N79-10733
REIBER, J. H. C.
Contour detector and data acquisition system for the left ventricular outline
[NASA-CASE-ARC-10985-1] p0017 N79-10724
REICKE, N.
Balance training of the equilibrium organ and its effect on flight strategy
p0242 N79-27074
REID, L.
Growth of pulmonary circulation in normal pig - Structural analysis and cardiopulmonary function
p0067 A79-18961
Vehicle Steering control: A model of learning
p0089 N79-15606
REILLY, T.
Comparison of hormone and electrolyte circadian rhythms in male and female humans
p0004 A79-11948
REIN, R.
An approach to the origin of self-replicating system. I - Intermolecular interactions
p0204 A79-37948
REINDELL, H.
Cardiological findings in 115 pilots: Diagnoses and assessment of their flying fitness
p0030 N79-11721
REINHARDT, B.
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
p0297 A79-52023
REISCHL, P.
Application of pseudo random binary sequence input to identification of respiratory control dynamics
p0268 A79-48011
REISING, J. M.
Multifunction keyboard configurations for single-seat, air-to-ground fighter cockpits
p0039 A79-13213
REITZ, G.
The Biostack experiment in the U.S. long exposure duration test program
p0227 A79-41230
REMBAUM, A.
Polyglutaraldehyde - A new reagent for coupling proteins to microspheres and for labeling cell-surface receptors
p0274 A79-50230
Design of polymeric immunomicrospheres for cell labelling and cell separation
p0275 A79-50234
REMEK, V.
Communication problems of international crews
[IAF PAPER 79-A-23] p0303 A79-53425
REMINGTON, M.
Advanced industrial robot control systems
[PB-287273/7] p0113 N79-16558
REMMERS, E. P.
A numerical method of film analysis with differentiation
p0061 A79-17585
RENDAS, A.
Growth of pulmonary circulation in normal pig - Structural analysis and cardiopulmonary function
p0067 A79-18961
RENEMANN, H. H.
Cardiological findings in 115 pilots: Diagnoses and assessment of their flying fitness
p0030 N79-11721
RENNIE, P. A.
Automated clinical system for chromosome analysis
[NASA-CASE-NPO-13913-1] p0050 N79-12694
REPA, B. S.
The influence of vehicle aerodynamic and control response characteristics on driver-vehicle performance
p0089 N79-15608
The application of integral performance criteria to the analysis of discrete maneuvers in a driving simulator
[RS-GMR-2394] p0115 N79-17484
REPPERGER, D. W.
An algorithm to ascertain critical regions of human tracking ability
p0163 A79-30218
A method motion simulator design based on modeling characteristics of the human operator
p0091 N79-15623
A relationship between eye movement patterns and performance in a precognitive tracking task
p0116 N79-17490
RESHETNIKOV, N. N.
Role of autogenic training in psychophysiological conditioning of aviation school students
p0098 A79-21244
RESNICK, J. B.
Prosthesis coupling
[NASA-CASE-KSC-11069-1] p0240 N79-26772
REUL, H.
Theoretical foundations of cardiovascular processes
p0304 A79-53531
REVA, F. V.
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
p0313 N79-33809
REVZIN, A. M.
Development of electrophysiological indices of neurological toxicity for organophosphate pesticides and depressant drugs
[AD-A070299] p0314 N79-33821
REYES, A. L.
Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components
[NASA-CR-158627] p0197 N79-25705
REYNOLDS, H. M.
Anatomical frames of reference and biomechanics
p0065 A79-18230
The inertial properties of the body and its segments
p0033 N79-11738
REYSA, R. P.
Test evaluation of space station ECLSS maintenance concepts
[ASME PAPER 78-ENAS-43] p0009 A79-12589
RHODE, E. A.
Tolerance of domestic fowl to high sustained +Gz
p0127 A79-24630
Influence of the ambient acceleration field upon acute acceleration tolerance in chickens
p0230 A79-41715

RICE, G. P.
Left Anterior Hemiblock (LAH): Diagnosis and aeromedical risk
p0029 N79-11715

RICHARD, G. L.
Compensation for transport delays produced by computer image generation systems
[AD-A056720] p0019 N79-10738

RICHARDS, K. L.
A sample volume tracking unit for pulsed Doppler echocardiography
p0200 A79-36869

RICHARDS, W. A.
Experiments in texture perception
[AD-A059630] p0086 N79-15587

RICHERSON, M. E.
A theoretical model to estimate some ergonomic parameters from age, height and weight
p0132 A79-26150

RICHMOND, R.
A technology assessment of vegetable substitutes for animal protein in human food. Volume 1: The study
[PB-284681/4] p0059 N79-13719
A technology assessment of vegetable substitutes for animal protein in human food. Volume 2: Appendices
[PB-284682/2] p0059 N79-13720

RICHOILLEY, G.
Preliminary results of Cytos experiment flows in Salyut VI - Investigations of Paramechium aurelia
p0229 A79-41709

RIEDEL, S. A.
Investigation of nonlinear motion simulator washout schemes
p0091 N79-15624

RIEDERER, S. J.
Real-time computerized fluoroscopic cardiac imaging
p0294 A79-51035

RIEKSTS, G. A.
The use of Na-22 as a tracer for long-term bone mineral turnover studies.
p0265 A79-47327
Determination of muscle mass changes in legs from K-40 measurements
p0274 A79-49997

RIFKIN, R. D.
Coronary calcification in the diagnosis of coronary artery disease
p0226 A79-40465

RIGAUDIERE, F.
An apparatus for studying electroretinographic responses under conditions of space flight
p0006 A79-12517

RIGDEN, P. W.
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
p0266 A79-47334

RIGGS, L. A.
Upper-velocity threshold for detection of movement
p0299 A79-52541

RIMLAND, B.
Hemispheric asymmetry as related to pilot and radar intercept officer performance
[AD-A068087] p0289 N79-31935

RINARD, G. A.
Hybridization of biomedical circuitry
[NASA-CR-151874] p0111 N79-16543

RIPPO, A. J.
Telemedicine: An expanding new science on land and sea
p0146 N79-19020

RITCHIE, M. L.
Object, illusion and frame of reference as design criteria for computer-generated displays
p0137 A79-28157

RITTER, M.
Perception of depth - Processing of simple positional disparity as a function of viewing distance
p0139 A79-28197

RIVA, C. E.
Laser Doppler technique for measurement of eye movement
p0233 A79-42450

ROARK, M.
The effects of closed loop tracking on a subjective tilt threshold in the roll axis
p0090 N79-15620

ROBERTS, D. E.
The effects of dehydration on peripheral cooling
[AD-A065332] p0220 N79-25745

ROBERTS, E., JR.
Digital enhancement of computerized axial tomograms
p0004 A79-11544

ROBERTS, M. F.
Control of skin blood flow during exercise - Thermal and nonthermal factors
p0185 A79-33807

ROBINSON, C. P.
Reactions of methamidophos with mammalian cholinesterases
[AD-A058683/4] p0051 N79-12698

ROBINSON, C. S.
Biped stability considerations with vestibular models
p0066 A79-18287

ROBINSON, G. H.
Effects of information processing requirements on reaction time of the eye
p0064 A79-18219
Dynamics of the eye and head during movement between displays - A qualitative and quantitative guide for designers
p0209 A79-38362
Effects of information processing requirements on reaction time of the eye
[AD-A060099] p0080 N79-14778

ROBINSON, J.
A study of noninvasive blood pressure measurement techniques
p0294 A79-51036

ROBINSON, J. E.
Temperature uniformity in hyperthermal tumor therapy
p0018 N79-10730

ROCKAFELLER, E. F.
Food packages for Space Shuttle
[ASME PAPER 78-ENAS-13] p0007 A79-12562

RODARTE, J. R.
Distribution of regional volumes and ventilation in excised canine lobes
p0236 A79-43703

RODGERS, J. L.
MM/1, a man - machine interface: A contribution towards a standard
[NPL-CSU-2/78] p0197 N79-23669

RODINA, G. P.
Recovery of hemopoiesis in rats exposed to radiation during space flight
p0014 N79-10701

ROEBELEN, G. J., JR.
A thermoelectric integrated membrane evaporation system
[ASME PAPER 78-ENAS-19] p0007 A79-12568

ROEGE, R. E.
The effects of dehydration on peripheral cooling
[AD-A065332] p0220 N79-25745

ROEGER, W.
Increasing pilot's performance capacity during flight through use of a control element serving as information carrier
[DGLR PAPER 78-152] p0042 A79-14097

ROEHRIG, H.
The development of a digital video subtraction system for intravenous angiography
p0294 A79-51033

ROGERS, S. R.
The response of selected terrestrial organisms to the Martian environment - A modeling study
p0136 A79-27928

ROHRMANN, B.
Aircraft noise and its effect on man: Methods and results of research, consequences for environmental protection
p0162 A79-29763

ROLFE, R. D.
A biochemical basis of obligate anaerobiosis
p0142 N79-18561

ROMANOV, V. S.
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation
p0312 N79-33804

ROMANSKY, M. L.
Stress and fatigue in the driving environment
p0211 N79-24629

ROMASHKIN-TIMANOV, V. I.
Comparative evaluation of the effectiveness of visual and aural tracking of a sinusoidal signal

p0159 A79-28736

RONOFF, R. A.
Conjoint effect of physical stress and noise stress on information processing performance and cardiac response
p0161 A79-29715

ROOD, R.
Development of a performance criterion for air traffic personnel research through air traffic control simulation
[AD-A058082] p0031 N79-11727

ROOZBAZAR, A.
A theoretical model to estimate some ergonomic parameters from age, height and weight
p0132 A79-26150

ROSCOE, S. N.
Transfer of landing skill after training with supplementary visual cues
p0138 A79-28167

ROSE, R. M.
Air traffic controller health change study
[FAA-AM-78-39] p0122 N79-17534

ROSEBORO, J. A.
Effect of ultrasonic irradiation on mammalian cells and chromosomes in vitro
p0134 A79-27239

ROSENBAUM, R. M.
Morphological and biochemical effects of oxygen toxicity
[AD-A056778] p0018 N79-10734

ROSENBLATT, L. S.
Comparison of circadian rhythms in male and female humans
p0004 A79-11987

ROSENFELD, R. S.
Comparison of plasma and urinary steroids in men with type A and type B behavior patterns
p0028 N79-11704

ROSENMAN, R. H.
Comparison of plasma and urinary steroids in men with type A and type B behavior patterns
p0028 N79-11704

ROSENTHAL, L. A.
Investigation of techniques to reduce electrostatic discharge susceptibility of EED's containing plastic plugs
[AD-A059982] p0093 N79-15638

ROSENZWEIG, S. N.
US experiments flown on the Soviet Satellite COSMOS 782
[NASA-TM-78525] p0020 N79-11651
US experiments flown on the Soviet satellite COSMOS 936
[NASA-TM-78526] p0023 N79-11671

ROSIER, S.-P.
The electrocardiogram recorded by telemetry during a parachute jump, compared to a trace during stress tests - A preliminary study of 29 cases
p0256 A79-46600

ROSINSKI, R. R.
Perception of graphic displays of space
p0062 A79-18205
Effect of optical magnification on the perception of displayed orientation
[AD-A065949] p0196 N79-23660

ROSSO, J.
Eye torsion in response to a tilted visual stimulus
p0305 A79-54254

ROSTOPSHINA, A. V.
Biological experiments carried out aboard the biological satellite Cosmos-936
p0230 A79-41717
Effect of accelerations combined with radiation on occurrence of gene mutations in the drosophila
p0016 N79-10720
Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582] p0071 N79-14711

ROTA, P.
Normal and pathological cardiovascular findings in applicants to the Air Force service
p0031 N79-11722

ROTH, J. T.
Seating, console and workplace design - Seated operator reach profiles
p0036 A79-13188

ROTH, W. J.
Cold water survival suits for aircrew
p0298 A79-52282

ROTH, E. D.
Stereo 3-D perception for a robot
p0019 N79-10740

ROTHBAUER, G.
Influences of joystick spring resistance on the execution of simple and complex positioning movements
p0119 N79-17517

ROTONDO, G.
Cardiovascular diseases as a cause of unfitness for flying service in aircrews of Italian Air Force: Etiopathogenesis, influence of performance in flight, and prevention
p0031 N79-11725
Sensorial aspects of helicopter operations
p0152 N79-19644
Human factors in production and prevention of aircraft accidents due to disorientation in flight
p0291 N79-31952

ROURE
Evaluation of the amount of exposure to vibrations transmitted to the whole body case of vibrations due to a loader mounted on catapillar tracks, a fork-lift truck and a hydraulic excavator
[RAE-LIB-TRANS-1930] p0080 N79-14773

ROUSE, W. B.
A model of human decisionmaking in fault diagnosis tasks that include feedback and redundancy
p0163 A79-30222
Modeling the human as a controller in a multitask environment
p0087 N79-15595
Prospects of a mathematical theory of human behavior in complex man-machine systems tasks
p0088 N79-15599
A model of human event detection in multiple process monitoring situations
p0092 N79-15632
Pilot decision making in a computer-aided flight management situation
p0093 N79-15633

ROUTZAHN, R. L.
Environmental test and evaluation of a molecular sieve on-board oxygen generation system
[AD-A061531] p0125 N79-17559

ROYCHOUDHURY, A.
Incidence of spinal disability amongst IAF pilots - Follow up of 38 cases
p0201 A79-37133

ROYER, E. R.
Microbial load monitor
[NASA-CR-160274] p0243 N79-27815

ROZOV, A. N.
Biological experiments carried out aboard the biological satellite Cosmos-936
p0230 A79-41717

ROZOVA, E. V.
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
p0296 A79-51114
The effect of the reduction of inspired gas density on external respiration
p0296 A79-51115

RUBANOV, A. S.
Thermal effects during the exposure of ocular fundus tissues to laser radiation
p0234 A79-43057

RUBANOVICH, R. M.
Some properties of conservative systems
p0221 A79-35942

RUBINSKAIA, N. L.
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite
p0299 A79-52475

RUBLEE, P. A.
Bacteria in a North Carolina salt marsh. Standing crop and importance in the decomposition of Spartina alterniflora
[PB-288816/2] p0153 N79-19668

RUDERMAN, I. W.
Metabolic rate meter and method
[NASA-CASE-MSC-12239-1] p0175 N79-21750

RUDICHENKO, V. F.
Dependence of the functional activity of liver mitochondria on microwave radiation
p0075 N79-14741

State of process of oxidation phosphorylation of liver mitochondria on exposure to an electric field
p0075 N79-14742

RUDNEV, M. I.
Changes in the bioelectrical activity of some cerebral structures in rabbits exposed to microwaves
p0188 A79-35917

RUDONETKIN, N. N.
Control of vertical position after flights aboard the Salyut-4 orbital station
p0311 N79-33793

RUDRAPATNA, A. N.
A trade-off analysis design tool: Aircraft interior noise-motion/passenger satisfaction model
p0112 N79-16549

RUDY, K. H.
Flight prototype CO2 and humidity control system
[NASA-CR-160224] p0222 N79-25760

RUDY, Y.
The eccentric spheres model as the basis for a study of the role of geometry and inhomogeneities in electrocardiography
p0226 A79-40649

RUEHMANN, H.
Investigation on the effect of mechanical properties of control elements on human control performance under stochastic roll vibrations
[BMVG-FBWT-78-11] p0146 N79-18593

RUMMEL, J. A.
Life sciences experiments in the first Spacelab mission
[ASME PAPER 78-ENAS-26] p0008 A79-12575
Skylab medical data evaluation program (SMEDEP)
[NASA-CR-160279] p0259 N79-28869
BIOSPEX: Biological space experiments, a compendium of life sciences experiments carried on US spacecraft
[NASA-TM-58217] p0261 N79-29784

RUSKE, G.
Automatic recognition of spoken words using a functional model of the auditory system
p0235 A79-43464

RUSS, J.
Naval aviation training - Perspective and prospects
[SAE PAPER 781004] p0130 A79-25886

RUSTAGI, J. S.
Estimation of rate constants in the Michaelis-Menten model
[AD-A070360] p0307 N79-32824

RYAKHOVSKAYA, G. A.
Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body
p0073 N79-14725

RYAN, L. C.
Current role of alcohol as a factor in civil aircraft accidents
p0136 A79-27561

RYCKELYNCK, B.
Psychosis in air force flight personnel during the last 25 years
p0103 A79-23957

RYLANDER, R.
Startle reactions to simulated sonic booms - Influence of habituation, boom level and background noise
p0097 A79-20502

RYZHKOVA, V. Y.
Investigation of composition of trace contaminants in the air environment of the Soyuz-22 spacecraft
p0072 N79-14720

S

SABETTA, F.
Computed axial tomography (CAT)
[ISS-R-78/4] p0262 N79-29791

SABOE, E. P.
Biological effects of nonionizing electromagnetic radiation. Volume 2, number 4: A digest of current literature
[AD-A055569] p0055 N79-13689

SABUROV, K. A.
Immunophysiological aspects of man's adaptation to highland
p0188 A79-35123

SACHAR, J.
Relating performance in basic electricity and electronics and A schools
[AD-A060914] p0085 N79-15584

SACKNER, M. A.
Hemodynamics in teenagers and asthmatic children during exercise
p0133 A79-27102

SACKS, R. J.
Medical barofunction testing of aviators with otorhinolaryngologic disease
p0298 A79-52285

SADEH, D.
Geotropism of hornet comb construction under persistent acceleration
p0006 A79-12514

SADOSKY, T. L.
A prediction model of arm push strength in the transverse plane
p0037 A79-13195

SAFONOV, V. A.
Mathematical model of the respiration rhythm generation process
p0254 A79-46268

SAFONOVA, E. N.
Amino acids in southern Kamchatka hot springs
p0182 A79-33122

SAGAN, C.
Exobiology and the origin of life
[NASA-CR-157988] p0081 N79-14782

SAGAR, K.
Effect of hypoxia on mechanical properties of hyperthyroid cat papillary muscle
p0296 A79-51111

SAGE, W. W.
Distribution of bluegreen algae in a Mississippi Gulf Coast salt marsh
[PB-288982/2] p0159 N79-19667

SAGUY, I.
Maximizing storage stability of foods to be used for resupply in a controlled ecological life supply system: Evaluation of research
[NASA-CR-158846] p0260 N79-28880

SAHAKIAN, B. J.
Low tryptophan diet decreases brain serotonin and alters response to apomorphine
p0226 A79-40672

SAIDA, S.
Useful visual field size for pattern perception
p0129 A79-25098

SAIKI, H.
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life
[IAF PAPER 79-76] p0301 A79-53285

SAINI, V. D.
Using color substitution pupil response to expose chromatic mechanisms
p0265 A79-47116

SAITO, I.
Vigilance and electroencephalogram
p0100 A79-22975
Analysis of electroencephalogram during psychomotor performance
p0209 A79-38820

SAKAGUCHI, R.
Effects of dietary composition on nutritional state in rats during exposure to high altitude
p0134 A79-27118

SAKAGUCHI, T.
Effects of dietary composition on nutritional state in rats during exposure to high altitude
p0134 A79-27118

SAKURAI, I.
Effects of dietary composition on nutritional state in rats during exposure to high altitude
p0134 A79-27118
Measurements of pilot workload during low altitude and high speed maneuvers of F-1 supersonic jet fighter
p0209 A79-38821

SALDIVAR, J. T.
Stress in air traffic controllers: A restudy of 32 controllers 5 to 9 years later
[FAA-AM-78-40] p0144 N79-18581

SALIOU, P.
A new case of autochthonous malaria in the Paris region associated with frequentation of airports - Recommendations of prophylactic procedures
p0104 A79-23958

SALLES-CUNHA, S. X. D.
Noninvasive techniques in the evaluation of the peripheral circulation
p0154 N79-19675

SALNITSKII, V. P.
Engineering-psychological study of information imaging systems
p0099 A79-21404

SALTIN, B.
Phosphorylase a in human skeletal muscle during exercise and electrical stimulation
p0067 A79-18962

SAMAJA, M.
Oxygen affinity of blood in altitude Sherpas
p0268 A79-47854

SAMARAS, G. M.
Temperature uniformity in hyperthermal tumor therapy
p0018 N79-10730

SAMARIN, G. I.
Effect of restricted activity on vestibular function
p0312 N79-33802

SAMEJIMA, F.
Estimation of the operating characteristics of item response categories, 3: The normal approach method and the Pearson system
[AD-A056747] p0145 N79-18587

SAMN, S.
Human operators in adversary tracking encounters
p0269 A79-48015

SAMPSON, J. B.
New inventory for the assessment of symptom occurrence and severity at high altitude
p0273 A79-49991

SAMSONOV, N. M.
Utilization of the wastes of vital activity
[NASA-TM-75410] p0177 N79-21768

SAMUELSON, G. S.
Direct exposure of monolayers of mammalian cells to airborne pollutants in a unique culture system
[AD-A069822] p0283 N79-31897

SANDERLIN, J. C.
Human factors design criteria for transilluminated displays
p0036 A79-13187

SANDERS, A. F.
The use of artificial signals during SONAR-watch
[IZF-1978-25] p0309 N79-32837

SANDERS, M. G.
Visual workload of the copilot/navigator during terrain flight
p0038 A79-13206
Night vision goggles and in-flight evaluation of the inside/outside refocusing problems in a UH-1H helicopter
p0063 A79-18215
Visual workload of the copilot/navigator during terrain flight
p0209 A79-38364
An evaluation of perceptual-motor workload during a helicopter hover maneuver
[AD-A058016] p0052 N79-12709
An evaluation of the effects of a stability augmentation system upon aviator performance/workload during a MEDEVAC high hover operation
p0148 N79-19612

SANDIE, W. S.
Atmospheric neutrons
[NASA-CP-3126] p0211 N79-24631

SANDLER, H.
Cardiovascular regulatory response to lower body negative pressure following blood volume loss
p0101 A79-23470
Physiological responses of women to simulated weightlessness: A review of the first female bed-rest study
[NASA-SP-430] p0054 N79-13686

SANMARCO, M. E.
Computer quantitation of coronary angiograms
p0293 A79-51030

SANO, S.
Prebiotic synthesis of amino acids by carboxylation of amines in oxidative atmosphere
p0203 A79-37937

SANT, J. S.
Ensuring medical fitness on entry and during service in aircrew in IAF
p0182 A79-33187

SANTAMARIA, L. J.
Protective approaches in the moderation of the physiological effects of extreme ambient conditions in helicopter operations
p0149 N79-19618

SANTODONATO, J.
Health effects associated with diesel exhaust emissions, literature review and evaluation
[PB-289817/9] p0171 N79-20727

SANTUCCI, G.
Recognition by the human eye of colored symbols on different backgrounds
p0136 A79-27673

SANTUCCI, G. F.
Visual acuity with regard to simultaneous colored contrast on a television screen - Results
p0103 A79-23952
Providing an eye separator on a color cathode tube
p0152 N79-19639

SAPP, J. H.
Oculomotor performance of aviators during an autorotation maneuver in a helicopter simulator
p0151 N79-19638

SAPP, W.
Cosmic ray effects on the eyes of rats flown on COSMOS 782
p0022 N79-11669

SARASON, I. G.
Life stress, organizational stress, and job satisfaction
[AD-A055153] p0057 N79-13706

SARKISYAN, A. P.
Effects of laser radiation on morphology of peripheral blood and bone marrow under experimental and clinical conditions
p0071 N79-14710

SAROL, Z.
Medicobiological research within the framework of the scientific program 'Intercosmos'
p0181 A79-32658

SARRAILHE, S. R.
Impact tests on crash helmets for motor cyclists
[AD-A065966] p0197 N79-24655

SAUER, R. L.
Food packages for Space Shuttle
[ASME PAPER 78-ENAS-13] p0007 A79-12562
Microbial Check Valve for Shuttle
[ASME PAPER 78-ENAS-27] p0008 A79-12576
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] p0302 A79-53294

SAVAGE, R. E.
Models for automated motor skills training
p0035 A79-13182
Cross-validation of regression equations to predict performance in a pursuit tracking task
p0064 A79-18222

SAVELEV, I. A.
Biomechanical properties of muscles and the efficiency of movement
p0276 A79-50652

SAVIK, L. F.
Cosmic ray effects on the eyes of rats flown on COSMOS 782
p0022 N79-11669

SAVILOV, A. A.
Effects of hyperhydration on human endurance of orthostatic and LBNP tests
p0072 N79-14721
Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819

SAVIN, B. M.
Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency
[CONF-780541-1] p0307 N79-32827

SAVIN, W. M.
Effects of exercise, vitamin E, and ozone on pulmonary function and lipid peroxidation
p0067 A79-18965
Effects of ozone inhalation on work performance and maximal oxygen uptake
p0133 A79-27103

SAVINA, V. P.
Investigation of composition of trace contaminants in the air environment of the Soyuz-22 spacecraft

p0072 N79-14720

SAVINA, V. A.
Morphological study of adrenals of rats irradiated during flight aboard Kosmos-690 satellite
p0108 N79-16517

SAVOSTIN-ASLING, I.
Mineralization in teeth and jaws, as judged radiographically, in rats of the COSMOS-782 experiment
p0022 N79-11667

SAVVOV, A.
Liquid crystal developments for medicine
p0175 N79-21746

SAWAI, H.
Prebiotic condensation of oligonucleotide
p0204 A79-37945

SAXENA, S. C.
Heat transfer and temperature distribution in the human body
p0041 A79-13612

SAXENA, V. P.
Application of similarity transformation to unsteady state heat migration problems in human skin and subcutaneous tissues
p0233 A79-42932

SCACCHI, M.
Visual motion perception by intelligent systems
p0300 A79-52691

SCANLAN, L. A.
Contrast enhancement using local area brightness and gain control
p0037 A79-13199
Target acquisition in realistic terrain
p0037 A79-13203
A behavioral model of target acquisition in realistic terrain
[AD-A056760] p0015 N79-10742

SCHAEFER, H. J.
Personnel neutron monitoring in space
[NASA-CR-151865] p0111 N79-16541

SCHAFFER, R. W.
Speech quality measurement
[AD-A056272] p0033 N79-11745

SCHEIBNER, G.
The effect of ultrasound on botulin toxin
[AD-A059544] p0142 N79-18566

SCHELD, H. W.
Killfish development in zero-G on COSMOS 782: Fundulus experiment K-104
p0021 N79-11659

SCHELKOPF, J. D.
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] p0302 A79-53294

SCHERLAG, B. J.
The effects of filtering the His-Purkinje system electrocardiogram
p0130 A79-26073

SCHEUER, J.
Effect of exercise on collateral development in dogs with normal coronary arteries
p0067 A79-18960
Effect of physical conditioning on cardiac mitochondrial function
p0068 A79-18966

SCHIFF, A.
Quantitative review of human susceptibility to magnetic fields
[UCID-17773] p0026 N79-11691

SCHIFFLER, R. J.
Study of crew task loading on the C-141A aircraft
[AD-A057346] p0034 N79-11746

SCHMELZER, B.
Male and female characteristics in vestibular testing - A step toward the selection of the best participants for space flight
[IAF PAPER 79-80] p0301 A79-53288

SCHMIDT-WIEDERKEHR, P.
Crawford and Lavoisier on the method of development and place of formation of body heat
[BLL-RTS-11228] p0142 N79-18568

SCHMIDT, D.
Saccadic velocity characteristics - Intrinsic variability and fatigue
p0165 A79-30663

SCHMIDT, D. K.
Pilot-optimal augmentation of the air-to-air tracking task
[AIAA 79-1747] p0252 A79-45388
Pilot-optimal augmentation synthesis
p0088 N79-15603

SCHMIDT, R. V.
Telemetry of intracranial pressure
p0227 A79-41400
Noninvasive cardiovascular measurements
p0293 A79-51026

SCHMIDT, R. E.
Suprathreshold retinal damage due to single 6 picosecond 1060 nm laser light pulses
p0266 A79-47330

SCHMIDT, U.
Man, dummy, test vehicle: A comparison of test results for escape systems with the 3 different test methods
p0287 N79-31924

SCHMIDT, W.
Balance training of the equilibrium organ and its effect on flight strategy
p0242 N79-27074

SCHMIER, E. R.
Methodological and operational aspects of programmed environment research
[AD-A068587] p0289 N79-31936

SCHNECK, D. J.
Aerodynamic forces exerted on an articulated human body subjected to windblast
[AD-A059023] p0055 N79-13688
Studies of limb-dislodging forces acting on an ejection seat occupant
[AD-A064882] p0196 N79-23658

SCHNEIDER, H. P.
Bimodal relationship of human tremor and shivering on introduction to cold exposure
p0298 A79-52278

SCHNEIDER, R. C.
Ruptured arteriovenous anomaly in a former woman astronaut candidate
p0128 A79-24640

SCHOFIELD, D.
MM/1, a man - machine interface: A contribution towards a standard
[NPL-CSU-2/78] p0197 N79-23669

SCHOR, C. M.
The influence of rapid prism adaptation upon fixation disparity
p0231 A79-42230

SCHORI, T. R.
A real-world assessment of noise exposure
[AD-A061692] p0155 N79-19680

SCHREIBER, P.
Protection against laser beams
p0236 A79-43609

SCHROEDER, D. J.
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
p0273 A79-49984
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
[AD-A069375] p0314 N79-33819

SCHROEDER, T.
Human engineering study of information processing applicable to helmet-mounted displays
p0068 A79-18994

SCHROETER, K.
Microanalytical identification of barium sulphate crystals in statoliths of Chara Rhizoids
[NASA-TM-75611] p0175 N79-21744

SCHROTER, R. C.
Respiration
p0247 N79-27845

SCHUBERT, E.
Influence of light adaptation on dark adaptation time for pattern recognition tasks
[FB-31] p0316 N79-33835

SCHUBERT, F. H.
Technology advancement of an oxygen generation subsystem
[NASA-CR-152257] p0261 N79-28883
Electrochemically regenerable carbon dioxide absorber
[NASA-CR-152099] p0262 N79-29794

SCHUEMER-KOHRS, A.
Aircraft noise and its effect on man: Methods and results of research, consequences for environmental protection
p0162 A79-29763

SCHUEMER, R.
Aircraft noise and its effect on man: Methods and

results of research, consequences for environmental protection
p0162 A79-29763
SCHULTE-WINTROP, H. C.
Backache in UH-1D helicopter crews
p0149 N79-19620
SCHULZE, E.
Aviation-medicine appraisal as part of the fitness regulations in transportation
p0129 A79-25373
SCHUMACHER, W.
Petri nets as a modeling tool for discrete concurrent tasks of the human operator
p0088 N79-15600
SCHUTZ, B. E.
Simple models for the shuttle remote manipulator system
[NASA-CR-151861] p0113 N79-16554
SCHUTZ, R. K.
A prediction model of arm push strength in the transverse plane
p0037 A79-13195
SCHWAN, H. P.
Classical theory of microwave interactions with biological systems
p0082 N79-15556
SCHWANK, J. C. H.
Pilot performance during flight simulation with peripherally presented visual signals
p0063 A79-18213
SCHWARTZ, A.
Effect of physical conditioning on cardiac mitochondrial function
p0068 A79-18966
SCHWARTZ, H.
High 'Q' escape protection
p0044 A79-14428
SCHWARTZ, R. M.
The point mutation process in proteins
p0205 A79-37972
Evolution of early life inferred from protein and ribonucleic acid sequences
p0206 A79-37980
SCHWARTZ, S. H.
Use of reward-penalty structures in human experimentation
p0089 N79-15607
The effects of alcohol on driver performance in a decision making situation
p0092 N79-15629
A decision model applied to alcohol effects on driver signal light behavior
p0092 N79-15630
SCIARAFFA, D.
Sweating responses during heat acclimation and moderate conditioning
p0185 A79-33803
Deconditioning-induced exercise responses as influenced by heat acclimation
p0273 A79-49985
SCOTT, B. D.
Ruptured arteriovenous anomaly in a former woman astronaut candidate
p0128 A79-24640
SCOTT, C. D.
Emergence of biotechnology
[TID-28983] p0211 N79-24626
SCRIMSHIRE, D. A.
A revised model of gas transport in human lungs
p0253 A79-45768
SCULLY, M. O.
A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles
p0294 A79-51038
SEARS, A. F.
Protective clothing and equipment for firefighters: Current standards and practices
[PB-286990/7] p0113 N79-16557
SEARS, W.
Joint testing of the RAF high altitude protective ensemble
p0044 A79-14434
SEARS, W. J.
Evaluation of the Sierra Engineering Company lightweight helmet
[AD-A061799] p0157 N79-19689
SEAY, D. E.
Simulator Training Requirements and Effectiveness Study /STRES/
p0063 A79-18216
SEBESTA, P.
Wildlife monitoring program plan
[NASA-TM-78578] p0190 N79-23626
SEBESTA, P. D.
Support system considerations for STS biological investigations
[ASME PAPER 78-ENAS-37] p0008 A79-12584
SEDOV, A. V.
Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body
p0073 N79-14725
Liberation of carbon monoxide by man when working in protective gear
p0076 N79-14748
SEED, W. A.
Techniques of measurement
p0247 N79-27850
SEGAL, S. S.
Effects of glycogen depletion and work load on postexercise O2 consumption and blood lactate
p0277 A79-50903
SEID-GUSEYNOV, A. A.
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
p0311 N79-33797
SEIDER, M. J.
Recovery of skeletal muscle after 3 mo of hindlimb immobilization in rats
p0268 A79-47856
SEIFERT, D. J.
Modeling and analysis using SAINT - A combined discrete/continuous network simulation language
p0004 A79-11480
Combined discrete network-continuous control modeling of man-machine systems
p0260 N79-28879
Combined discrete network: Continuous control modeling of man-machine systems
[AD-A071574] p0310 N79-32842
SAINT: A combined simulation language for modeling man-machine systems
p0317 N79-33842
SEIGNEURIC, A.
Selection of astronaut candidates - Contribution of the exercise ECG and spirography
p0047 A79-15489
Mitral prolapse and acceleration
p0103 A79-23951
Conduction difficulties of vagal origin in flight personnel - Significance of intrathoracic data on the bundle of His
p0103 A79-23955
Pneumothorax and flight personnel
p0103 A79-23956
The application of vectorcardiography to aerospace medicine
p0256 A79-46602
SEITHER, R.
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] p0307 N79-32823
SEKI-CHIBA, S.
Nitrate fermentation in Clostridium perfringens and significance in metabolic evolution
p0205 A79-37968
SEKI, Y.
Sulfate-reducing bacteria and biochemical evolution
p0205 A79-37967
SEKIGUCHI, C.
Frequency analysis of heart rate variability under flight conditions
p0202 A79-37713
SEKULER, R.
Mutual repulsion between moving visual targets
p0275 A79-50473
SELBY, P. H.
Development of recommendations to improve controls operability
[PB-284433/0] p0053 N79-12714
SELF, H. C.
The behavior of observers in detecting unbriefed targets at different aircraft speeds with side-looking radar
[AD-A060908] p0085 N79-15586
SELIVRA, A. I.
The effect of hyperoxia on the oxygen tension of

blood and cerebral tissue
p0208 A79-38146

SELZER, R. H.
Computer quantitation of coronary angiograms
p0293 A79-51030

SEMPLE, C. A.
Simulator Training Requirements and Effectiveness Study /STRES/
p0063 A79-18216

SEN GUPTA, J.
Effect of physical training at moderate altitude /1850 m/ on hypoxic tolerance
p0235 A79-43210

SERDIUK, A. M.
Cell mechanisms for the biological effects of electromagnetic fields
p0188 A79-35569

SERDYUK, A. M.
Determination of a generalized output index of a biological experiment after multiple tests
p0076 N79-14744

SEREBRENNIKOV, M. I.
Nystagmographic characterization of responses to rotation of persons with different vestibular-vegetative stability
p0188 A79-35122

SEREDENKO, M. M.
Lung oxygen diffusibility and permeability in dogs of various ages under normal conditions and in cases of acute hypoxic hypoxia
p0296 A79-51114

The effect of the reduction of inspired gas density on external respiration
p0296 A79-51115

SERGEEV, A. A.
Pathophysiology of overloads: Bibliography of Soviet publications
p0200 A79-36385

SERGEYEV, S. A.
Blood lipid changes in hypoxic rats
p0074 N79-14731

SERGIYENKO, A. V.
Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
p0311 N79-33798

SEROVA, L. V.
Effect of weightlessness and centrifugation (LXG) on erythrocyte survival in rats subjected to prolonged space flight
p0023 N79-11674

Principal results of experiment with mammals onboard the Kosmos-782 biosatellite
p0073 N79-14726

DNA content of animal organs during space flight on Kosmos-690 satellite
p0073 N79-14728

SERRE, L.
The value of measuring ocular tonus as a test for detecting glaucoma in flight personnel
p0104 A79-23959

SERRUYS, P. W.
Clinical usefulness of radiopaque markers in left ventricular function
p0293 A79-51029

SETH, V. K.
Disability pattern amongst civil aircrew
p0182 A79-33192

SETLIK, I.
Experiment Chlorella 1 on board of Salyut 6
[IAF PAPER 78-53] p0003 A79-11223

SETTLE, S. J.
Applied analysis of computer simulated decompression profiles
p0017 N79-10722

SEVERIN, G. I.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
p0303 A79-53486

SEVEROVOSTOKOVA, V. I.
Regional blood supply under hypoxic hypoxia
p0097 A79-20652

SHAEFFER, J.
Hyperthermia as an Antineoplastic Treatment Modality
[NASA-CP-2051] p0017 N79-10728

SHAFER, IU. G.
The dose rate of cosmic ray radiation received by a biological target in the stratosphere and at altitudes of satellite orbits
p0233 A79-42623

SHAFFSTALL, R. M.
Incapacitation time for +Gz-induced loss of consciousness
p0102 A79-23475

Evaluation of assisted positive-pressure breathing on +Gz tolerance
p0266 A79-47336

SHALIT, B.
Shalit Perceptual Organisation and Reduction Questionnaire (SPORQ): The instrument, design, administration and scoring
[FOA-C-55021-H6] p0249 N79-27859

Shalit Perceptual Organization and Reduction Questionnaire (SPORQ). Report 2: Characteristics and reliability
[FOA-C-55031-H6] p0309 N79-32836

SHANDALA, M. G.
Immunological effects of microwave action
p0172 N79-20736

Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency
[CONF-780541-1] p0307 N79-32827

SHANNON, R. H.
Application of performance model to assess aviator critical incidence
p0063 A79-18209

SHAPIRO, M.
Recurrent training/supernumerary system
p0041 A79-13283

SHAPOSHNIKOV, Y. A.
Effects of physical conditioning and electric stimulation on metabolic processes in the soleus muscle and structure thereof in hypokinetic man
p0192 N79-23634

SHARAEV, G. A.
Elements of the theory of biological analyzers
p0132 A79-26450

SHARDA, P. C.
Vertebral fractures in Gnat ejections
p0201 A79-37134

SHARMA, J.
Simulation and control of a human temperature regulation system
p0041 A79-13613

SHARMA, R. P.
Responses of high altitude natives to a standard cold test at sea level
p0164 A79-30658

SHARMA, S.
Effect of alcohol and marijuana on eye movements
p0101 A79-23469

SHARP, P. W.
Anthropology in Spacelab - Control and display system in Spacelab
[DGLR PAPER 78-151] p0042 A79-14096

SHARPE, L. T.
Changes in critical duration during dark-adaptation
p0304 A79-54252

SHATUNINA, T. P.
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
p0313 N79-33809

SHAW, C. G.
Real-time computerized fluoroscopic cardiac imaging
p0294 A79-51035

SHAW, G.
A critical assessment of the origin of life
p0207 A79-37985

SHAW, J. M.
Multi-PIERRE - A learning robot system
p0066 A79-18425

SHEEDY, J. E.
The perceived direction of the binocular image
p0104 A79-24069

SHEFTER, L. I.
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
p0311 N79-33797

SHELDON, B.
A brief overview of the theory and application of the optimal control model of the human operator
p0317 N79-33841

SHEPELEV, Y. A.
Effect of combination of hypoxia and hypercapnia

on survival of Japanese quail
p0194 N79-23641

SHEPELEV, Y. Y.
Prospects of using Japanese quail in biological life support systems
p0109 N79-16531

SHEPPARD, A.
Possible mechanisms of weak electromagnetic field coupling in brain tissue
p0082 N79-15555

SHEREMETEVSKAIA, S. K.
Regional blood supply under hypoxic hypoxia
p0097 A79-20652

SHERIDAN, T. B.
Human/computer control of undersea teleoperators
p0089 N79-15612
A model for dynamic allocation of human attention among multiple tasks
p0092 N79-15627

SHERSTNEVA, I. Y.
Increased hemoglobin and content of rat blood serum as a result of decreased resistance of erythrocyte membranes to hyperbaric oxygenation, and the protective effect of urea
p0193 N79-23637

SHERWOOD, E.
Prebiotic condensation reactions using cyanamide
p0203 A79-37932

SHEVCHENKO, Y. V.
Effect of combination of hypoxia and hypercapnia on survival of Japanese quail
p0194 N79-23641

SHEVKUN, O. N.
Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body
p0073 N79-14725
Liberation of carbon monoxide by man when working in protective gear
p0076 N79-14748

SHEYKIN, A. A.
Probability of caisson disease while wearing a space suit when exiting from a spacecraft with an atmosphere close to that of earth
p0244 N79-27826

SHIELDS, N. L., JR.
Man/terminal interaction evaluation of computer operating system command and control service concepts
p0064 A79-18224
Earth orbital teleoperator systems evaluation
[NASA-CR-150912] p0112 N79-16552

SHIKHODYROV, V. V.
Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation
p0312 N79-33804

SHIKINA, M. I.
Microflora of water reclaimed in sealed compartments
p0193 N79-23638

SHIMIZU, M.
Cardiovascular regulatory response to lower body negative pressure following blood volume loss
p0101 A79-23470
Carbon suboxide and the genetic code
p0252 A79-44865

SHIMOYAMA, A.
Synthesis of amino acids under primitive earth conditions in the presence of clay
p0203 A79-37930

SHIPOV, A. A.
Characteristics of vestibular nystagmus in rats
p0016 N79-10714
Effects of vestibular factors on color-discriminating function of the human eyes following color preadaptation
p0192 N79-23632

SHIRACHI, D. K.
The effect of a visual/motion display mismatch in a single axis compensatory tracking task
p0118 N79-17511

SHIRLEY, R. S.
The effect of a visual/motion display mismatch in a single axis compensatory tracking task
p0118 N79-17511

SHISHKIN, S. B.
Norepinephrine action on smooth muscle cells of coronary arteries
p0208 A79-38149

SHITSKOVA, A. P.
Environment monitoring in the USSR and hygienic practice
p0121 N79-17528

SHMELEV, L. A.
Elements of the theory of biological analyzers
p0132 A79-26450

SHOENBERGER, R. W.
Intensity judgements of non-sinusoidal vibrations - Support for the ISO weighting method
p0010 A79-12868
Psychophysical assessment of angular vibration - Comparison of vertical and roll vibrations
p0234 A79-43206

SHONYO, C. A.
Human work measurement. A bibliography with abstracts
[NTIS/PS-78/1197/9] p0081 N79-14781

SHOSTAK, V. I.
Cerebral hemodynamics and visual analyzer function following exposure to bright light
p0109 N79-16525
Restoration of color perception after deadapting flashes
p0193 N79-23640

SHROCK, C. G.
Determination of antimicrobial susceptibilities on infected urines without isolation
[NASA-CASE-GSC-12046-1] p0076 N79-14750

SHTARK, M. B.
New principles of automation of biomedical research
p0078 N79-14763

SHUBICH, M. G.
Biochemical study of proteins of gastric and intestinal mucosa of rats flown aboard the Kosmos-605 biosatellite
p0192 N79-23631

SHUBIN, V. G.
Clinical and morphological studies of people in the course of long-term hypokinesia and subsequent readaptation
p0015 N79-10709

SHUINOVA, N. Y.
Evaluation of oxidizability of air in closed areas
p0313 N79-33808

SHULER, M. L.
Waste treatment options for use in closed systems
[AIAA PAPER 79-1409] p0187 A79-34843

SHULTZ, R. E.
Computer augmented manual control of remote manipulators
p0269 A79-48019

SHULZHENKO, E. B.
Prophylactic effects of intermittent acceleration against physiological deconditioning in simulated weightlessness
p0229 A79-41712
Comparison of physiological effects of head-down tilting and immersion on the human body
p0298 A79-52279

SHULZHENKO, Y. B.
Cardiac arrhythmia following postimmersion +G sub z accelerations
p0015 N79-10710

SHVARTZ, E.
Sweating responses during heat acclimation and moderate conditioning
p0185 A79-33803
Deconditioning-induced exercise responses as influenced by heat acclimation
p0273 A79-49985

SHVETS, V. N.
Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582] p0071 N79-14711
Immunological reactivity of rats flown aboard Cosmos-605 and Cosmos-690 biosatellites
p0244 N79-27824

SIAPKARAS, A.
Multi-attribute subjective evaluations of manual tracking tasks vs. objective performance of the human operator
p0116 N79-17486

SIDWELL, A.
Saccadic eye movements and visual stability
p0035 A79-13075

SIEGEL, A. I.
Man-machine reliability - A practical engineering

tool
p0047 A79-15400
A survey of Applied Psychological Services' models of the human operator
p0317 N79-33839

SIEGEL, B. Z.
The effects of temperature, salinity, and other factors on the growth and formation of UV-absorbing substances by the fungus Aspergillus
p0005 A79-12512

SIEGEL, S. M.
The effects of temperature, salinity, and other factors on the growth and formation of UV-absorbing substances by the fungus Aspergillus
p0005 A79-12512

SIEVERS, A. J.
Microanalytical identification of barium sulphate crystals in statoliths of Chara Rhizoids
[NASA-TM-75611] p0175 N79-21744

SIEVERTS, H.
Mechanics of breathing during graded exercise measured with the bodyplethysmograph
p0029 N79-11709

SIGMAN, E.
Eye torsion in response to a tilted visual stimulus
p0305 A79-54254

SILER, K.
Response of the rat erythrocyte to ozone exposure
p0067 A79-18963

SILVERBERG, G. D.
Telemetry of intracranial pressure
p0227 A79-41400

SILVERMAN, M. P.
Relationship between proton motive force and potassium ion transport in Halobacterium halobium envelope vesicles
p0227 A79-40775
Gating effects in Halobacterium halobium membrane transport
p0268 A79-47849

SIMCOX, W. A.
Prosthetic EMG control enhancement through the application of man-machine principles
p0117 N79-17505

SIMEONI, M.
Plasma aldosterone, renin activity, and cortisol responses to heat exposure in sodium depleted and repleted subjects
p0297 A79-52023

SIMIONESCU, B. C.
Porphyrin-like compounds genesis under simulated abiotic conditions
p0099 A79-22078

SIMIONESCU, C. I.
Porphyrin-like compounds genesis under simulated abiotic conditions
p0099 A79-22078

SIMMONDS, R. C.
Subcutaneous channeling probe
[NASA-CASE-ARC-11091-1] p0025 N79-11684

SIMMONS, R. R.
Visual workload of the copilot/navigator during terrain flight
p0038 A79-13206
Methodological considerations of visual workloads of helicopter pilots
p0209 A79-38363
Visual workload of the copilot/navigator during terrain flight
p0209 A79-38364
An evaluation of perceptual-motor workload during a helicopter hover maneuver
[AD-A058016] p0052 N79-12709
An evaluation of the effects of a stability augmentation system upon aviator performance/workload during a MEDEVAC high hover operation
p0148 N79-19612
Changes in the rotary wing aviator's ability to perform an uncommon low altitude rearward hover maneuver as a function of extended flight requirements and aviator fatigue
p0150 N79-19623
Visual performance/workload of helicopter pilots during instrument flight
p0152 N79-19640
Aviator visual performance: A comparative study of a helicopter simulator and the UH-1 helicopter
p0153 N79-19652

SIMONELLI, N. M.
An investigation of pictorial and symbolic aircraft displays for landing
p0063 A79-18211

SIMONOV, P. V.
Psychophysiological forecasting of efficiency
p0010 A79-12867

SIMONOV, Y. Y.
Effect of impact accelerations on chemical resistance of rat erythrocytes
p0313 N79-33811

SIMSON, M. B.
Temporal relation between onset of cell anoxia and ischemic contractile failure
p0300 A79-52895

SINGH, G.
Analysis of climatic data and cockpit thermal conditions at a fighter base in North West India
p0201 A79-37135

SINGH, J.
Developmental and hematological responses to low level exposure of carbon monoxide in mice
p0048 A79-16099
Developmental and hematological responses to low level continuous exposure of nitrogen dioxide in mice
p0147 N79-19026
Electrophoresis pattern of serum from mice exposed to different concentrations of sulfur dioxide
p0147 N79-19027

SINGH, M. S.
Aerobiotelemetry from a fighter aircraft
p0200 A79-37131

SINGLEY, G. T., III
The use of mathematical modeling in crashworthy helicopter seating systems
p0287 N79-31923

SINYAK, Y. V.
Microflora of water reclaimed in sealed compartments
p0193 N79-23638
Effects of different values of urine pH during long-term storage on microflora composition
p0194 N79-23643

SINYAK, Y. Y.
Quality of water reclaimed from urine as related to pH of initial product
p0313 N79-33807

SIVUK, A. K.
Distinctions referable to excretion of end products of protein metabolism in urine of man submitted to 182-day antiorthostatic hypokinesia
p0193 N79-23635

SKAVENSKI, A. A.
Quality of retinal image stabilization during small natural and artificial body rotations in man
p0225 A79-40187

SKOLNIK, M. I.
Capabilities of radar as they might relate to entomological studies
p0148 N79-19598

SKRIABIN, N. G.
The dose rate of cosmic ray radiation received by a biological target in the stratosphere and at altitudes of satellite orbits
p0233 A79-42623

SLANSKY, S.
Contributions of the retina and of the eye optical system to the modulation lowering of the aerial image
p0100 A79-22771

SLAUGHTER, J. W.
Hybrid computation of left ventricular performance using noninvasive techniques
[AD-A063749] p0190 N79-22758

SLAUGHTER, P. H.
Earth orbital teleoperator systems evaluation
[NASA-CR-150912] p0112 N79-16552

SLEDGE, W. H.
Psychosocial aspects of syncope and vertigo in aircrew
p0027 N79-11701

SLINEY, D. H.
The development of laser exposure limits
p0181 A79-32320

SLOBODKIN, L. B.
Closed regenerative life support systems for space travel - Their development poses fundamental questions for ecological science
p0228 A79-41702

SLOBODNIK, B.
Correlation of head injury with mechanical forces based on helmet damage duplication
p0287 N79-31920

SLOBODNIK, B. A.
SPH-4 helmet damage and head injury correlation
p0127 A79-24633

SLONIM, A. D.
Ecological physiology of animals. I - General ecological physiology and physiology of adaptations
p0275 A79-50470

SMALL, D. W.
Image processing program completion report
[AD-A061597] p0123 N79-17549

SMARGUN, L. M.
Microflora of water reclaimed in sealed compartments
p0193 N79-23638

SMETANIN, B. N.
Mechanism for the regulation of human posture during movements of the foot
p0276 A79-50651

SMILEY, A.
Vehicle Steering control: A model of learning
p0089 N79-15606

SMIRNOVA, L. A.
Dynamics of the catalase activity of the blood of athletes under the influence of local decompression
p0271 A79-49699

SMIRNOVA, T. M.
Recovery of hemopoiesis in rats exposed to radiation during space flight
p0014 N79-10701
Use of a mathematical model of erythropoiesis for evaluation of effects of space flight factors
p0192 N79-23630

SMIT, J.
An analysis of helicopter pilot control behaviour and workload during instrument flying tasks
[NLR-MP-78003-U] p0124 N79-17553
An analysis of helicopter pilot control behavior and workload during instrument flying tasks
p0150 N79-19630

SMITH, A. H.
Tolerance of domestic fowl to high sustained +Gz
p0127 A79-24630
Effects of brief exposure of domestic fowl to very intense acceleration fields
p0127 A79-24631
Influence of the ambient acceleration field upon acute acceleration tolerance in chickens
p0230 A79-41715

SMITH, B. A.
Pilot performance during flight simulation with peripherally presented visual signals
p0063 A79-18213
Undergraduate pilot training: Visual discrimination pretraining for land task
[AD-A068141] p0317 N79-33844

SMITH, C.
Isokinetic exercise: A review of the literature
[NASA-CR-151841] p0051 N79-12695

SMITH, C. G.
Contrast sensitivity of the human visual system at one luminance level while adapted to a stimulus at another luminance level
[AD-A064370] p0190 N79-22759

SMITH, D. E.
An examination of statistical impact acceleration injury prediction models based on -Gx accelerator data from subhuman primates
[AD-A057276] p0026 N79-11690
Some Bayesian inference procedures for use in developing an impact acceleration injury prediction model
[AD-A067228] p0220 N79-25741

SMITH, D. M.
A preliminary toxicological study of silastic 386 foam elastomer: catalyst
[LA-7366-MS] p0071 N79-14714

SMITH, E. B.
Detection of bubbles in decompression sickness
p0041 A79-13573

SMITH, H. P. R.
A simulator study of the interaction of pilot workload with errors, vigilance, and decisions
[NASA-TM-78482] p0079 N79-14769

SMITH, J. E.
Age trends in the cardiovascular dynamics of aircrewmen
p0136 A79-27560

SMITH, K. H.
Hyperbaric decompression by means of bubble detection
[AD-A062441] p0171 N79-20726

SMITH, P. W.
Reactions of methamidophos with mammalian cholinesterases
[AD-A058683/4] p0051 N79-12698

SMITH, R. C.
A comparison of the job attitudes and interest patterns of air traffic and airway facility personnel
[AD-A067826] p0281 N79-30933

SMITH, R. G.
Portable device for detection of petit mal epilepsy
p0254 A79-46226

SMITH, R. E.
Regional heat loss in resting man during immersion in 25.2 C water
p0202 A79-37709

SMITH, R. P.
Hemoglobinemia in rats exposed to high altitude is not due to an overload of catabolic mechanisms
p0101 A79-23467

SMITH, W. L.
Challenges to life support system's future
[ASME PAPER 78-ENAS-28] p0008 A79-12577

SMOLENSKY, M. H.
Medical barofunction testing of aviators with otorhinolaryngologic disease
p0298 A79-52285

SMOLICZ, T.
Man and automation
p0275 A79-50372

SMOORENBURG, G. F.
Effects of acute noise traumata on whole-nerve and single-unit activity
[IZF-1978-23] p0308 N79-32829
Tentative evaluation of annoyance caused by noise from gunfire
[IZF-1978-21] p0310 N79-32843

SMOUGUR, T.
Joint testing of the RAF high altitude protective ensemble
p0044 A79-14434

SMYLY, H. M.
Prosthetic urinary sphincter
[NASA-CASE-MFS-23717-1] p0077 N79-14756

SMYTH, C. C.
Internal cockpit reflections of external point light sources for the model YAH-64 advanced attack helicopter
[AD-A056489] p0033 N79-11744

SNOW, C. K.
The role of physical examinations and education in prospective medicine
p0026 N79-11694

SOEDE, M.
Reduced mental capacity and behavior of a rider of a bicycle simulator under alcohol stress or under dual task load
p0116 N79-17489

SOHRAB, S.
Application of pseudo random binary sequence input to identification of respiratory control dynamics
p0268 A79-48011

SOKOLIUK, A. N.
Devices for synchronizing a digital measuring apparatus with biological signals
p0160 A79-29271

SOKOLOV, Y. A.
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
p0311 N79-33797

SOKOLOVA, N. A.
Effect of oxygen poisoning on the spectrum of lactate dehydrogenase isozymes of rabbit blood plasma
p0017 N79-10721

SOKOLOVA, Y. A.
Effects of vibration and noise on some indices of efficiency of MI-4 helicopter crews
p0015 N79-10711

SOLEILHAVOUP, J. P.
Genetic effects of balloon flight in Drosophila melanogaster p0006 A79-12520

SOLODKOV, F. B.
Effects of vestibular stimuli on the electrical activity of muscles p0187 A79-35121

SOLONIN, G. I.
Effect of hypokinesia on animal resistance to chemical agents p0109 N79-16524

SOLOMON, C. J.
Effects of low temperature on in vivo and in vitro protein synthesis in Escherichia coli and Pseudomonas fluorescens p0131 A79-26141

SOLOVEV, A. A.
Nonlinear optical susceptibility of the human eye to IR radiation in the 800 to 1355 micron range p0188 A79-35363
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye p0301 A79-53163

SOLOVEV, A. I.
Possibilities and perspectives of tetrapolar transthoracic impedance rheophethysmography in noninvasive studies of hemo- and cardiodynamics p0296 A79-51118

SOLOVEVA, I. B.
On the man's adaptation to the operator's work under stressful conditions of space flight [IAF PAPER 78-A-56] p0003 A79-11345
Psychological training - One of the most important factors of enhancing the safety of space flights [IAF PAPER 79-A-24] p0303 A79-53426

SOMERS, P.
The development of integrated multidimensional displays p0187 A79-34990

SON, IU. A.
Investigation of the content of hemoglobin and its fractions in permanent inhabitants of the Tien Shan and Pamir p0188 A79-35124

SONG, D.
Mechanisms of oxygen toxicity at the cellular level [AD-A070026] p0307 N79-32823

SONTZ, C.
Man-machine reliability - A practical engineering tool p0047 A79-15400

SOSIN, I. I.
The dose rate of cosmic ray radiation received by a biological target in the stratosphere and at altitudes of satellite orbits p0233 A79-42623

SOTO, R. J.
Density dependence of maximum expiratory flow p0050 N79-12691

SOULARD, C. D.
Effects of chronic changes in hemoglobin-O2 affinity in rats p0185 A79-33808

SOUZA, K. A.
Characterization of a novel extremely alkalophilic bacterium p0004 A79-11950
Temperature-dependent morphological changes in membranes of Bacillus stearothermophilus p0005 A79-12475
The joint US-USSR biological satellite program p0182 A79-33050
US experiments flown on the Soviet Satellite COSMOS 782 [NASA-TM-78525] p0020 N79-11651
US experiments flown on COSMOS 782 p0020 N79-11652
US experiments flown on the Soviet satellite COSMOS 936 [NASA-TM-78526] p0023 N79-11671
The Cosmos 936 mission p0023 N79-11672

SPADY, A. A., JR.
Flight management research utilizing an oculometer p0001 A79-10389
Airline pilot scan patterns during simulated ILS approaches [NASA-TP-1250] p0155 N79-19682

SPALL, W. J.
The physical appearance of intelligent aliens p0105 A79-24519

SPANGLER, W. L.
Tolerance of domestic fowl to high sustained +Gz p0127 A79-24630
Effects of brief exposure of domestic fowl to very intense acceleration fields p0127 A79-24631
Influence of the ambient acceleration field upon acute acceleration tolerance in chickens p0230 A79-41715

SPARKS, B.
The effects of the pollutant, sodium cyanide, on the morphology and physiology of oedogonium cardiacum p0147 N79-19028

SPARKS, K. E.
Exercise ventilation correlates positively with ventilatory chemoresponsiveness p0066 A79-18954

SPASSKIY, Y. A.
Energy expenditures of man during long exposure to a periodically changing atmosphere p0312 N79-33799

SPECKER, L. J.
Application of biodynamic models to the analysis of F-16 canopy birdstrike p0285 N79-31911

SPEED, W. C.
A new noninvasive technique for cardiac pressure measurement. II Scattering from encapsulated bubbles p0294 A79-51038

SPENCE, J. T.
Making it in academic psychology: Demographic and personality correlates of eminence [NASA-CR-162287] p0289 N79-31932

SPERINDE, S. J.
Sweating responses during heat acclimation and moderate conditioning p0185 A79-33803
Deconditioning-induced exercise responses as influenced by heat acclimation p0273 A79-49985

SPERLING, D. R.
An improved method for inducing hypothermia and rewarming p0267 A79-47339

SPEYER, J. L.
Human operators in adversary tracking encounters p0269 A79-48015

SPIES, E.
Heart rate: Physiological characteristics and quantification methods for use in behavioral studies [CSIR-SR-PERS-276] p0121 N79-17531

SPIKES, J. D.
Energy transfer mechanisms in photobiological reactions [COO-875-180] p0283 N79-31898

SPILLMANN, L.
The equivalent background and retinal eccentricity p0104 A79-24066

SPINTIG, J.
The Spacelab flight unit environmental control/life support system [ASME PAPER 78-ENAS-14] p0007 A79-12563

SPORRONG, A.
Perceived quantization error. Effect of quantization function, reconstruction function and number of levels [FOA-C-56015-H9] p0124 N79-17556

SPRAGUE, E. A.
The prediction of the existence or nonexistence of coronary artery disease using routine clinical laboratory measurement p0028 N79-11703

SPRINGER, D. L.
Metabolism of hydrazine [AD-A062251] p0169 N79-20716

STABEKIS, P.
Planetary protection guidelines for Outer Planet missions p0005 A79-12511

STAHL, F. I.
Human responses to fire: Three designs for research [PB-284959/4] p0058 N79-13708

STAMENOVIC, B.
Biomagnetism and artificial magnetic stimulation of living structures
[IAF PAPER 78-52] p0002 A79-11222
STAHN, G. E.
Eye movements and symmetry - Foundations for a quantitative analysis of eye movements as they depend on the structure of the perception field
p0098 A79-20756
STAMPER, D. A.
Honest 1: Personality, heart rate, urinary catecholamine, and subjective fatigue measures related to night nap-of-the-earth flying
[AD-A054888] p0055 N79-13692
STAMPFL, P.
Thoughts about man-machine interrelations in space flights applied to Spacelab missions
[IAF PAPER 79-95] p0302 A79-53295
STANEK, K. A.
Metabolic responses of ponies to treadmill exercise in hyperoxia
p0049 N79-12681
STAPLEFORD, R. L.
Piloted aircraft simulation - Advantages, disadvantages, and practical problems
[SAE PAPER 780548] p0001 A79-10407
STARK, L.
The trajectories of saccadic eye movements
p0065 A79-18250
Omnidirectional increase in threshold for image shifts during saccadic eye movements
p0139 A79-28198
STARR, G. P.
A comparison of control modes for time-delayed remote manipulation
p0163 A79-30223
STASZ, C.
Individual differences in knowledge acquisition from maps
[AD-A065040] p0196 N79-23663
STAUFFER, R. M.
Physiological effects of a military training program on males and females
[AD-A062936] p0220 N79-25744
STAVE, A. M.
The influence of low frequency vibration on pilot performance /as measured in a fixed base simulator/
p0299 A79-52326
STAYTON, L.
Hyperbaric decompression by means of bubble detection
[AD-A062441] p0171 N79-20726
STAZHADZE, L. L.
The adrenosympathetic system in the presence of traumatic shock during simulation of effects of weightlessness on the human body
p0192 N79-23633
STEEB, R.
Communications management by the remote system - An adaptive approach
p0041 A79-13226
Adaptive estimation of information values in continuous decision making and control of advanced aircraft
[AD-A069741] p0282 N79-30941
STEEL-PERKINS, A. P.
Disorientation in Royal Naval helicopter pilots
p0152 N79-19648
STEENBERGEN, C.
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
p0307 N79-32825
STEIN, A. C.
Use of reward-penalty structures in human experimentation
p0089 N79-15607
The effects of alcohol on driver performance in a decision making situation
p0092 N79-15629
STEIN, I. H.
The effect of active area on the legibility of dot matrix displays
[AD-A058014] p0052 N79-12708
STEIN, W.
The man-computer division of tasks in the case of the control of complex technical systems
p0061 A79-17683
The human operator in the control system: Linear models
p0132 A79-26356
STEINBACH, K. H.
Cell biology basis for the life of an organism in the radiation field
[ANL-TRANS-1152] p0261 N79-29786
STEINMAN, R. M.
The effect of expectations on slow oculomotor control. I - Periodic target steps. II - Single target displacements
p0225 A79-40185
Quality of retinal image stabilization during small natural and artificial body rotations in man
p0225 A79-40187
STELINGOVSKIY, K. V.
Compensatory reactions of the kidneys to orthostatic factors
p0015 N79-10708
STELMAKH, M. F.
Nonlinear optical susceptibility of the human eye to IR radiation in the 800 to 1355 micron range
p0188 A79-35363
Nonlinear perception of infrared radiation in the 800-1355 nm range with human eye
p0301 A79-53163
STENGEL, R. F.
Prediction of pilot-aircraft stability boundaries and performance contours
p0118 N79-17507
STEPANOVA, S. I.
Stability of circadian system of the body
p0073 N79-14723
STEPANTSOV, V. I.
Possibilities of preventing adverse reactions in simulating the acute period of adaptation to weightlessness
p0244 N79-27825
STERN, D. H.
Citric acid enhancement of copper sulfate toxicity to blue-green algae and other nuisance organisms
[PB-289490/5] p0170 N79-20718
STERN, M. S.
Citric acid enhancement of copper sulfate toxicity to blue-green algae and other nuisance organisms
[PB-289490/5] p0170 N79-20718
STERN, R.
Effect of ultrasonic irradiation on mammalian cells and chromosomes in vitro
p0134 A79-27239
STEUCK, M. J.
Evaluation of fluoropolymer membranes in oxygenators
[PB-286698/6] p0112 N79-16547
STEWARD, F. C.
The morphogenetic responses of cultured totipotent cells of carrot (Daucus carota L.) at zero gravity
p0021 N79-11657
STEWART, G. K.
A Canadian approach to high altitude protection
p0045 A79-14435
STICKLAND, A. C.
Life sciences and space research XVI; Proceedings of the Open Meetings of the Working Group on Space Biology, Tel Aviv, Israel, June 7-18, 1977
p0005 A79-12508
STINNER, R. E.
The role of insect dispersal and migration in population processes
p0147 N79-19593
STOCK, B.
Clozapine metabolism in humans
[BLL-RTS-10902] p0142 N79-18567
STOCK, M. P.
Renal damage in mice following exposure to the pyrolysis products of polytetrafluoroethylene
p0066 A79-18306
STOCKWELL, C. W.
Biped stability considerations with vestibular models
p0066 A79-18287
STOKES, J. W.
Sustained operations and sleep deprivation - Effects on indices of stress
p0009 A79-12859
Construction in space - Toward a fresh definition of the man/machine relation
p0187 A79-34985
STOLL, A. M.
Heat transfer principles in personal protection

applications p0043 A79-14405
Thermal conduction effects in human skin p0265 A79-47329
Thermal conduction effects in human skin. 1: Experimental data acquisition [AD-A068479] p0259 N79-28871
Thermal conduction effects in human skin. 3: Influence of epidermal thickness and exposure time [AD-A068481] p0259 N79-28872

STONE, L. W.
The assessment of rotary wing aviator precision performance during extended helicopter flights p0040 A79-13221
Night vision goggles and in-flight evaluation of the inside/outside refocusing problems in a UH-1H helicopter p0063 A79-18215
Changes in the rotary wing aviator's ability to perform an uncommon low altitude rearward hover maneuver as a function of extended flight requirements and aviator fatigue p0150 N79-19623

STORK, R. L.
Human compatibility testing of a 2-man molecular sieve oxygen generator [AD-A058248] p0053 N79-12710
Evaluation of the Sierra Engineering Company lightweight helmet [AD-A061799] p0157 N79-19689

STORM, W. F.
Minuteman missile crew fatigue and 24-hour alerts [AD-A056561] p0056 N79-13696

STOROZHENKO, I. N.
The role of computer technology mathematical models in treatment of patients following heart surgery p0170 N79-20721

STOUDT, H. W.
Arm-leg reach and workspace layout p0033 N79-11739

STOWELL, H. R.
A photometric and legibility assessment of Aerospace Optics, Incorporated Vivisun 20/20 display [AD-A067668] p0242 N79-26786

STRASHIMIROV, D.
On the latency of human visually evoked response to sinusoidal gratings p0232 A79-42236

STRASSER, H.
Comparative experiments on performance and fatigue effects on pilots using tracking tests and physiological measurement parameters [RAE-LIB-TRANS-1971] p0080 N79-14774

STRAUB, K. D.
Molecular absorption of non-ionizing radiation in biological systems p0082 N79-15553

STRAZHIZHOVSKIY, A. D.
Effect of infra-low-frequency magnetic fields on cell division p0173 N79-20739

STRIBLEY, R. F.
Physiological requirements for design of environmental control systems - Control of heat stress in high-performance aircraft [ASME PAPER 78-ENAS-22] p0007 A79-12571
Fighter index of thermal stress /FITS/ - guidance for hot-weather aircraft operations p0202 A79-37715
Effect of cockpit temperature gradients on the validity of single-point measurements p0234 A79-43203
Tracking-task performance during heat stress simulating cockpit conditions in high-performance aircraft p0236 A79-43675
Heat and acute dehydration effects on acceleration response p0237 A79-43705
Fighter index of thermal stress: Development of interim guidance for hot-weather USAF operations [AD-A053471] p0056 N79-13699
Fighter index of thermal stress: Relation to weather conditions at ATC and TAC bases [AD-A062713] p0174 N79-20748

STRIEB, M. I.
Visual performance modeling in the human operator simulator p0317 N79-33840

STRINGER, F. S.
Optimisation of pilot capability and avionic system design [AGARD-AR-118] p0113 N79-16560

STROM, J. A.
Hybrid computation of left ventricular performance using noninvasive techniques [AD-A063749] p0190 N79-22758

STROMEYER, C. F., III
Apparent saturation of blue-sensitive cones occurs at a color-opponent stage p0002 A79-10474
Direction-selective adaptation with very slow motion p0265 A79-47118

STROMME, S. B.
Pulmonary blood volume and interventricular circulation time in physically trained and untrained subjects p0128 A79-24700

STRUMZA, M. V.
The influence of intermittent aircraft noise on sleep. I p0255 A79-46599

STUCK, B. E.
Extrapolation of pulsed light data in scanned displays p0138 A79-28170

STUPAKOV, G. P.
Changes in properties of rat femur as a result of crural exarticulation and hypokinesia p0108 N79-16522
Significance of the vibration component to the deleterious effect of impact accelerations p0312 N79-33801

STYKAN, O. A.
Paroxysmal disorders of consciousness due to flight factors p0161 A79-29300

SUDAKOV, A. I.
Functional changes in the cardiovascular system of machine-tool operators under physical and neurologically stressful loads p0160 A79-29270

SUDON, M.
Development of adaptation to hypodynamics on rat and its readaptability to ambulatory life [IAF PAPER 79-76] p0301 A79-53285

SUIRIDKINA, L. P.
Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia p0313 N79-33813

SULLIVAN, M. J.
Dynamic measurement of human cyclofusional eye movements p0142 N79-18575

SUMMERS, W. C.
An algorithm to ascertain critical regions of human tracking ability p0163 A79-30218

SUN, P. S.
Helicopter commands at the touch of a hand [AHS 79-13] p0270 A79-49066

SUN, S. T.
Study of model membrane fusion using photon correlation spectroscopy p0147 N79-19591

SURI, K. B.
Motion sickness in cats - A symptom rating scale used in laboratory and flight tests p0202 A79-37711

SUROVTSEV, N. A.
Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body p0073 N79-14725
Liberation of carbon monoxide by man when working in protective gear p0076 N79-14748

SUSLOVA, O. B.
Adaptive optimization of exchange of gases in plants in a sealed phytotron p0313 N79-33806

SUSSMAN, E. D.
Effects of deceleration and rate of deceleration on live seated human subjects [PB-284653/3] p0057 N79-13702

SUTTON, J.
Changes in lung volume, lung density, and distribution of ventilation during hypobaric decompression
p0185 A79-33806

SUZUKI, S.
Temporary threshold shift from transportation noise
p0254 A79-46286

SUZUKI, T.
Electromagnetic power absorption in cylindrical tissue models excited by a loop antenna
p0136 A79-27959

SUZUKI, Y.
Mechanical efficiency of fast- and slow-twitch muscle fibers in man during cycling
p0268 A79-47852

SVERDLINA, N. T.
Clinical and morphological studies of people in the course of long-term hypokinesia and subsequent readaptation
p0015 N79-10709

SVIREZHEV, Y. M.
Analysis of distribution of sequences of R-R intervals in astronauts: Generalized coordinate method
p0015 N79-10707

SVIRIDKINA, L. P.
State of blood clotting during prolonged hypokinesia
p0073 N79-14729

SWARTZLANDER, E. E., JR.
High-speed computerized tomography
p0004 A79-12030

SYCHEV, B. S.
Atlas of the dose characteristics of external ionizing radiation /Handbook/
p0098 A79-20669

SYLVESTER, J. T.
Evidence for increased intrathoracic fluid volume in man at high altitude
p0305 A79-54266

Evidence for increased intrathoracic fluid volume in man at high altitude
[AD-A065333] p0220 N79-25743

SYLVESTER, S. M.
Stress management: A comparison of educational, aerobic and autosuggestive approaches
p0260 N79-28875

SYVERTSON, C. A.
Aerospace highlights and potential medical applications
p0293 A79-51027

SZABO, N. S.
Digital image anomalies - Static and dynamic
p0137 A79-28158

SZCZEPANSKI, A.
Guidelines for designing machines and devices for acoustic vibrations from the point of view of the physiological and psychological properties of the human organism
p0236 A79-43608

SZENDE, K.
Gel-electrophoresis studies for the taxonomic characterization of soil microorganisms
[NBC/CNR-TT-1924] p0120 N79-17521

T

TABOADA, J.
Suprathreshold retinal damage due to single 6 picosecond 1060 nm laser light pulses
p0266 A79-47330

TADEUSIEWICZ, R.
Attempt to describe a class of man-machine dialogue systems based on a natural language
p0251 A79-44057

TAIRBEKOV, M.
Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582] p0071 N79-14711

TAIRBEKOV, M. G.
Biological experiments carried out aboard the biological satellite Cosmos-936
p0230 A79-41717

TAKANO, N.
Acid-base curve nomogram for chimpanzee blood and comparison with human blood characteristics
p0133 A79-27105

TAKATA, K.
Simulation study on time series of heart responses
p0037 A79-13197

TALBOT, L.
A fluid-mechanical study of the closure of heart valves
p0161 A79-29540

TAN, W. H.
An extension of the quickened display for manual control
p0086 N79-15591

TAMURA, S.
A binocular stereoscopic display system for echocardiography
p0130 A79-26072

TANAKA, K.
On the relationship between pilot rating and pilot dynamics. I - An experimental approach
p0066 A79-18474

A binocular stereoscopic display system for echocardiography
p0130 A79-26072

A study of the effect of forcing function characteristics on human operator dynamics in manual control
p0086 N79-15590

Motion cue effects on human pilot dynamics in manual control
p0119 N79-17514

TANAKA, H.
Simulation study on time series of heart responses
p0037 A79-13197

TANEEVA, G. V.
Dynamics of the catalase activity of the blood of athletes under the influence of local decompression
p0271 A79-49699

TANSLEY, B. W.
Chromatic border distinctness - Not an index of hue or saturation differences
p0139 A79-28332

TAPLEY, B. D.
Simple models for the shuttle remote manipulator system
[NASA-CR-151881] p0113 N79-16554

TAPPEL, A. L.
Effects of exercise, vitamin E, and ozone on pulmonary function and lipid peroxidation
p0067 A79-18965

TARANENKO, Y. N.
Vertical orientation of man during 5-day antiorthostatic hypokinesia (-4, -8 and -12 deg head down position)
p0313 N79-33810

TARG, R.
Development of techniques to enhance man/machine communication
[NASA-CR-157886] p0032 N79-11730

TARSHIS, A. M.
Contribution of rib cage and abdomen-diaphragm to tidal volume during CO2 rebreathing
p0185 A79-33805

TASHPULATOV, R. Y.
Effect of 49-day space flight on parameters of immunological reactivity and protein composition of blood in the crew of Salyut-5
p0107 N79-16515

Studies of microbial flora and immunity of Salyut-3 crew
p0192 N79-23629

Investigation of albumin and globulin composition of blood of the crew of the Salyut-3 orbital station
p0244 N79-27820

TATARINOVA, N. V.
Hemodynamic indices under orthostatic and vestibular effects
p0098 A79-20692

TATENO, Y.
Goodman et al.'s method for augmenting the number of nucleotide substitutions
p0253 A79-45639

Augmentation algorithm - A reply to Holmquist
p0253 A79-45644

TAYLOR, D. H.
Microbiological evaluation of the mobile biological isolator system
[NASA-CR-162293] p0307 N79-32822

TAYLOR, G. R.
Microflora analysis of a child with severe combined immune deficiency
p0004 A79-11900

TAYLOR, J. T.
Direct exposure of monolayers of mammalian cells to airborne pollutants in a unique culture system
[AD-A069622]
p0283 N79-31897

TAYLOR, L. S.
The Physical Basis of Electromagnetic Interactions with Biological Systems
[HEW-PUB-FDA-78-8055]
p0081 N79-15551

TAYLOR, R. M.
The psychologist in aircraft accident investigation
p0291 N79-31946
Geographical disorientation and flight safety
p0291 N79-31951

TAYLOR, T. I.
Metabolic rate meter and method
[NASA-CASE-MSC-12239-1]
p0175 N79-21750

TAYLOR, W. D.
Distribution of phytoplankton in Arkansas lakes
[PB-292742/4]
p0240 N79-26768

TAYLOR, W. S.
Distribution of phytoplankton in North Carolina lakes
[PB-286387/6]
p0084 N79-15573

TAYS, M.
Joint testing of the RAF high altitude protective ensemble
p0044 A79-14434

TAYS, M. A.
An assessment of the RAE Type 'N' full pressure suit automatic head enclosure
p0044 A79-14432

TEBBETTS, I.
Anthropometric source book. Volume 1: Anthropometry for designers
[NASA-RP-1024]
p0032 N79-11734
Guidelines for fit testing and evaluation of USAF personal-protective clothing and equipment
[AD-A065901]
p0197 N79-23668
Analysis of body size measurements for US Navy women's clothing and pattern design
[AD-A068600]
p0290 N79-31939

TEICHNER, W. H.
Visual search for complex targets
p0208 A79-38357

TEISSEIRE, B. P.
Effects of chronic changes in hemoglobin-O2 affinity in rats
p0185 A79-33808

TEIXEIRA, R. A.
Optokinetic motion sickness - Attenuation of visually-induced apparent self-rotation by passive head movements
p0135 A79-27558

TELL, E. W.
Life support systems for biological specimens in the Shuttle/Spacelab
[ASME PAPER 78-ENAS-38]
p0009 A79-12585

TELL, R. A.
Measurements of radiofrequency field intensity in buildings with close proximity to broadcast stations
[PB-290944/8]
N79-25750
Radiofrequency radiation levels and population exposure in urban areas of the eastern United States
[PB-292855/4]
p0241 N79-26779

TEMPLETON, T. K.
Compensation for transport delays produced by computer image generation systems
[AD-A056720]
p0019 N79-10738

TENHOOR, F.
Influences of dietary fats on coronary flow rate and left ventricular work of the isolated rat heart
p0239 N79-26766
Effects of dietary fats on the coronary flow rate and the left ventricular function of the isolated rat heart
p0239 N79-26767
Aspects of dietary prevention of arteriosclerosis
p0262 N79-29792

TENOSO, H. J.
Water system virus detection
[NASA-CASE-MSC-16098-1]
p0013 N79-10693

TEPPER, M. L.
Between incident and accident
p0292 N79-31953

TER-POGOSSIAN, M. M.
Computerized positron emission tomography /PET/ for the assessment of myocardial integrity
p0293 A79-51031

TERRY, S. C.
A study of noninvasive blood pressure measurement techniques
p0294 A79-51036

TESAR, D.
Computer augmented manual control of remote manipulators
p0269 A79-48019

TESKY, N. J.
Nonshivering thermogenesis in normal and dystrophic muscle
p0054 N79-13680

TETEPORT, A.
Mechanism of the formation of phosphenes by X-rays
p0006 A79-12516

THACKRAY, R. I.
The effect of increased monitoring load on vigilance performance using a simulated radar display
p0236 A79-43674
Visual search performance during simulated radar observation with and without a sweepline
[AD-A068020]
p0281 N79-30938

THEIS, C. F.
Human compatibility testing of a 2-man molecular sieve oxygen generator
[AD-A058248]
p0053 N79-12710

THEWES, D.
The local and time-dependent temperature field in the body of a homeothermic organism in case of sudden changes of quantity and local distribution of internal heat production
p0128 N79-24699

THOMAS, D. J.
Medical qualification procedures for hazardous-duty aeromedical research
p0026 N79-11695
Multiaxis dynamic response of the human head and neck to impact acceleration
p0284 N79-31906
Transient intraventricular conduction defects observed during experimental impact in human subjects
p0285 N79-31907

THOMAS, R. E.
The distribution of cadmium and other metals in human tissues
[PB-285200/2]
p0057 N79-13703

THOMAS, R. G.
A preliminary toxicological study of silastic 386 foam elastomer: catalyst
[LA-7366-MS]
p0071 N79-14714

THOMPSON, C. D.
Extended duration Orbiter life support definition
[ASME PAPER 78-ENAS-42]
p0009 A79-12588
Test evaluation of space station ECLSS maintenance concepts
[ASME PAPER 78-ENAS-43]
p0009 A79-12589

THOMPSON, D. A.
The development of a six degree-of-constraint robot performance evaluation test
p0117 N79-17504

THOMPSON, L. C.
Compensation for transport delays produced by computer image generation systems
[AD-A056720]
p0019 N79-10738

THOMPSON, R. W.
Engineering test and evaluation during high G. Volume 3: Anti-G suits
[AD-A059122]
p0052 N79-12706
Engineering test and evaluation during high G. Volume 2: Anti-G valves
[AD-A059521]
p0081 N79-14780

THORNDYKE, P. W.
Individual differences in knowledge acquisition from maps
[AD-A065040]
p0196 N79-23663

THORNTON, W.
Anthropometric changes in weightlessness
p0032 N79-11735

THUEMLER, R.
A model for vestibular function in altered

gravitational states
TICKNER, E. G. p0229 A79-41710
Noninvasive assessment of pulmonary hypertension using bubble ultrasonic ringing (BURP) method, part 2
[PB-283935/5]
TIETZ, J. D. p0051 N79-12699
A comparison of oculomotor and motion parallax cues of egocentric distance

TIFFANY, P. B. p0305 A79-54253
Discrimination of density and clustering on four versions of a stochastic display

TIGRANIAN, R. A. p0036 A79-13192
Some neurochemical characteristics of rats after space flight in the Cosmos-936 satellite

TIGRANYAN, R. A. p0299 A79-52475
Radiation lesion to liver DNA of rats exposed to radiation during flight aboard the Kosmos-690 biosatellite

p0014 N79-10702
Principal results of experiment with mammals onboard the Kosmos-782 biosatellite

p0073 N79-14726
DNA content of animal organs during space flight on Kosmos-690 satellite

p0073 N79-14728
Effects of space flight factors on electrolyte composition of rat skeletal muscles

p0109 N79-16530
Sterols bound with blood plasma proteins and erythrocyte membranes during hypokinesia

p0193 N79-23636
Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite

p0244 N79-27822
Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite

p0311 N79-33795
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
TIKHONCHUK, V. S. p0311 N79-33796
The time parameter in exposures to microwave radiation

p0105 A79-24419
Effect of microwave radiation on the resistance of rats to transverse acceleration loading

p0275 A79-50496
Time parameter in microwave irradiation
TIKHONOVA, G. P. p0277 A79-50694
Effect of hypokinesia on animal resistance to chemical agents

TILLERY, J. B. p0109 N79-16524
The distribution of cadmium and other metals in human tissues
[PB-285200/2]
TILTON, H. B. p0057 N79-13703
ISAAC-1 - A color sensing robot

TIMBAL, J. p0138 A79-28168
Relations between research and instruction in physiology and aerospace ergonomy in the military health services

TIMBERLAKE, G. T. p0104 A79-23960
Laser Doppler technique for measurement of eye movement

TIMOFEEV, A. V. p0233 A79-42450
Robots and artificial intelligence

TIMOFEYEV-RESOLSKIY, N. V. p0061 A79-17569
Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582]
TINDLE, J. R. p0071 N79-14711
Effects on A-6E bombardier/navigator flight training with the introduction of device 2F114, A-6E weapon system trainer
[AD-A068607]
p0289 N79-31933

TIXADOR, R.
Preliminary results of Cytos experiment flows in Salyut VI - Investigations of Paramechium aurelia
TLEULIN, S. ZH. p0229 A79-41709
The effect of thermal stimulation of the skin on activity of lateral crescent interneurons of lumbar segments

TOLE, J. R. p0208 A79-38147
A fast-reacting and versatile optokinetic stimulus pattern by computer graphics with application examples

TOLTZIS, H. p0160 A79-28993
A spherical representation of a human body for visualizing movement

TOMASHEVASKAYA, L. A. p0301 A79-53096
Investigation of the activity of some enzymatic systems in response to a super-high frequency electromagnetic field

TOMIZUKA, M. p0074 N79-14737
An extension of the quickened display for manual control

TONOTSUKA, E. p0086 N79-15591
The origin of the protein synthesis mechanism
TOPMILLER, D. A. p0207 A79-37986
Computer-graphic design for human performance
[AD-A055132]
TORBATI, D. p0046 A79-15399
Capillary fragility during air exposure of man to 1-5 ATA and after decompression

p0010 A79-12863
Organ blood flow, cardiac output, arterial blood pressure, and vascular resistance in rats exposed to various oxygen pressures
TORDA, T. p0135 A79-27557
Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite

TORNABENE, T. G. p0244 N79-27822
Squalenes, phytanes and other isoprenoids as major neutral lipids of methanogenic and thermoacidophilic 'archaebacteria'

TOUCHSTONE, R. M. p0232 A79-42274
The effect of increased monitoring load on vigilance performance using a simulated radar display

p0236 A79-43674
Visual search performance during simulated radar observation with and without a sweepline
[AD-A068020]
TOUPANCE, G. p0281 N79-30938
Abundance of organic compounds photochemically produced in the atmospheres of the Outer Planets
TOUPET, M. p0210 A79-39075
The responses of frogs to vestibular and visual stimulation in weightlessness

TOWE, B. C. p0006 A79-12513
X-ray backscatter imaging

TOWLE, V. L. p0176 N79-21754
Objective determination of human visual acuity from the visual evoked potential

TOWNSEND, T. H. p0228 A79-41423
Effects of phase manipulation on speech intelligibility through communication headsets
TRATZ, W. M. p0164 A79-30654
Microbiological evaluation of the mobile biological isolator system
[NASA-CR-162293]
TRAYBAR, J. J. p0307 N79-32822
Workload and the certification of helicopters for IFR operation
[AD-A072758]
TREANOR, J. J. p0318 N79-33850
The helmet protects the aviator's head - Or does it
p0044 A79-14429

TRENOR, J. W.
Effects of hypodynamic simulations on the skeletal system of monkeys
p0146 N79-19021

TREST, C. C.
A lower body negative pressure box for +Gz simulation in the upright seated position
[AD-A069326] p0259 N79-28868

TRETYACHENKO, V. V.
New combined aspirator for sampling developed
p0170 N79-20722

TRIEBWASSER, J. H.
Relaxed +Gz tolerance in healthy men - Effect of age
p0067 A79-18956
Prospective Medicine Opportunities in Aerospace Medicine
[AGARD-CP-231] p0026 N79-11692
Distinguishing borderline hypertensives from normotensives: A clinical study of 300 aircrewmen
p0027 N79-11699
The prediction of the existence or nonexistence of coronary artery disease using routine clinical laboratory measurement
p0028 N79-11703
Detection of coronary artery disease in apparently healthy, asymptomatic aircrew members using thallium-201 myocardial perfusion scintigraphy
p0029 N79-11712
Effect of age on relaxed +G sub z tolerance of aircrewmen
p0030 N79-11719
Reproducibility of human cardiovascular responses to orthostatic stress
p0030 N79-11720
Prospective medicine opportunities in aerospace medicine
p0171 N79-20730

TRIPP, J.
Non-invasive information on the P-R segment of the cardiac cycle - An assessment of the clinical potential of the electric and magnetic methods
p0295 A79-51045

TRIPP, J. H.
The theory of the magnetocardiogram
p0304 A79-53533

TROI, V.
Computed axial tomography (CAT)
[ISS-R-78/4] p0262 N79-29791

TROITSKAIA, E. N.
3'5'-cyclic AMP content in rat tissues during hypoxic adaptation and gamma irradiation
p0069 A79-19426

TROITSKAIA, N. A.
Some forms of adaptation to extreme influences in the blood system
p0256 A79-46679

TROLLIP, S. R.
A computer-based simulator simulator
p0039 A79-13215
The evaluation of a complex computer-based flight procedures trainer
p0161 A79-29717

TROOST, B. T.
Linearization and sensitivity analysis of model for human eye movements
p0102 A79-23783

TROSHIKHIN, G. V.
Tissular respiration of the brain after exposure of rats to hypertoxic helium and oxygen mixtures at atmospheric and elevated pressure
p0015 N79-10712
Toxicity of oxygen mixed with helium
p0245 N79-27829

TROSHIN, A. Z.
Effect of brief head-down hypokinesia on pressure in various parts of the healthy man's cardiovascular system
p0245 N79-27831

TROXLER, R. G.
The prediction of the existence or nonexistence of coronary artery disease using routine clinical laboratory measurement
p0028 N79-11703

TRUBACHEV, I. N.
Characteristics of proteins of some unicellular organisms as potential components of ecological life support systems
p0246 N79-27834

TRUSCH, R. B.
A thermoelectric integrated membrane evaporation system
[ASME PAPER 78-ENAS-19] p0007 A79-12568

TRUSHINSKIY, Z. K.
Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
p0313 N79-33809

TRUSWELL, P.
Prediction of body temperatures during exercise in flying clothing
p0273 A79-49989

TSIVINA, T. A.
Model of human heat exchange and identification of its parameters Physiological studies and mathematical modeling
p0159 A79-28739

TSVETKOV, A. A.
Studies of venous circulation in the crew of the Salyut-5 orbital station
p0310 N79-33791

TSYBENKO, V. A.
Interaction between hypothalamic and bulbar levels of regulating blood circulation
p0098 A79-21242

TULEBEKOV, B. T.
Immunophysiological aspects of man's adaptation to highland
p0188 A79-35123

TULGA, M. K.
A model for dynamic allocation of human attention among multiple tasks
p0092 N79-15627

TULUNAY-KEESEY, U.
Effects of stimulus onset and image motion on contrast sensitivity
p0231 A79-42231

TURKINA, N. V.
Training of visual recognition
p0160 A79-29250
Training effect of recognition of different alphabets of visual stimuli
p0175 N79-21747

TURNBILL, C.
Cosmic ray effects on the eyes of rats flown on COSMOS 782
p0022 N79-11669
Cosmic ray effects on the eyes of stationary and centrifuged rats flown on COSMOS 936, experiment K-207
p0024 N79-11678

TURNBILL, C. E.
Effects of weightlessness on the embryonic development and aging of Drosophila
p0022 N79-11670

TURNER, R. T.
Quantitative analysis of selected bone parameters
p0023 N79-11676

TURRY, V. W.
Some variations on derivations by Primoff and their extensions
[PB-287298/4] p0112 N79-16548

TYLER, C. W.
Hyper-resolution in human perception of movement in visual displays
p0132 A79-26240

TYLER, P. E.
Relationship between thermogenic drinking and plasma renin activity in the rat
p0235 A79-43211

TYNDALL, L. H.
Analysis of naval aviation head and neck injuries (1969-1978)
[AD-A057657] p0026 N79-11689

TYURINA, E. V.
Compensatory reactions of the kidneys to orthostatic factors
p0015 N79-10708

U

UDDGARD, A.
Biologically active short-chain peptides
[FOA-C-40063-C1] p0261 N79-29785

UDINTSEV, N. A.
Effects of intermittent magnetic field on activity of carbohydrate metabolism enzymes and oxygen uptake in testicular tissue

p0075 N79-14738
UDUPA, K. J.
Homomorphic analysis and modeling of ECG signals
p0210 A79-39973
UENO, T.
Spatial summation in human vision - Simple reaction time measurements
p0265 A79-47115
UHRHAMMER, T. J.
Development of an electrical energy converter for driving left heart assist blood pumps
[PB-293510/4] p0241 N79-26780
ULLMAN, S.
The interpretation of visual motion
p0186 A79-34424
Bandpass channels, zero-crossings, and early visual information processing
[AD-A062338] p0170 N79-20724
UNTERHARNSCHEIDT, F.
Potential relationship between human central nervous system injury and impact forces based on primate studies
p0286 N79-31919
URSANO, R. J.
Psychiatric education in aerospace medicine
p0202 A79-37712
USACHEV, V. V.
Hemodynamic indices under orthostatic and vestibular effects
p0098 A79-20692
USHAKOV, A. S.
Space biology and medicine
p0132 A79-26344
Studies of amino acid metabolism in the muscles of rats flown aboard the biosatellite Cosmos 782
p0230 A79-41714
USPENSKIY, L. S.
Effect of acute hypoxia on some parameters of renal excretory function and renal hemodynamics
p0245 N79-27828
UTIDJIAN, H. M. D.
Feasibility of an epidemiological study of workers occupationally exposed to high voltage electric fields in the electric power industry
[EPRI-EA-1020] p0316 N79-33832
UTKIN, V. N.
Central and cerebral hemodynamics and metabolism of the healthy man during head-down tilting
p0127 A79-24634
Effect of brief head-down hypokinesia on pressure in various parts of the healthy man's cardiovascular system
p0245 N79-27831

V

VACKAR, M. I.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
p0303 A79-53486
VAIL, IU. S.
Automatic control of physiological functions of the human organism in pathology
p0132 A79-26350
VAKIN, E. A.
Amino acids in southern Kamchatka hot springs
p0182 A79-33122
VALBERG, A.
Chromatic border distinctness - Not an index of hue or saturation differences
p0139 A79-28332
VALERI, C. R.
Temperature effects on shape and function of human granulocytes
[AD-A063750] p0189 N79-22757
VALETON, J. M.
Retinal site of transient tritanopia
p0256 A79-46623
VALOT, C.
Visual acuity with regard to simultaneous colored contrast on a television screen - Results
p0103 A79-23952
VAN BEAUMONT, W.
Plasma volume and electrolyte shifts with heavy exercise in sitting and supine positions
p0161 A79-29336
Effect of sodium and calcium ingestion on thermoregulation during exercise in man
p0163 A79-30624
Sweating responses during heat acclimation and moderate conditioning
p0185 A79-33803
Limb blood flow - Rest and heavy exercise in sitting and supine positions in man
p0235 A79-43208
VAN BREDA KOLFF, K.
Weight control and restraint of laboratory rats
p0133 A79-26584
VAN NORREN, D.
Primate cone sensitivity to flicker during light and dark adaptation as indicated by the foveal local electroretinogram
p0104 A79-24065
Retinal site of transient tritanopia
p0256 A79-46623
VAN VOLLENHOVEN, E.
Theoretical foundations of cardiovascular processes
p0304 A79-53531
VAN WIJK, R. A.
Evaluation of models describing human operator control of slowly responding complex systems
p0167 A79-31494
VANCOTT, H. P.
Arousal from sleep by emergency alarms: Implications from the scientific literature
[PB-284044/5] p0051 N79-12700
VANDERBEL-KAHN, J.
Development and evaluation of instrument systems for noninvasive detection, characterization and quantification of atherosclerotic lesions
[PB-286851/1] p0085 N79-15582
VANDERHAMER, C. J. A.
Cu-content of the liver of young mice in relation to a defect in the Cu-metabolism
[IRI-133-77-02] p0239 N79-26764
Results of a 64Cu-loading test applied to patients with an inherited defect in their Cu-metabolism (Menkes' disease)
[IRI-133-77-04] p0240 N79-26774
The oral 64Cu-loading test: Applications and problems
[IRI-133-78-02] p0240 N79-26775
VANDERKAM, J. J.
Observability of electrical heart activity studied with singular value decomposition
[TH-78-E-81] p0144 N79-18584
VANDERMEULEN, J. P.
COSMOS 936, experiment K-208: Spaceflight effects on muscle fibers
p0024 N79-11679
VANDERSCHANS, G. P.
Evaluation of the risks involved in the application of tritium gas and measures which have to be taken
[MBL-1978-6] p0122 N79-17541
VANDERVAART, J. C.
Vestibular models and thresholds of motion perception. Result of tests in a flight simulator
[VTH-LR-265] p0146 N79-18595
VANDERWOLF, L.
Preparation of some prostaglandin E sub 1 omega-homo-prostaglandin E sub 1 esters and their inhibiting properties on rat blood platelet aggregation
p0239 N79-26765
VANDEWOESTIJNE, K. P.
Follow-up and transversal study of vital capacity and FEV sub values among personnel of the Belgian Army forces
p0028 N79-11706
VANDORP, D. A.
Preparation of some prostaglandin E sub 1 omega-homo-prostaglandin E sub 1 esters and their inhibiting properties on rat blood platelet aggregation
p0239 N79-26765
VANECK, P.
Early diagnosis for decompression sickness. Changes in the blood found shortly after decompression. Part 2: Experiments on rats
[MBL-1978-7] p0120 N79-17524
VANEIJNSBERGEN, B.
General activities related to medical research
[TNO-MFI-PR-6] p0262 N79-29793
VANGOOL, M. F. C.
Influence of motion wash-out filters on pilot tracking performance
[NLR-MP-78005-U] p0124 N79-17554

VANNAASTERT, J. A.
Evaluation of the Sierra Engineering Company lightweight helmet
[AD-A061799] p0157 N79-19689
VANHEMMEN, J. J.
Chemical protection against ionizing radiation: A survey of possible mechanisms
[MBL-1977-8] p0122 N79-17540
VANHEUSDEN, E.
Effects of acute noise traumata on whole-nerve and single-unit activity
[IZF-1978-23] p0308 N79-32829
VANHOOIDONK, C.
Percutaneous absorption of toxic agents. Part 2: The nerve bases and some other toxic organophosphates. A survey of the literature.
[PML-1978-9] p0123 N79-17542
VANLUNTEREN, A.
Parameter estimation in a human operator describing function model for a two-dimensional tracking task
p0115 N79-17481
VANNORDSTRAND, P. C.
Regional program for acquisition of medical experiments
[NASA-CR-160121] p0155 N79-19677
Systems identification and application systems development for monitoring the physiological and health status of crewmen in space
[NASA-CR-160235] p0212 N79-24642
VANSTEENWYK, R.
Short-range movement of major agricultural pests
p0148 N79-19594
VANSTRATUM, P.
Physiological effects of a high soybean protein diet in man
p0240 N79-26777
VANWIJK, R. A.
A model of the human supervisor
p0117 N79-17495
VARFOLOMEEV, V. A.
Tremometry as a method of evaluating the functional state of the nervous system of a pilot
p0300 A79-53065
VARTANIAN, I. A.
Auditory analysis of complex sound: Electrophysiological investigations
p0167 A79-31899
VASILEV, A.
On the latency of human visually evoked response to sinusoidal gratings
p0232 A79-42236
VASILEVA, S. V.
Role of n-aminobenzoic acid in repairing UV and gamma radiation damage
p0301 A79-53211
VASSOUT, P.
The effects of strong shock waves on mortality rates and percentages of pulmonary lesions in rats as a function of the number of exposures
[NASA-TM-75598] p0053 N79-13676
VATULYA, N. M.
Fluid-electrolyte metabolism in the crew of Salyut-4
p0311 N79-33792
VAUGHAN, D. R.
Pacific Northwest Laboratory report for 1977 to the DOE assistant secretary for environment. Part 2: Ecological sciences
[PNL-2500-PT-2] p0053 N79-13677
VAUGHAN, J. A.
Visual acuity of the aging hyperopic eye in the intermediate range
p0037 A79-13198
Aeromedical implications of the X-Chrom lens for improving color vision deficiencies
p0135 A79-27556
Visual performance assessment through clear and sunscreen-treated windows
[AD-A059750] p0080 N79-14775
Visual and optical assessment of gas protective face masks
p0152 N79-19642
The optical properties of smoke-protective devices
[FAA-AM-78-41] p0242 N79-26784
VAUGHN, C. R.
Radar, Insect Population Ecology, and Pest Management
[NASA-CP-2070] p0147 N79-19592
VDHORST, A. R. A.
The driving simulator developed by the Institute for Perception TNO. A validation study in straight road driving
[IZF-1978-16-PR-1] p0145 N79-18588
VEGHTE, J. H.
Temperature changes during exercise measured by thermography
p0235 A79-43209
VEICSTEINAS, A.
Oxygen affinity of blood in altitude Sherpas
p0268 A79-47854
VELDHUYZEN, W.
Modelling the human operator of slowly responding systems using linear models
p0117 N79-17492
VELEZ, S.
Laser safety bioeffects research - Histopathology of retinal effects
p0138 A79-28169
VELLEND, H.
Determination of antimicrobial susceptibilities on infected urines without isolation
[NASA-CASE-GSC-12046-1] p0076 N79-14750
VELTHUYS, B.
Photochemistry and enzymology of photosynthesis
[COO-3326-70] p0239 N79-26763
VENDT, V. P.
Sterols bound with blood plasma proteins and erythrocyte membranes during hypokinesia
p0193 N79-23636
VENTERS, M. D.
Blood volume and cardiorespiratory responses to lower body negative pressure
p0010 A79-12864
Effects of regional hemoconcentration during LBNP on plasma volume determinations
p0265 A79-47326
Specialized physiological studies in support of manned space flight
[NASA-CR-151876] p0111 N79-16542
VENTILLA, M.
Experimental approach to the chemical evolution in the primeval sea. I - Formation of amino acids and amino acid polymers in modified sea mediums
p0203 A79-37935
VERESOTSKAYA, N. A.
Protein fractions and enzymatic activity thereof in the rat myocardium after the flight on Kosmos-690 biosatellite
p0014 N79-10700
Changes in metabolism of soleus muscle tissue in rats following the flight aboard the Kosmos-690 biosatellite
p0108 N79-16518
VERGEAU, B.
A new case of autochthonous malaria in the Paris region associated with frequentation of airports - Recommendations of prophylactic procedures
p0104 A79-23958
VERGHESE, C. A.
Biodynamics of aviation stresses on the vertebral column
p0272 A79-49733
VERGILES, N. IU.
Eye movements and visual perception
p0267 A79-47429
VERGNE-MARINI, P.
Early cardiovascular adaptation to simulated zero gravity
p0162 A79-29727
VERGROESEN, A. J.
Aspects of dietary prevention of arteriosclerosis
p0262 N79-29792
VERICH, W. H.
Functional outcomes of prosthetic cardiac valve replacement
p0076 N79-14746
VERIGO, V. V.
Some problems involved in using mathematical methods for evaluation of pathophysiological changes in the body
p0192 N79-23628
Use of a mathematical model of erythropoiesis for evaluation of effects of space flight factors
p0192 N79-23630
Some of the problems involved in planning biological experiments
p0312 N79-33805

VERMA, R. N.
Assessment of burns in accident fatalities
p0272 A79-49729

VERMA, S. P.
Aerobiotelemetry from a fighter aircraft
p0200 A79-37131

VERNIKOS-DANELLIS, J.
Comparison of circadian rhythms in male and female humans
p0004 A79-11947

Comparison of hormone and electrolyte circadian rhythms in male and female humans
p0004 A79-11948

Effects of fenfluramine administration on activity of the pituitary-adrenal system in the rat
p0005 A79-12474

Inhibition of the pituitary-adrenal response to stress during deprivation-induced feeding
p0235 A79-43605

The importance of light, postural and social cues in the regulation of the plasma cortisol rhythm in man
p0267 A79-47398

Synaptosomal uptake of hypothalamic monoamines and recovery of pituitary-adrenal activity following medial forebrain bundle lesions in rats
p0275 A79-50232

Absence of gastric ulceration in rats after flight on the COSMOS 782
p0021 N79-11660

Indomethacin-antihistamine combination for gastric ulceration control
[NASA-CASE-ARC-11118-2] p0077 N79-14755

VERNOT, E. H.
Toxicity of high density jet fuel components
[AD-A068596] p0259 N79-28870

VERONA, R. W.
Contrast sensitivity of the human eye to various display phosphor types
[AD-A058383] p0056 N79-13695

Head aiming/tracking accuracy in a helicopter environment
p0153 N79-19651

VERPLANK, W. L.
Human/computer control of undersea teleoperators
p0089 N79-15612

Display aids for remote control of untethered undersea vehicles
p0090 N79-15613

The facilitating effects of uncertainty in long-term manual control
p0115 N79-17485

VERSCHELL, H. J.
Atmospheric neutrons
[NASA-CR-3126] p0211 N79-24631

VETTES, B.
Special test for astronaut selection - Tests of tolerance in the centrifuge and in flight
p0047 A79-15491

Cardiac reactions in tests on the wearing of the Yankee Escape System harness during minus G accelerations in the z direction
p0103 A79-23953

Conduction difficulties of vagal origin in flight personnel - Significance of intrathoracic data on the bundle of His
p0103 A79-23955

Cardiac conduction and aptitude problem of fliers. The benefits of endocavital recording of the His bundles
p0030 N79-11716

Tentative estimation of the injuries likely to occur during the crash of a SA 341 Gazelle helicopter, from a study on mannequins
p0287 N79-31925

VIADRO, M. D.
Some tests used in the practice of aviation medical examination for differential diagnosis of heart diseases
p0188 A79-35136

VIARD, D.
Selection and techniques for analysis of indices of visual data reception. II
p0047 A79-15494

Choice and techniques of analysis of indices for the perception of visual information. III
p0103 A79-23954

VICENS
Vertebral pains in helicopter pilots
p0153 N79-19656

VIEILLEFOND, H.
Detection and supervision of obstructed respiratory flow in fliers. Advantages of debit-volume graphs
p0028 N79-11707

VIELLEFOND, H.
Special tests for astronaut selection - Muscular exercise test
p0047 A79-15492

VIGASH, M.
Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite
p0244 N79-27822

VIKHROV, A. I.
Atlas of the dose characteristics of external ionizing radiation /Handbook/
p0098 A79-20669

VIKHROV, N. I.
Analysis of distribution of sequences of R-R intervals in astronauts: Generalized coordinate method
p0015 N79-10707

VIKMANIS, M.
Modeling human tracking performance in a high G-stress environment
p0269 A79-48012

VIKMANIS, M. M.
AAA gunnermodel based on observer theory
p0087 N79-15594

VIKTOROV, A. N.
Characteristics of bacterial aerosol in airtight rooms occupied by humans
p0016 N79-10715

VIL-VILIAMS, I. F.
Prophylactic effects of intermittent acceleration against physiological deconditioning in simulated weightlessness
p0229 A79-41712

VIL-VILYAMS, I. F.
Cardiac arrhythmia following postimmersion +G sub z accelerations
p0015 N79-10710

VILLAUME, J. E.
A literature review-problem definition studies on selected toxic chemicals. Volume 2: Occupational health and safety aspects of phosphorus smoke compounds
[AD-A056019] p0025 N79-11685

VILLOTA, R.
Maximizing storage stability of foods to be used for resupply in a controlled ecological life supply system: Evaluation of research
[NASA-CR-158846] p0260 N79-28880

VINOGRADOV, G. I.
Immunological effects of microwave action
p0172 N79-20736

VINOGRADOV, IU. A.
Radiobiological investigations in Cosmos 782 space flight /Biobloc SF1 experiment/
p0006 A79-12518

VINOGRADOVA, L. A.
Microflora of water reclaimed in sealed compartments
p0193 N79-23638

VINOGRADOVA, L. N.
Relationship between the reproduction tactics and the major indices of speech retention-reproduction processes
p0254 A79-46276

VITOVTOVA, T. I.
Magnetic field effect on radial processes in biological membranes
p0172 N79-20737

VLASOVA, T. F.
Studies of amino acid metabolism in the muscles of rats flown aboard the biosatellite Cosmos 782
p0230 A79-41714

VLES, R.
Effects of dietary fats on atherosclerosis and thrombosis
p0240 N79-26776

VLODAVETS, V. V.
Microflora of water reclaimed in sealed compartments
p0193 N79-23638

VNUKOV, V. V.
Increased hemoglobin and content of rat blood serum as a result of decreased resistance of erythrocyte membranes to hyperbaric oxygenation,

and the protective effect of urea
p0193 N79-23637
VODIAN, N. A.
Studies on the bioassayable growth hormone-like activity of plasma
p0267 A79-47848
VOGEL, F. S.
Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798
VOGEL, J. A.
Physiological effects of a military training program on males and females
[AD-A062936] p0220 N79-25744
VOGT, J. J.
Human skin wettedness and evaporative efficiency of sweating
p0162 A79-29726
Effect of rate of change in skin temperature on local sweating rate
p0268 A79-47853
VOGT, L.
The response of a realistic computer model for sitting humans to different types of shocks
p0288 N79-31927
VOKHMINTSEV, A. V.
Changes in calcium ion activity due to magnetization of solution as the possible mechanism of biological action of magnetic fields
p0173 N79-20741
VOLKMANN, C.
COSMOS 936, experiment K204: The effects of space flight on some liver enzymes concerned with carbohydrate and lipid metabolism in the rat
p0023 N79-11675
VOLOSHIN, V. G.
Possibilities of preventing adverse reactions in simulating the acute period of adaptation to weightlessness
p0244 N79-27825
VOLOSHKO, N. A.
Dynamics of the catalase activity of the blood of athletes under the influence of local decompression
p0271 A79-49699
VOLOZHIN, A. I.
Changes in properties of rat femur as a result of crural exarticulation and hypokinesia
p0108 N79-16522
VON BAUMGARTEN, R. J.
A model for vestibular function in altered gravitational states
p0229 A79-41710
VON BECKH, H. J.
Physiologic and performance measurements in simulated airborne combined stress environments
p0202 A79-37710
VON GIERKE, H.
Can man be calculated - Biological models in aeronautical medicine and engineering
p0161 A79-29589
VON GRUENAU, M.
Form information is necessary for the perception of motion
p0232 A79-42235
VON MULDAU, H. H.
Overview of the use of robots in space missions
[DGLR PAPER 78-154] p0042 A79-14099
VONGIERKE, H. E.
Models and Analogues for the Evaluation of Human Biodynamic Response, Performance and Protection
[AGARD-CP-253] p0284 N79-31901
The validation of biodynamic models
p0286 N79-31914
VOS, J. J.
The want and feasibility to temper sunlight for the eyes
[IZF-1977-21] p0122 N79-17538
Sunglasses for drivers?
[IZF-1977-24] p0122 N79-17539
Acceptable radiation levels in the ultraviolet visible infrared regions
[IZF-1978-15] p0248 N79-27853
VUJNOVIC, D.
The comparative study of metabolism changes dynamics during hypoxia and hyperoxia in mice lungs
[IAF PAPER 78-51] p0002 A79-11221
VYKUKAL, H. C.
Spacesuit mobility knee joints
[NASA-CASE-ARC-11058-2] p0214 N79-24651
Spine immobilization method and apparatus
[NASA-CASE-ARC-11167-1] p0279 N79-30921
VYNIATNINA, Z. K.
Cerebral gas exchange in rats adapted to hypoxia during inspiration of oxygen-poor mixtures
p0097 A79-20623
VYTCHIKOVA, M. A.
Energy expenditures of man during long exposure to a periodically changing atmosphere
p0312 N79-33799

W

WAAG, W. L.
Recent studies of simulation training effectiveness
[SAE PAPER 781006] p0130 A79-25888
WACHTEL, T. L.
Effect of fiber and dye degradation products /FDP/ on burn wound healing
p0298 A79-52277
Bioassay of thermal protection afforded by candidate flight suit fabrics
p0298 A79-52280
Biomedical constraints on thermal protective flight clothing design: A bioengineering analysis
p0153 N79-19662
A porcine bioassay study of the physiological effects of fiber and dye degradation products (FDP) on burn wound healing
[AD-A066990] N79-25748
Evaluation of four thermally protective fabrics using the USAARL bioassay method
[AD-A067351] p0223 N79-25762
Mathematical models of skin burns induced by simulated postcrash fires as aids in thermal protective clothing design and selection
[AD-A066946] p0223 N79-25766
WADDELL, J.
Soviet civil aviation training programs
p0270 A79-49221
WADDELL, J. L.
Current trends in UK military aircrew survival equipment
p0183 A79-33633
WADE, C. E.
Regional heat loss in resting man during immersion in 25.2 C water
p0202 A79-37709
WADHAWAN, M. L.
Ageing and flying fitness
p0182 A79-33190
WAGENAAR, W. A.
The use of artificial signals during SONAR-watch
[IZF-1978-25] p0309 N79-32837
WAGNER-BARTAK, C. G.
Manned simulations of the SRMS in SIMFAC
p0089 N79-15611
WALKER, C. F.
Multi-channel stimulation of peripheral nerve trunks
p0176 N79-21753
WALKER, G. W. R.
Nucleotide-binding site data and the origin of the genetic code
p0206 A79-37974
WALKER, S.
Development of space biology experiments for the Space Shuttle - A student's perspective
[AAS PAPER 78-134] p0099 A79-21252
WALL, R. J.
Automated clinical system for chromosome analysis
[NASA-CASE-NPO-13913-1] p0050 N79-12694
WALLER, M. C.
Models of human operators in vision dependent tasks
[NASA-CP-2103] p0317 N79-33838
WALRAFEN, G. E.
Raman and infrared investigations of the nature of intracellular water
[AD-A061254] p0120 N79-17522
WALSH, A. B.
Cell response to chronic irradiation-modeling and simulation studies
p0142 N79-18562
WALTER, J.
The significance of rhythm disturbances in asymptomatic persons

p0027 N79-11698

WALTER, P. V.
Skin-resistance measuring device with higher resolution
p0252 A79-45476

WALTHER, U.
Helicopter night operations - Feasibility and impact on the overall system
p0048 A79-16235

WANG, T. C.
Mathematical studies of oxygen transport to tissue
p0170 N79-20723

WANNER, J.-C.
The multiloop concept of the pilot work load as a basis of future experiments and studies
[ONERA, TP NO. 1978-10] p0045 A79-14795
Pilot workload in the aircraft of the future
p0226 A79-40646
The vestibule and flying
p0255 A79-46598

WANZEK, S. J.
Aircrew inflight physiological data acquisition system 2
[AD-A055638] p0055 N79-13690

WARD, C.
A head injury model
p0286 N79-31918

WARD, S. L.
An algorithm to ascertain critical regions of human tracking ability
p0163 A79-30218
Determination of cerebral and neck subcutaneous tissue PO2 with 3 and 4 +Gz in M. mulatta
p0234 A79-43205

WARNKE, C. T.
A study of noninvasive blood pressure measurement techniques
p0294 A79-51036

WARTZOK, D.
Radio tracking of a fin whale /Balaenoptera physalus/
p0061 A79-18008

WASHIZU, K.
A study of the effect of forcing function characteristics on human operator dynamics in manual control
p0086 N79-15590
Motion cue effects on human pilot dynamics in manual control
p0119 N79-17514

WASIELEWSKI, M. R.
In vitro duplication of the primary light-induced charge separation in purple photosynthetic bacteria
p0131 A79-26100

WASSERMAN, J. F.
Development and evaluation of instrument systems for noninvasive detection, characterization and quantification of atherosclerotic lesions
[PB-286851/1] p0085 N79-15582

WASSERMAN, K.
Anaerobic threshold alterations caused by endurance training in middle-aged men
p0227 A79-41184

WASTI, K.
A literature review-problem definition studies on selected toxic chemicals. Volume 2: Occupational health and safety aspects of phosphorus smoke compounds
[AD-A056019] p0025 N79-11685
A literature review-problem definition studies on selected toxic chemicals. Volume 5: Occupational health and safety and environmental aspects of zinc chloride
[AD-A056020] p0025 N79-11687

WATANABE, K.
Structure-stability relationship of thermophile tRNA - A model for biological adaptation and limit of life at high temperature
p0206 A79-37976

WATANABE, Y.
Simulation study on time series of heart responses
p0037 A79-13197

WATT, D. G.
Doppler detection of thresholds for decompression-induced venous gas emboli in the awake rat
p0202 A79-37707

WATTERS, H. H.
Construction in space - Toward a fresh definition of the man/machine relation
p0187 A79-34985

WATTS, C. D.
A biogeochemical study of the Abu Dhabi algal mats - A simplified ecosystem
p0132 A79-26373

WEAVER, C. S.
A study of noninvasive blood pressure measurement techniques
p0294 A79-51036

WEBBER, C.
Changes in lung volume, lung density, and distribution of ventilation during hypobaric decompression
p0185 A79-33806

WEBBER, K. T.
The metabolic demand and oxygen supply of the heart - Physiologic and clinical considerations
p0300 A79-52894

WEBER, O.
Analyses of midair collisions in German airspace: Methodology and results
p0291 N79-31949

WEBER, P.
Isolation of a shock-induced circulating cardiodepressant substance
p0257 A79-46967

WEBSTER, J. G.
Portable device for detection of petit mal epilepsy
p0254 A79-46226

WEED, R. I.
Studies of metabolism, function and mechanism of destruction of red cells
[AD-A070240] p0315 N79-33828

WEGMANN, H. M.
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] p0302 A79-53291

WEI, E. P.
Responses of pial arterioles after prolonged hypercapnia and hypoxia in the awake rabbit
p0101 A79-23075

WEICHENRIEDER, A.
The influence of mechanical vibration and noise on the peripheral blood circulation at skin level
[RAE-LIB-TRANS-1980] p0084 N79-15578

WEIGEL, C. L.
Pilot preflight briefing utilizing an interactive computer generated Voice Response System
p0167 A79-31887

WEIL, J. V.
Exercise ventilation correlates positively with ventilatory chemoresponsiveness
p0066 A79-18954
CO2 and exercise tidal volume
p0133 A79-27104

WEINER, F. C.
Biped stability considerations with vestibular models
p0066 A79-18287

WEINSTEIN, L.
Determination of antimicrobial susceptibilities on infected urines without isolation
[NASA-CASE-GSC-12046-1] p0076 N79-14750

WEISBERG, D.
A further investigation of visual dominance
p0186 A79-33949

WEISS, D. J.
Proceedings of the 1977 Computerized Adaptive Testing Conference
[AD-A060049] p0079 N79-14771
A construct validation of adaptive achievement testing
[AD-A063148] p0173 N79-20742

WEISS, M. S.
The effect of impact acceleration on the electrical activity of the brain
p0287 N79-31921

WELCH, A. J.
Measurements in the laser irradiated eye
[AD-A069842] p0315 N79-33825

WELKOWITZ, W.
A catheter flow probe for measurement of left ventricular source parameters
p0274 A79-50108

WELLS, A. F.
Water system virus detection

[NASA-CASE-MSC-16098-1] p0013 N79-10693

WELLS, C. H.
Tissue gas and blood analyses of human subjects breathing 80% argon and 20% oxygen
p0164 A79-30655

WELPE, E.
Visual angle constancy for the subjective checkerboard pattern, as an indication of cortical origination of size constancy
p0231 A79-42232

WELSH, K. W.
Visual acuity of the aging hyperopic eye in the intermediate range
p0037 A79-13198
Aeromedical implications of the X-Chrom lens for improving color vision deficiencies
p0135 A79-27556
Visual performance assessment through clear and sunscreen-treated windows
[AD-A059750] p0080 N79-14775
Visual and optical assessment of gas protective face masks
p0152 N79-19642
The optical properties of smoke-protective devices
[FAA-AM-78-41] p0242 N79-26784

WENGER, C. B.
Control of skin blood flow during exercise - Thermal and nonthermal factors
p0185 A79-33807

WEST, B.
The combined effects of pulsed magnetic radiation (diapulse) and chemotherapy on tumor bearing mice. The measurement of rodent palatal explants as a device for measurement of the biologic effects of nonionic radiation (MMR)
p0018 N79-10733

WEST, J. B.
Distribution of pulmonary ventilation and perfusion during short periods of weightlessness
p0068 A79-18967
Radiographic comparison of human lung shape during normal gravity and weightlessness
p0305 A79-54269

WESTBROOK, R. M.
A long-range and long-life telemetry data-acquisition system for heart rate and multiple body temperatures from free-ranging animals
[NASA-TM-78590] p0239 N79-26762

WESTON, L. M.
An Air Combat Effectiveness Study /ACES/ program
p0040 A79-13222

WESTOVER, J. B.
Food packages for Space Shuttle
[ASME PAPER 78-ENAS-13] p0007 A79-12562

WESTURA, E. E.
Experience with periodic aviation medical examinations
p0026 N79-11696

WEWERINKE, P. H.
A theoretical and experimental analysis of the outside world perception process
p0091 N79-15625
An analysis of helicopter pilot control behaviour and workload during instrument flying tasks
[NLR-MP-78003-U] p0124 N79-17553
An analysis of helicopter pilot control behavior and workload during instrument flying tasks
p0150 N79-19630
Performance and workload analysis of inflight helicopter missions
[NLR-MP-77013-U] p0308 N79-32834
A theoretical and experimental analysis of the outside world perception process
[NLR-MP-78020-U] p0309 N79-32835

WEYER, D.
Undergraduate pilot training: Visual discrimination pretraining for land task
[AD-A068141] p0317 N79-33844

WHEELER, G. L.
Minimum sea surface temperatures and associated survival times
[AD-A070162] p0315 N79-33824

WHETTEN, L. L.
Soviet civil aviation training programs
p0270 A79-49221

WHINNERY, J. E.
Incapacitation time for +Gz-induced loss of consciousness
p0102 A79-23475
Better definition of eye to aortic valve distance in high acceleration cockpit /HAC/ seating geometries
p0183 A79-33632
Concurrent loss of consciousness and sino-atrial block during +Gz stress
p0202 A79-37714
+Gz tolerance correlation with clinical parameters
p0235 A79-43213
Reproducibility of +Gz tolerance testing
p0267 A79-47337
Technique for simulating G-induced tunnel vision
p0299 A79-52286

WHIPP, B. J.
Anaerobic threshold alterations caused by endurance training in middle-aged men
p0227 A79-41184

WHITE, G. L.
Effects of methylprednisolone sodium succinate on clearance of livine E. coli from peripheral blood of dogs
[AD-A062123] p0169 N79-20717

WHITE, G. R.
Cold water survival suits for aircrew
p0298 A79-52282
Cold water survival suits for aircrew
[ARL/SYS-NOTE-56] p0261 N79-28882

WHITE, R. C.
Life sciences experiments mission development test program
[ASME PAPER 78-ENAS-36] p0008 A79-12583

WHITE, R. J.
A long term model of circulation
[NASA-CR-147674] p0212 N79-24636
Acid-base homeostasis in the human system
[NASA-CR-160222] p0212 N79-24640
A simple model of fluid flow and electrolyte balance in the body
[NASA-CR-160205] p0217 N79-25722
Fluid and electrolyte control systems in the human body: A study report
[NASA-CR-160210] p0217 N79-25723
On a basic model of circulatory, fluid, and electrolyte regulation in the human system based upon the model of Guyton
[NASA-CR-160212] p0218 N79-25725

WHITE, R. M.
United States Army anthrometry: 1946-1977
[AD-A068095] p0289 N79-31938

WHITEHEAD, G. D.
Manned simulations of the SRMS in SIMFAC
p0089 N79-15611

WHITEHURST, H. O.
The relative effects of multiple factors on target acquisition
p0267 A79-47765

WHITFIELD, D.
A preliminary study of the air traffic controller's 'picture'
p0221 A79-36227

WHITMAN, E. M.
The biodynamic response of the human body and its application to standards
p0288 N79-31929

WHITTLE, M. W.
Caloric and exercise requirements of space flight - Biostereometric results from Skylab
p0128 A79-24637

WICHMAN, H.
In-flight measures of stress reduction due to wearing expandable foam earplugs
p0273 A79-49986

WICKENS, C. D.
The event related cortical potential as an index of task workload
p0038 A79-13208
The effects of participatory mode and task workload on the detection of dynamic system failures
p0098 A79-21156
The internal model: A study of the relative contribution of proprioception and visual information to failure detection in dynamic systems
p0087 N79-15596
A quasi-linear control theory analysis of timesharing skills
p0115 N79-17479

The effects of participatory mode and task workload on the detection of dynamic system failures
p0116 N79-17487
Development and utilization of internal models in dynamic systems: A comparison of monitors and operators as failure detectors
[AD-A069730] p0282 N79-30942
WICKRAMASINGHE, C.
Lifecloud: The origin of life in the universe
p0061 A79-17123
WICKS, S. M.
Stress in air traffic controllers: A restudy of 32 controllers 5 to 9 years later
[FAA-AM-78-40] p0144 N79-18581
WIERWILLE, W. W.
The influence of vehicle aerodynamic and control response characteristics on driver-vehicle performance
p0089 N79-15608
The application of integral performance criteria to the analysis of discrete maneuvers in a driving simulator
[BS-GMR-2394] p0115 N79-17484
WIJNANS, M.
Early diagnosis for decompression sickness. Changes in the blood found shortly after decompression. Part 2: Experiments on rats
[MBL-1978-7] p0120 N79-17524
WIKER, G. A.
Compact artificial hand
[NASA-CASE-NPO-13906-1] p0214 N79-24652
WIKSWO, J. P., JR.
Clinical magnetocardiography
p0295 A79-51044
WILEY, R. W.
Night vision goggles and in-flight evaluation of the inside/outside refocusing problems in a UH-1H helicopter
p0063 A79-18215
WILF, J. M.
Robotic vision
p0187 A79-34984
WILKINS, J. R.
Use of platinum electrodes for the electrochemical detection of bacteria
p0131 A79-26146
WILLERSON, J. T.
ST isopotential precordial surface maps in patients with acute myocardial infarction
p0098 A79-21245
WILLIAMS, B. A.
An inductively powered telemetry system for temperature, EKG, and activity monitoring
p0228 A79-41424
Subcutaneous channeling probe
[NASA-CASE-ARC-11091-1] p0025 N79-11684
WILLIAMS, D.
Short-term memory factors in ground controller/pilot communication
p0181 A79-32626
WILLIAMS, D. S.
The robot's eyes - Stereo vision system for automated scene analysis
p0004 A79-12006
Robotic vision
p0187 A79-34984
WILLIAMS, L. R.
Distribution of phytoplankton in North Carolina lakes
[PB-286387/6] p0084 N79-15573
Distribution of phytoplankton in Arkansas lakes
[PB-292742/4] p0240 N79-26768
WILLIAMS, M. D.
Evolution of enzyme function - The coupled oscillator theory
p0205 A79-37970
WILLIAMS, R. A.
Velocity precision in smooth pursuit eye movements
p0129 A79-25399
WILLIAMS, T. E.
System for and method of freezing biological tissue
[NASA-CASE-GSC-12173-1] p0013 N79-10694
WILLIGES, B. H.
Models for automated motor skills training
p0035 A79-13182
Augmented feedback in adaptive motor skill training
p0062 A79-18208
Cross-validation of regression equations to predict performance in a pursuit tracking task
p0064 A79-18222
WILLIGES, R. C.
Models for automated motor skills training
p0035 A79-13182
Experimental designs for investigating complex human operator/machine systems
p0040 A79-13225
Augmented feedback in adaptive motor skill training
p0062 A79-18208
Cross-validation of regression equations to predict performance in a pursuit tracking task
p0064 A79-18222
WILLMERT, K. D.
Graphic display of human motion
[AD-A064344] p0190 N79-22763
WILSON, D. A.
A transient analysis of the cerebrovascular response to carbon dioxide
p0111 N79-16539
WILSON, G. L.
Engineering test and evaluation during high G. Volume 3: Anti-G suits
[AD-A059122] p0052 N79-12706
Engineering test and evaluation during high G. Volume 2: Anti-G valves
[AD-A059521] p0081 N79-14780
WILSON, J. D.
The effect of hyperthermia on the radiation response of crypt cells in mouse jejunum
p0018 N79-10731
WILSON, L.
General methods to enable robots with vision to acquire, orient, and transport workpieces
[PB-287199/4] p0113 N79-16556
WILSON, T. A.
Modeling the effect of axial bronchial tension on expiratory flow
p0067 A79-18957
Improved measurements of shear modulus and pleural membrane tension of the lung
p0236 A79-43702
Distribution of regional volumes and ventilation in excised canine lobes
p0236 A79-43703
WINGET, C. M.
Comparison of circadian rhythms in male and female humans
p0004 A79-11947
Comparison of hormone and electrolyte circadian rhythms in male and female humans
p0004 A79-11948
The importance of light, postural and social cues in the regulation of the plasma cortisol rhythm in man
p0267 A79-47398
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] p0302 A79-53291
WINKLE, L.
Reproductive adaptation in Drosophila exposed to oxygen-enriched atmospheres
p0164 A79-30657
WINSHIP, J. A.
The fitting of Canadian Forces aircrew helmets - Why the difference
p0184 A79-33645
WINTER, D. L.
Physiological responses of women to simulated weightlessness: A review of the first female bed-rest study
[NASA-SP-430] p0054 N79-13686
WINTER, W. R.
Flight test evaluation of an RAF high altitude partial pressure protective assembly
[NASA-TM-72864] p0214 N79-24654
WINTERSON, B. J.
Quality of retinal image stabilization during small natural and artificial body rotations in man
p0225 A79-40187
WIRTHS, G.
Spacelab environmental control/life support system /ECLS/ for life science experiments
[IAF PAPER 78-59] p0003 A79-11225
WISSMAN, D.
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology

[AD-A069983] p0308 N79-32833

WISWELL, R. A.
Time course of O2-pulse during various tests of aerobic power
p0297 A79-52024

WITOWSKI, D. J.
Development of aerospace-aviation equipment described
p0081 N79-14795

WITT, W. M.
Regional coronary blood flow at rest and during high sustained +Gz in a miniature swine with subclinical, ischemic, coronary heart disease due to coronary stenosis
p0010 A79-12865

WITTE, M. E.
Direct exposure of monolayers of mammalian cells to airborne pollutants in a unique culture system
[AD-A069822] p0283 N79-31897

WITTNER, M.
Morphological and biochemical effects of oxygen toxicity
[AD-A056778] p0018 N79-10734

WOESE, C. R.
A proposal concerning the origin of life on the planet earth
p0253 A79-45641

WOLBARSHT, M. L.
Electrophysiological determination of retinal sensitivity to color after intense monochromatic light adaptation
[AD-A063852] p0189 N79-22756

WOLCOTT, J. H.
Correlation of choice reaction time performance with biorhythmic criticality and cycle phase
p0102 A79-23471

WOLCZEK, O.
Chirality of compounds essential for the existence of life, and the possibility of its evolution in the universe
p0186 A79-34464

WOLF, J. D.
Crew workload assessment. Development of a measure of operator workload
[AD-A068616] p0261 N79-28884

WOLF, J. J.
A survey of Applied Psychological Services' models of the human operator
p0317 N79-33839

WOLF, W.
Radar, Insect Population Ecology, and Pest Management
[NASA-CP-2070] p0147 N79-19592

WOLFE, C.
Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] p0310 N79-33788

WOLFE, D.
Composition of cerebral fluids in goats adapted to high altitude
p0277 A79-50902

WOLFE, J. M.
Eye torsion and visual tilt are mediated by different binocular processes
p0256 A79-46651

WOLFE, L. A.
Effects of endurance training on left ventricular dimensions in healthy men
p0237 A79-43706

WOLLENBERGER, A.
Effect of adaptation to high-altitude hypoxia on cardiac adrenoreactivity and the state of the adenylcyclase and phosphodiesterase systems in the myocardium
p0255 A79-46500

WOLLSCHLAEGER, P. B.
Microwave apexcardiography
p0231 A79-41848

WOLTHUIS, R. A.
Reproducibility of human cardiovascular responses to orthostatic stress
p0030 N79-11720

WOLTHUIS, R. A.
Relaxed +Gz tolerance in healthy men - Effect of age
p0067 A79-18956
Blood pressure variability of the individual in orthostatic testing
p0265 A79-47328
Distinguishing borderline hypertensives from normotensives: A clinical study of 300 aircrewmen
p0027 N79-11699
Detection of coronary artery disease in apparently healthy, asymptomatic aircrew members using thallium-201 myocardial perfusion scintigraphy
p0029 N79-11712
Effect of age on relaxed +G sub z tolerance of aircrewmen
p0030 N79-11719

WONG, J. T.-F.
Inadequacy of prebiotic synthesis as origin of proteinous amino acids
p0253 A79-45643

WOOD, G. A.
Electrophysiological correlates of local muscular fatigue effects upon human visual reaction time
p0297 A79-52025

WOOD, W. C.
Implementation of a divisional aviation program to decrease flight crew fatigue
p0150 N79-19624

WOODRUFF, R. R.
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view
[AD-A070231] p0308 N79-32832

WOODS, R. R.
Electrochemically regenerable carbon dioxide absorber
[NASA-CR-152099] p0262 N79-29794

WOODSON, W. E.
Development of recommendations to improve controls operability
[PB-284433/0] p0053 N79-12714

WOODWARD, C. C.
High 'Q' escape protection
p0044 A79-14428

WOOTEN, F. T.
Medical technology transfer
p0048 A79-16138

WORTMAN, D. B.
Modeling and analysis using SAINT - A combined discrete/continuous network simulation language
p0004 A79-11480

WRIGHT, E. E.
A system for sterilizing objects
[NASA-CASE-KSC-11085-1] p0318 N79-33848

WU, T.-K.
Electromagnetic fields and power deposition in body-of-revolution models of man
p0130 A79-26007

WURSTER, R. D.
Role of skin temperature in the control of sweating
p0277 A79-50907

WURTMAN, R. J.
Low tryptophan diet decreases brain serotonin and alters response to apomorphine
p0226 A79-40672

WYATT, H. J.
The role of perceived motion in smooth pursuit eye movements
p0225 A79-40184

WYATT, H. L.
Influences of physical conditioning and deconditioning on coronary vasculature of dogs
p0067 A79-18955

WYNVEEN, R. A.
Instrumentation for controlling and monitoring environmental control and life support systems
[ASME PAPER 78-ENAS-40] p0009 A79-12587
Technology advancement of an oxygen generation subsystem
[NASA-CR-152257] p0261 N79-28883

Y

YAGODOVSKIY, V. S.
Changes in properties of rat femur as a result of crural exarticulation and hypokinesia
p0108 N79-16522

YAKIMENKOV, L. I.
Ultrasonic doppler directional blood flow velocity meter
[RAE-LIB-TRANS-.918] p0279 N79-30920

YAKIMOVA, I. V.
Effects of different values of urine pH during long-term storage on microflora composition
p0194 N79-23643

Quality of water reclaimed from urine as related to pH of initial product
p0313 N79-33807

YAKNOVA, Y.
Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite
p0244 N79-27822

YAKOVLEVA, V. I.
Histological and histochemical studies of the liver of rats flown aboard Kosmos-690 biosatellite
p0014 N79-10703
Comparative analysis of causes of animal deaths during chronic exposure to gamma radiation and the aftereffect period
p0016 N79-10718

YAKUSHEVA, V. I.
Changes in properties of rat femur as a result of crural exarticulation and hypokinesia
p0108 N79-16522

YAKUT, M. M.
Biological specimen holding facilities for Spacelab experiments
[IAF PAPER 78-56] p0003 A79-11224
Life support systems for biological specimens in the Shuttle/Spacelab
[ASME PAPER 78-ENAS-38] p0009 A79-12585

YAMANAKA, T.
Evolutionary relationship based on a biochemical study of energy-acquiring system between Nitrosomonas europaea and Thiobacillus novellus
p0205 A79-37966

YAMASHIRO, S. M.
Application of pseudo random binary sequence input to identification of respiratory control dynamics
p0268 A79-48011

YANAGAWA, H.
Experimental approach to the chemical evolution in the primeval sea. I - Formation of amino acids and amino acid polymers in modified sea mediums
p0203 A79-37935
Experimental approach to the chemical evolution in the primeval sea. II - Formation of protocell-like structures 'marigranules' in a modified sea medium
p0204 A79-37964

YANG, E.
Organic geochemical studies on kerogen precursors in recently deposited algal mats and oozes
p0001 A79-10419

YANG, J.
Estimation of rate constants in the Michaelis-Menten model
[AD-A070360] p0307 N79-32824

YANG, P. Y.
Instrumentation for controlling and monitoring environmental control and life support systems
[ASME PAPER 78-ENAS-40] p0009 A79-12587

YANG, W.-J.
Theoretical foundations of cardiovascular processes
p0304 A79-53531
Equations on biotransport mechanisms
p0304 A79-53535

YANKO, V. M.
The systemic principles of building a man-machine control staff
p0249 N79-27861

YANKYAVICHYUS, K. K.
Effects of electromagnetic field induction on development of the green algae, scenedesmus quadricauda (Turbpin) Breb. and composition of free amino acids in its biomass and medium
p0075 N79-14740

YASUI, S.
A fast-reacting and versatile optokinetic stimulus pattern by computer graphics with application examples
p0160 A79-28993

YAU, K.-W.
Thermal activation of the visual transduction mechanism in retinal rods
p0230 A79-41746

YAZDOVSKIY, V. I.
Utilization of the wastes of vital activity
[NASA-TM-75410] p0177 N79-21768

YEE, J. P.
Development and application of resistive pulse spectroscopy: Studies on the size, form and deformability of red blood cells
[LBL-8640] p0280 N79-30924

YEGOROV, I. A.
Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
p0311 N79-33796

YEGOROVA, I. A.
Radiation lesion to liver DNA of rats exposed to radiation during flight aboard the Kosmos-690 biosatellite
p0014 N79-10702
DNA content of animal organs during space flight on Kosmos-690 satellite
p0073 N79-14728

YEGUNOVA, M.
Medical science in Siberia: Oxygen exchange in the Far North
[NASA-TM-75391] p0211 N79-24630

YEIN, F.
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] p0307 N79-32823

YEN, T. T.
Development of an electrical energy converter for circulatory device
[PB-286738/0] p0111 N79-16545

YERMOLAYEVA, M. V.
Psychological experiment on components of the meaning of work
p0071 N79-14709

YEROKHIN, V. I.
Aphotometer for determining the biomass of microorgan from the ATP content
[BLL-RTS-11456] p0141 N79-18555

YIEN, D. T. M.
Trace contaminant studies of HSC adsorbent
[NASA-CR-160148] p0177 N79-21769

YIPINTSOI, T.
Effect of exercise on collateral development in dogs with normal coronary arteries
p0067 A79-18960

YONEYAMA, T.
Electromagnetic power absorption in cylindrical tissue models excited by a loop antenna
p0136 A79-27959

YOUNG, D. M.
Training requirements for helicopter operation with night vision goggles
p0153 N79-19650

YOUNG, D. R.
In-vivo bone strain telemetry in monkeys /M. nemestrina/
p0002 A79-10608
Effects of hypodynamic simulations on the skeletal system of monkeys
p0146 N79-19021

YOUNG, J. T.
Regional coronary blood flow at rest and during high sustained +Gz in a miniature swine with subclinical, ischemic, coronary heart disease due to coronary stenosis
p0010 A79-12865

YOUNG, L. L., III
Health and safety hazards associated with solar concentration systems
p0200 A79-36628

YOUNG, L. R.
A fast-reacting and versatile optokinetic stimulus pattern by computer graphics with application examples
p0160 A79-28993
Manual control of yaw motion with combined visual and vestibular cues
p0119 N79-17513
Sensory mechanism modeling
[AD-A069439] p0262 N79-29796

YOUNG, M. E.
Effects of fatigue on human behavior and performance. A bibliography with abstracts
[NTIS/PS-79/0071/5] p0177 N79-21762
Human memory. A bibliography with abstracts
[NTIS/PS-79/0640/7] p0318 N79-33847

YOUNG, R. S.
Publications of the planetary biology program for 1977: A special bibliography
[NASA-TM-80338] p0179 N79-21777
Publications of the planetary biology program for 1978: A special bibliography
[NASA-TM-80745] p0319 N79-33854

YOUNGLING, E. W.
An Air Combat Effectiveness Study /ACES/ program

p0040 A79-13222

YOUNT, D. E.
Application of a bubble formation model to decompression sickness in rats and humans
p0102 A79-23473

YUROVA, K. S.
Effects of endogenous factors on the process of gas bubble formation in the body related to decompression
p0015 N79-10713

YURUGI, R.
Effects of dietary composition on nutritional state in rats during exposure to high altitude
p0134 A79-27118

Z

ZABALA ITURRALDE, J.
Control of robot manipulators from the modeling of their dynamics
p0101 A79-23427

ZACHARIAS, G. L.
Manual control of yaw motion with combined visual and vestibular cues
p0119 N79-17513
Motion cue models for pilot-vehicle analysis
[AD-A061477] p0125 N79-17561

ZAKHAROVA, N. S.
Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
p0311 N79-33797

ZALESKY, P. J.
Hybrid computation of left ventricular performance using noninvasive techniques
[AD-A063749] p0190 N79-22758

ZALOGUYEV, S. N.
Characteristics of bacterial aerosol in airtight rooms occupied by humans
p0016 N79-10715

ZALYUBOVSKAYA, N. P.
Effect of radio waves of a millimeter frequency range on the body of man and animals
p0172 N79-20735

ZALYUBOVSKIY, I. I.
Magnetic field effect on radial processes in biological membranes
p0172 N79-20737

ZAMEL, N.
Absence of effects of hypoxia on small airway function in humans
p0268 A79-47851

ZARETSKIY, V. V.
Ergometric tests in expert medical certification of flight personnel
p0109 N79-16527

ZAVALOVA, N. D.
Experimental and psychological investigations in aviation and astronautics
p0041 A79-13998

ZAWACKI, B. E.
Diagnosis of cutaneous thermal burn injuries by multispectral imaging analysis
[NASA-CR-162103] p0279 N79-30922

ZEE, D. S.
Pursuit after-nystagmus
p0271 A79-49484

ZEEVI, Y. Y.
Latency of peripheral saccades
p0278 A79-50987

ZEITLIN, L. R.
Conjoint effect of physical stress and noise stress on information processing performance and cardiac response
p0161 A79-29715

ZELIGMAN, V. S.
Changes in human renal function in passive head-up and head-down positions
p0072 N79-14722

ZELLER, A. F.
Three decades of USAF efforts to reduce human error accidents, 1947-1977
p0290 N79-31943

ZEMAN, W.
Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798

ZENIN, V. P.
Compensatory reactions of the kidneys to orthostatic factors
p0015 N79-10708

ZENOBI, T. J.
Design considerations for inflatable head/neck restraint systems
p0043 A79-14407

ZERBUEHLEN, R. O.
Computer aided control of a mechanical arm
p0275 A79-50334

ZHELTOV, G. I.
Thermal effects during the exposure of ocular fundus tissues to laser radiation
p0234 A79-43057

ZHERNAKOV, A. F.
Evaluation of circulatory reactions in the head to antiorthostatic position
p0245 N79-27832

ZHIGAILO, T. L.
Individual differences in hypoxic responses at high altitudes
p0159 A79-28738

ZHILINA, G. E.
Functional changes in the cardiovascular system of machine-tool operators under physical and neurologically stressful loads
p0160 A79-29270

ZHILIS, B. G.
Effect of acute hypoxia on some parameters of renal excretory function and renal hemodynamics
p0245 N79-27828

ZHVALIKOVSKAIA, V. P.
Biological experiments carried out aboard the biological satellite Cosmos-936
p0230 A79-41717

ZHVALIKOVSKAYA, V. P.
Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582] p0071 N79-14711

ZIANE, D.
A description of the recent neuropsychological selection of pilots for land forces light aircraft
p0151 N79-19633

ZINCHENKO, T. P.
Visual information processing
p0076 N79-14747

ZINCHENKO, V. P.
Physiologicohygienic and ergonomic aspects of Salyut 6 cosmonauts extravehicular activity /EVA/
p0303 A79-53486

ZIPPLER, D. B.
Improved airline-type supplied-air plastic suit
[DPSPU-78-30-12] p0282 N79-30943

ZLATKIS, A.
Early detection of disease: The correlation of the volatile organic profiles from patients with upper respiratory infections with subjects of normal profiles
[NASA-CR-160100] p0121 N79-17532

ZOLLARS, G. F.
Stress factors on pilot performance. Citations from the International Aerospace Abstracts data base
[NTIS/PS-79/0506/0] p0260 N79-28878

ZON, J. R.
A hypothesis of plasmonic absorption of RF energy by biological objects
p0233 A79-42506

ZORILE, V. I.
Effects of vestibular stimuli on the electrical activity of muscles
p0187 A79-35121

ZOZULIAKOVA, S. V.
Epiphysis of rats under the combined action of hypoxia, hypercapnia and cooling
p0256 A79-46680

ZRENNER, E.
Enchancement of luminance flicker by color-opponent mechanisms
p0252 A79-44582

ZUCKER, R. S.
The application of integral performance criteria to the analysis of discrete maneuvers in a driving simulator
[RS-GMR-2394] p0115 N79-17484

ZUKHBAYA, T. M.
Effects of long-term and chronic radiation on

hemopoiesis
p0016 N79-10719

ZUMOFF, B.
Comparison of plasma and urinary steroids in men with type A and type B behavior patterns
p0028 N79-11704

ZWICK, H.
Low level laser light effects
p0138 A79-28171

ZWIEBEL, W.
Real-time computerized fluoroscopic cardiac imaging
p0294 A79-51035

ZYBIN, O. K.
Effect of brief head-down hypokinesia on pressure in various parts of the healthy man's cardiovascular system
p0245 N79-27831

ZYBIN, O. KH.
Central and cerebral hemodynamics and metabolism of the healthy man during head-down tilting
p0127 A79-24634

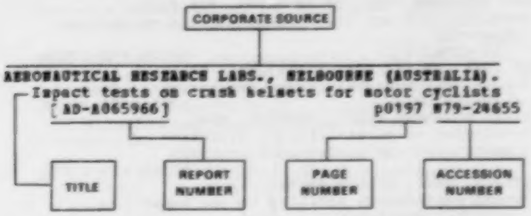
ZYKOV, P. M.
Ultrasonic doppler directional blood flow velocity meter
[RAE-LIB-TRANS-1918] p0279 N79-30920

CORPORATE SOURCE INDEX

AEROSPACE MEDICINE AND BIOLOGY / *a continuing bibliography* JANUARY 1980

1979 Cumulative Index

Typical Corporate Source Index Listing


CORPORATE SOURCE
AERONAUTICAL RESEARCH LABS., MELBOURNE (AUSTRALIA).
Impact tests on crash helmets for motor cyclists
[AD-A065966] p0197 N79-24655
TITLE
REPORT NUMBER
PAGE NUMBER
ACCESSION NUMBER

Listings in this index are arranged alphabetically by corporate source. The title of the document provides the user with a brief description of the subject matter. The report number helps to indicate the type of document listed (e.g., NASA report, translation, NASA contractor report). The page and accession numbers are located beneath and to the right of the title, e.g. p 0197 N79-24655. Under any corporate source the accession numbers are arranged in sequence with the *IAA* accession numbers appearing first.

A

ACADEMISCH ZIEKENHUIS ST. RAPHAEL, LEUVEN (BELGIUM).

Follow-up and transversal study of vital capacity and FEV sub values among personnel of the Belgian Army forces p0028 N79-11796

ACADEMY OF SCIENCES (USSR), BOROK.

Proceedings of the first and second USA-USSR Symposia on the Effects of Pollutants upon aquatic ecosystems. Volume 1: USA Symposium. Volume 2: USSR Symposium [PB-287219/0] p0112 N79-16546

ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT, NEUILLY-SUR-SEINE (FRANCE).

Optimisation of pilot capability and avionic system design [AGARD-AR-118] p0113 N79-16560

Optimisation of pilot capability and avionic system design, introduction p0113 N79-16561

Human capabilities p0114 N79-16562

Systems design p0114 N79-16563

Pilot workload qualification for avionics design p0114 N79-16564

Training implications p0114 N79-16565

The design of air combat aircraft p0114 N79-16566

Ground attack p0114 N79-16567

The Helicopter p0114 N79-16568

Survival and protection of aircrew in the event of accidental immersion in cold water [AGARD-AG-211(ENG)] p0196 N79-23661

Models and Analogues for the Evaluation of Human Biodynamic Response, Performance and Protection [AGARD-CP-253] p0284 N79-31901

Contributions of psychophysiological techniques to aircraft design and other operational problems [AGARD-AG-244] p0290 N79-31941

Human Factors Aspects of Aircraft Accidents and Incidents [AGARD-CP-254] p0290 N79-31942

ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT, PARIS (FRANCE).

Prospective Medicine Opportunities in Aerospace Medicine [AGARD-CP-231] p0026 N79-11692

Specific Findings in Cardiology and Pulmonary Function with Special Emphasis on Assessment criteria for Flying [AGARD-CP-232] p0028 N79-11705

Operational Helicopter Aviation Medicine [AGARD-CP-255] p0148 N79-19605

Evaluation of aircrew fatigue during operational helicopter flight mission p0149 N79-19622

Technical evaluation report on the Aerospace Medical Panel London Specialists' Meeting, Fall 1977 [AGARD-AR-131] p0171 N79-20729

AEROJET LIQUID ROCKET CO., SACRAMENTO, CALIF.

Development of an electrical energy converter for driving left heart assist blood pumps [PB-293510/4] p0241 N79-26780

AERONAUTICAL RESEARCH LABS., MELBOURNE (AUSTRALIA).

Impact tests on crash helmets for motor cyclists [AD-A065966] p0197 N79-24655

Cold water survival suits for aircrew [ARL/SYS-NOTE-56] p0261 N79-28882

AERONAUTICAL SYSTEMS DIV., WRIGHT-PATTERSON AFB, OHIO.

Study of crew task loading on the C-141A aircraft [AD-A057346] p0034 N79-11746

AEROSPACE MEDICAL DIV. AEROSPACE MEDICAL RESEARCH LABS. (6570TH), WRIGHT-PATTERSON AFB, OHIO.

Evaluation of cardiac risk and subject response to ameliorative efforts p0031 N79-11723

AEROSPACE MEDICAL RESEARCH LABS., WRIGHT-PATTERSON AFB, OHIO.

Reach capability of men and women: A three-dimensional analysis [AD-A060312] p0081 N79-14779

The behavior of observers in detecting unbriefed targets at different aircraft speeds with side-looking radar [AD-A060908] p0085 N79-15586

AAA gunnermodel based on observer theory p0087 N79-15594

Two dimensional eye tracking: Sampling rate of forcing function p0090 N79-15617

Head tracking at large angles from the straight ahead position p0090 N79-15618

A method motion simulator design based on modeling characteristics of the human operator p0091 N79-15623

A relationship between eye movement patterns and performance in a precognitive tracking task p0116 N79-17490

Use of the optimal control model in the design of motion cue experiments p0118 N79-17510

Effects of propellant hydrazines on red blood cells: Methemoglobin and Heinz body formation [AD-A064133] p0189 N79-22755

A subhuman primate restraint system [AD-A069607] p0279 N79-30915

Prediction of whole-body response to impact forces in flight environments p0284 N79-31902

Correlation of mechanism of extremity injury and aerodynamic factors in ejections from F-4 aircraft p0284 N79-31904

Application of biodynamic models to the analysis of F-16 canopy birdstrike p0285 N79-31911

The validation of biodynamic models p0286 N79-31914

Unsteady-state response of the vascular system to transient and sustained aerospace acceleration profiles
p0286 N79-31917
The application of control theory to the investigation of roll motion effects on human operator performance
p0288 N79-31931
Combined discrete network: Continuous control modeling of man-machine systems
[AD-A071574] p0310 N79-32842

AIR FORCE FLIGHT DYNAMICS LAB., WRIGHT-PATTERSON AFB, OHIO.
Flight experience with manually controlled unconventional aircraft motions
p0088 N79-15602
A head-up display for mid-air drone recovery
p0090 N79-15615
An approach to the multi-axis problem in manual control
p0115 N79-17482
An adaptive controller which displays human operator limitations for a fighter type aircraft
[AD-A066193] p0223 N79-25763

AIR FORCE HUMAN RESOURCES LAB., BROOKS AFB, TEX.
Compensation for transport delays produced by computer image generation systems
[AD-A056720] p0019 N79-10738
Methodology to assess psychological stress and its impact in the air combat environment
[AD-A053474] p0057 N79-13707
Survey of human operator modeling techniques for measurement applications
[AD-A058327] p0058 N79-13713
Subjective motion discrimination in the simulator for air-to-air combat
[AD-A059742] p0079 N79-14770
Air-to-air combat skills: Contribution of platform motion to inertial training
[AD-A062738] p0173 N79-20743
Air Force female pilots program: Initial performance and attitudes
[AD-A065641] p0241 N79-26783
Advanced training features: Bridging the gap between in-flight and simulator-based models of flying training
[AD-A068142] p0289 N79-31934
Pilot performance in simulated aerial refueling as a function of tanker model complexity and visual display field-of-view
[AD-A070231] p0308 N79-32832
Undergraduate pilot training: Visual discrimination pretraining for land task
[AD-A068141] p0317 N79-33844

AIR FORCE INSPECTION AND SAFETY CENTER, NORTON AFB, CALIF.
Three decades of USAF efforts to reduce human error accidents, 1947-1977
p0290 N79-31943

AIR FORCE INST. OF TECH., WRIGHT-PATTERSON AFB, OHIO.
Aircrew inflight physiological data acquisition system 2
[AD-A055638] p0055 N79-13690
The impact of a Learn-Forget-Learn (LFL) curve and learning curves on a system effectiveness model
[AD-A061622] p0124 N79-17550
Estimation of aircraft target motion using pattern recognition orientation measurements
p0177 N79-21764
An adaptive controller which displays human operator limitations for a fighter type aircraft
p0177 N79-21767
Contrast sensitivity of the human visual system at one luminance level while adapted to a stimulus at another luminance level
[AD-A064370] p0190 N79-22759
Aircrew modularized inflight data acquisition system
[AD-A064725] p0190 N79-22766
Application of learning curves of aircraft produced at more than one location to the F-16 lightweight fighter
[AD-A065881] p0196 N79-23664

AIR FORCE MEDICAL CENTER, WRIGHT-PATTERSON AFB, OHIO.
Prospective medicine opportunities in aerospace medicine
p0171 N79-20730

AIRESEARCH MFG. CO., PHOENIX, ARIZ.
SAINT: A combined simulation language for modeling man-machine systems
p0317 N79-33842

ALABAMA A & M UNIV., NORMAL.
Preparation of guinea pig macrophage for electrophoretic experiments in space
[NASA-CR-158777] p0243 N79-27814

ALABAMA UNIV. IN BIRMINGHAM.
The effect of 17alpha-ethynylestradiol on the radiation sensitivity of mice
p0141 N79-18557

ALBERT EINSTEIN COLL. OF MEDICINE, NEW YORK.
Morphological and biochemical effects of oxygen toxicity
[AD-A056778] p0018 N79-10734

ALLEN CORP. OF AMERICA, ALEXANDRIA, VA.
F-4J/N instructional system development: Phase 1
[AD-A061098] p0156 N79-19684

ANALYTIC SCIENCES CORP., READING, MASS.
Prediction of pilot-aircraft stability boundaries and performance contours
p0118 N79-17507

ANALYTICS, INC., WILLOW GROVE, PA.
Visual performance modeling in the human operator simulator
p0317 N79-33840

ANTHROPOLOGY RESEARCH PROJECT, YELLOW SPRINGS, OHIO.
Guidelines for fit testing and evaluation of USAF personal-protective clothing and equipment
[AD-A065901] p0197 N79-23668
Analysis of body size measurements for US Navy women's clothing and pattern design
[AD-A068600] p0290 N79-31939

APPLIED PSYCHOLOGICAL SERVICES, WAYNE, PA.
A survey of Applied Psychological Services' models of the human operator
p0317 N79-33839

ARGONNE NATIONAL LAB., ILL.
Cell biology basis for the life of an organism in the radiation field
[ANL-TRANS-1152] p0261 N79-29786

ARIZONA STATE UNIV., TEMPE.
Stress and simulation in pilot training
[AD-A066670] p0222 N79-25757

ARIZONA UNIV., TUCSON.
Adaptive supervisory control of remote manipulation
p0046 A79-14987
Developing closed life support systems for large space habitats
[AAS PAPER 78-145] p0099 A79-21260
Portable device for detection of petit mal epilepsy
p0254 A79-46226
Stress management: A comparison of educational, aerobic and autosuggestive approaches
p0260 N79-28875

ARKANSAS UNIV. FOR MEDICAL SCIENCES, LITTLE ROCK.
Molecular absorption of non-ionizing radiation in biological systems
p0082 N79-15553

ARMY AEROMEDICAL RESEARCH LAB., FORT RUCKER, ALA.
Left Anterior Hemiblock (LAH): Diagnosis and aeromedical risk
p0029 N79-11715
An evaluation of perceptual-motor workload during a helicopter hover maneuver
[AD-A058016] p0052 N79-12709
The effect of Nap-of-the-Earth (NOE) helicopter flying on pilot blood and urine biochemicals
[AD-A055204] p0055 N79-13693
The interaction of carbon monoxide and altitude on aviator performance: Pathophysiology of exposure to carbon monoxide
[AD-A055212] p0056 N79-13694
Contrast sensitivity of the human eye to various display phosphor types
[AD-A058383] p0056 N79-13695
An evaluation of the effects of a stability augmentation system upon aviator performance/workload during a MEDEVAC high hover operation
p0148 N79-19612
In-flight toxicology of fixed and rotary wing aircraft crew stations
p0149 N79-19619
Changes in the rotary wing aviator's ability to perform an uncommon low altitude rearward

hover maneuver as a function of extended flight requirements and aviator fatigue
p0150 N79-19623

Visual performance/workload of helicopter pilots during instrument flight
p0152 N79-19640

The effective acoustic environment of helicopter crewmen
p0152 N79-19645

Operational consideration of AN/PVS-5 night vision goggles for helicopter night flight
p0152 N79-19649

Training requirements for helicopter operation with night vision goggles
p0153 N79-19650

Head aiming/tracking accuracy in a helicopter environment
p0153 N79-19651

Aviator visual performance: A comparative study of a helicopter simulator and the UH-1 helicopter
p0153 N79-19652

US Army aviation fatigue-related accidents, 1971-1977
[AD-A062486] p0171 N79-20725

A porcine bioassay study of the physiological effects of fiber and dye degradation products (FDP) on burn wound healing
[AD-A066990] N79-25748

Evaluation of four thermally protective fabrics using the USAARL bioassay method
[AD-A067351] p0223 N79-25762

Mathematical models of skin burns induced by simulated postcrash fires as aids in thermal protective clothing design and selection
[AD-A066946] p0223 N79-25766

Correlation of head injury with mechanical forces based on helmet damage duplication
p0287 N79-31920

The use of mathematical modeling in crashworthy helicopter seating systems
p0287 N79-31923

ARMY AEROMEDICAL RESEARCH UNIT, FORT RUCKER, ALA.

Oculomotor performance of aviators during an autorotation maneuver in a helicopter simulator
p0151 N79-19638

ARMY AVIATION RESEARCH AND DEVELOPMENT COMMAND, FORT EUSTIS, VA.

The use of mathematical modeling in crashworthy helicopter seating systems
p0287 N79-31923

ARMY COLD REGIONS TEST CENTER, FORT GREELY, ARK.

Man and materiel in the cold regions, part 1
[AD-A063752] p0178 N79-21771

ARMY COMMUNICATIONS RESEARCH AND DEVELOPMENT COMMAND, FORT MONMOUTH, N. J.

Modeling and analysis of man-machine interface information
[AD-A063515] p0178 N79-21772

ARMY CONSTRUCTION ENGINEERING RESEARCH LAB., CHAMPAIGN, ILL.

Establishing habitability factors for the design of office environments
[AD-A056463] p0020 N79-10744

ARMY ELECTRONICS COMMAND, FORT BELVOIR, VA.

A behavioral model of target acquisition in realistic terrain
[AD-A056760] p0019 N79-10742

ARMY ELECTRONICS COMMAND, FORT MONMOUTH, N. J.

The effect of active area on the legibility of dot matrix displays
[AD-A058014] p0052 N79-12708

Radar observation of insects: Mosquitoes
p0148 N79-19600

ARMY ENVIRONMENTAL HYGIENE AGENCY, ABERDEEN PROVING GROUND, MD.

Nonionizing radiation protection special study: Infrared radiation hazard evaluation of the rotary forge, Watervliet Arsenal, Watervliet, New York, March - April 1978
[AD-A055643] p0055 N79-13691

ARMY MEDICAL RESEARCH INST. OF INFECTIOUS DISEASES, FREDERICK, MD.

The effect of ultrasound on botulin toxin
[AD-A059544] p0142 N79-18566

ARMY NATICK RESEARCH AND DEVELOPMENT COMMAND, MASS.

United States Army anthrometry: 1946-1977
[AD-A068095] p0289 N79-31938

ARMY RESEARCH INST. FOR THE BEHAVIORAL AND SOCIAL SCIENCES, ALEXANDRIA, VA.

A methodology for conducting human factors evaluations of vehicles in operational field tests
[AD-A061808] p0157 N79-19691

ARMY RESEARCH INST. OF ENVIRONMENTAL MEDICINE, NATICK, MASS.

A comparison of the physiological responses in young men and women to heat and cold stress
[AD-A061024] p0155 N79-19679

Instrumentation and techniques for the measurement of muscular strength and endurance in the human body
[AD-A061023] p0155 N79-19681

Evidence for increased intrathoracic fluid volume in man at high altitude
[AD-A065333] p0220 N79-25743

Physiological effects of a military training program on males and females
[AD-A062936] p0220 N79-25744

The effects of dehydration on peripheral cooling
[AD-A065332] p0220 N79-25745

Composition of cerebral fluids in goats adapted to high altitude
[AD-A070142] p0310 N79-33788

Optimal methods for physiologic research on clothing
[AD-A071855] p0319 N79-33852

ATLANTIC RICHFIELD CO., HARVEY, ILL.

Energy supply and demand in California
p0242 N79-27603

B

BALTIMORE CITY HOSPITALS, MD.

Senescent changes in the ribosomes of animal cells in vivo and in vitro
p0134 A79-27226

BATTELLE PACIFIC NORTHWEST LABS., RICHLAND, WASH.

The use of Na-22 as a tracer for long-term bone mineral turnover studies.
p0265 A79-47327

Determination of muscle mass changes in legs from K-40 measurements
p0274 A79-49997

Pacific Northwest Laboratory report for 1977 to the DOE assistant secretary for environment. Part 2: Ecological sciences
[PNL-2500-PT-2] p0053 N79-13677

Kinetic measurements of bone mineral metabolism: The use of Na-22 as a tracer for long-term bone mineral turnover studies
[NASA-CR-151868] p0111 N79-16544

Review of unfolding methods used in the US and their standardization for dosimetry
[BNWL-SA-6503] p0307 N79-32828

BELGIAN AIR FORCE, BRUSSELS.

Analysis of the intervention of the human factor as a principal cause or influence in accidents of Mirage aircraft in the Belgian Air Force
p0290 N79-31945

BOEING CO., HOUSTON, TEX.

Test evaluation of space station ECLSS maintenance concepts
[ASME PAPER 78-ENAS-43] p0009 A79-12589

BOEING CO., SEATTLE, WASH.

The effects of pilot age, lighting, and head-down time on visual accomodation
[AD-A064912] N79-25747

BOLT, BERANEK, AND NEWMAN, INC., CAMBRIDGE, MASS.

A model for the pilot's use of roll-axis motion cues in steady-state tracking tasks
[AD-A059504] p0079 N79-14772

Closed loop models for analyzing the effects of simulator characteristics
p0087 N79-15598

Evaluation of display and control concepts for a terminal configured vehicle in final approach in a windshear environment
p0090 N79-15616

Use of the tilt cue in a simulated heading tracking task
p0091 N79-15621

Combined monitoring, decision and control model for the human operator in a command and control desk
p0092 N79-15631

The effects of deviate internal representations in the optimal model of the human operator
p0114 N79-17477
Use of the optimal control model in the design of motion cue experiments
p0118 N79-17510
A model for the pilot's use of motion cues in roll-axis tracking tasks
p0118 N79-17512
Motion cue models for pilot-vehicle analysis
[AD-A061477] p0125 N79-17561
A decision, monitoring and control model of the human operator applied to an RPV control problem
[AD-A069880] p0282 N79-30939
Development of human performance models for man-machine system simulation
[AD-A069879] p0282 N79-30940
The application of control theory to the investigation of roll motion effects on human operator performance
p0288 N79-31931
A brief overview of the theory and application of the optimal control model of the human operator
p0317 N79-33841

BOSTON UNIV., MASS.
A biogeochemical study of the Abu Dhabi algal mats - A simplified ecosystem
p0132 A79-26373
An ultraviolet light induced bacteriophage in Beneckea gazogenes
p0254 A79-46463
Air traffic controller health change study
[FAA-AM-78-39] p0122 N79-17534

BOWLING GREEN STATE UNIV., OHIO.
Effects of filtering electroencephalic signals on auditory evoked brain stem responses
p0176 N79-21758

BRANDEIS UNIV., WALTHAM, MASS.
Optokinetic motion sickness - Attenuation of visually-induced apparent self-rotation by passive head movements
p0135 A79-27558
Changes in apparent body orientation and sensory localization induced by vibration of postural muscles - Vibratory myesthetic illusions
p0163 A79-30653
Rotation at 30 RPM about the Z axis after 6 hours in the 10-deg head-down position - Effect on susceptibility to motion sickness
p0165 A79-30662

BRIGHAM YOUNG UNIV., PROVO, UTAH.
Cardiac adaptation to endurance training: Determined by echocardiography and electrocardiography
p0194 N79-23648

BRISTOL UNIV. (ENGLAND).
A biogeochemical study of the Abu Dhabi algal mats - A simplified ecosystem
p0132 A79-26373

BRITISH AEROSPACE DYNAMICS GROUP, BRISTOL (ENGLAND).
Visual effects of helicopter maneuvre on weapon aiming performance
p0150 N79-19626

BRITISH LIBRARY LENDING DIV., BOSTON SPA (ENGLAND).
The lymph nodes and lymph vessels of the white rat
[BLL-RTS-11309] p0141 N79-18554
Aphotometer for determining the biomass of microorgan from the ATP content
[BLL-RTS-11456] p0141 N79-18555
The utilisation of organic compounds by purple bacteria in the presence of light
[BLL-RTS-11213] p0141 N79-18556
Clozapine metabolism in humans
[BLL-RTS-10902] p0142 N79-18567
Crawford and Lavoisier on the method of development and place of formation of body heat
[BLL-RTS-11228] p0142 N79-18568
Risks from various products used in paint spraying
[BLL-RTS-11499] p0142 N79-18569
Allergy to lanolin
[BLL-RTS-11185] p0142 N79-18570
Official method for determining ocular irritation
[BLL-RTS-11221] p0142 N79-18571
Information on the comparative physiology of digestive enzymes
[BLL-RTS-11203] p0142 N79-18572
The dangerous relation between sunburn and skin cancer
[BLL-RTS-11310] p0142 N79-18573
Solar radiation, light protection and tanning of human skin
[BLL-RTS-11580] p0142 N79-18574
Method and arrangement for the preparation of solid foodstuffs for long-term storage
[BLL-RTS-11445] p0145 N79-18590
Physical and mental working environment in a terminal based computer system
[BLL-RTS-11634] p0197 N79-23665
Uncommon hypersensitivity to contacting cold water and cold air with propagated reflex-like erythema development
[BLL-RTS-11644] p0279 N79-30917
Possibility of improving assessment of cardio-pulmonary function by submaximal exercise on a bicycle ergometer
[BLL-RTS-11657] p0279 N79-30918

BUNDESWEHRSANITAETSZENTRUM, HAMBURG (WEST GERMANY).
Standardized examination methods in ergometry
p0029 N79-11710

BUREAU OF RADIOLOGICAL HEALTH, ROCKVILLE, MD.
Electromagnetic fields in biological media. Part 1: Dosimetry - a primer on bioelectromagnetics
[PB-285793/6] p0078 N79-14759
The Physical Basis of Electromagnetic Interactions with Biological Systems
[HEW-PUB-FDA-78-8055] p0081 N79-15551
Some considerations of hazards in the use of lasers for artistic displays
[PB-294513/7] p0281 N79-30931

C

CAE ELECTRONICS LTD., MONTREAL (QUEBEC).
Manned simulations of the SRMS in SIMFAC
p0089 N79-15611
Multi-axis hand controller for the shuttle remote manipulator system
p0117 N79-17503

CALIFORNIA INST. OF TECH., PASADENA.
Stereo 3-D perception for a robot
p0019 N79-10740
A molecular description of oxygen binding to hemoglobin
p0194 N79-23646
Methods for localization of electrical sources in the human brain and applications to the visual system
p0314 N79-33815

CALIFORNIA STATE AIR RESOURCES BOARD, SACRAMENTO.
Human health damages from mobile source air pollution: A delphi method, volume 1
[PB-288319/7] p0145 N79-18585
Human health damages from mobile source air pollution: Additional Delphi data analysis, volume 2
[PB-288320/5] p0145 N79-18586

CALIFORNIA STATE UNIV., FULLERTON.
Temperature-dependent morphological changes in membranes of Bacillus stearothermophilus
p0005 A79-12475

CALIFORNIA STATE UNIV., HAYWARD.
Limb blood flow - Rest and heavy exercise in sitting and supine positions in man
p0235 A79-43208

CALIFORNIA UNIV., BERKELEY.
Organic geochemical studies on kerogen precursors in recently deposited algal mats and oozes
p0001 A79-10419
The augmentation algorithm and molecular phylogenetic trees
p0070 A79-20267
Beta-galactosidase and selective neutrality
p0132 A79-26169
Continuous metabolic and cardiovascular measurements on a monkey subject during a simulated 6-day Spacelab mission
p0229 A79-41713
An extension of the quickened display for manual control
p0086 N79-15591
Biological effects of laser irradiation on nerve cells
p0247 N79-27840

CALIFORNIA UNIV., BERKELEY. LAWRENCE BERKELEY LAB.
Development and application of resistive pulse

spectroscopy: Studies on the size, form and deformability of red blood cells
[LBL-8640] p0280 N79-30924
Effects on populations of exposure to low levels of ionizing radiation: Implications for nuclear energy and medical radiation
[LBL-9084] p0316 N79-33833
Health effects of low-level ionizing radiation
[LBL-9018] p0316 N79-33834

CALIFORNIA UNIV., DAVIS.
Studies on the erythron and the ferrokinetic responses in beagles adapted to hypergravity
p0010 A79-12869
Response of the rat erythrocyte to ozone exposure
p0067 A79-18963
RBC-/Cr-51/ half-life and albumin turnover in growing Beagle dogs during chronic radial acceleration
p0135 A79-27553
Thermoregulation in unrestrained rats during and after exposure to 1.5-4 G
p0227 A79-41185
Influence of the ambient acceleration field upon acute acceleration tolerance in chickens
p0230 A79-41715
Nonshivering thermogenesis in normal and dystrophic muscle
p0054 N79-13680
Enhancing biological production of ammonia from atmospheric nitrogen and soil nitrate
[PB-286515/2] p0083 N79-15571

CALIFORNIA UNIV., IRVINE.
Algal growth under multiple nutrient limiting conditions
p0013 N79-10692
Regulation of the carbon dioxide tension in arterial blood during inhalation of carbon dioxide in birds and mammals
p0169 N79-20713
Acute toxicity of a number of chemicals of interest to the Air Force
[AD-A067313] p0220 N79-25742
Toxicity of high density jet fuel components
[AD-A068596] p0259 N79-28870
Direct exposure of monolayers of mammalian cells to airborne pollutants in a unique culture system
[AD-A069822] p0283 N79-31897

CALIFORNIA UNIV., LA JOLLA.
Distribution of pulmonary ventilation and perfusion during short periods of weightlessness
p0068 A79-18967
Radiographic comparison of human lung shape during normal gravity and weightlessness
p0305 A79-54269

CALIFORNIA UNIV., LIVERMORE. LAWRENCE LIVERMORE LAB.
New developments in ultrasonic imaging of the chest and other body organs
[UCRL-80340-REV-1] p0018 N79-10735
Quantitative review of human susceptibility to magnetic fields
[UCID-17773] p0026 N79-11691

CALIFORNIA UNIV., LOS ANGELES.
Effect of ultrasonic irradiation on mammalian cells and chromosomes in vitro
p0134 A79-27239
Polyglutaraldehyde - A new reagent for coupling proteins to microspheres and for labeling cell-surface receptors
p0274 A79-50230
Possible mechanisms of weak electromagnetic field coupling in brain tissue
p0082 N79-15555
A correlation of the effects of cationic uncouplers on intact cardiac muscle and on calcium bound to isolated cardiac muscle plasma membranes
p0111 N79-16540

CALIFORNIA UNIV., RIVERSIDE.
The impact of sulfur dioxide on vegetation: A sulfur dioxide-ozone response model
[PB-283604/7] p0049 N79-12686
The effects of ozone on human erythrocytes and phospholipid vesicles
p0049 N79-12687
Short-range movement of major agricultural pests
p0148 N79-19594

CALIFORNIA UNIV., SAN FRANCISCO.
Functional connections of the central auditory nervous system: Thalamocortical corticothalamic and corticotectal connections of the AI, AII and AAF auditory cortical fields
p0246 N79-27839

CALIFORNIA UNIV., SANTA BARBARA.
Modeling of visual-vestibular interaction and the fast components of nystagmus
p0050 N79-12692

CALIFORNIA UNIV., SANTA CRUZ.
Effects of sleep at altered ambient temperatures on electrophysiological sleep and thermoregulatory mechanisms in human subjects and in the ground squirrel (Citellus lateralis)
p0216 N79-25709

CALIFORNIA UNIV. AT BERKELEY.
Molecular phylogenetic trees - On the validity of the Goodman-Moore augmentation algorithm
p0253 A79-45645

CALIFORNIA UNIV. AT SAN FRANCISCO.
Histological studies on tibial bone of rats in the 1975 COSMOS-782 flight. Part 1: Endochondral osteogenesis; medullary bone turnover
p0022 N79-11665
Histological studies on tibial bone of rats in the 1975 COSMOS-782 flight. Part 2: Microradiographic study of cortical bone
p0022 N79-11666
Mineralization in teeth and jaws, as judged radiographically, in rats of the COSMOS-782 experiment
p0022 N79-11667

CALSPAN CORP., BUFFALO, N. Y.
Retention and transfer of training on a procedural task interaction of training strategy and cognitive style
[AD-A058966] p0052 N79-12704
Performance evaluation of test dummies with flesh parts produced with substitute foaming compounds
[PB-289951/6] p0179 N79-21776

CANADA INST. FOR SCIENTIFIC AND TECHNICAL INFORMATION, OTTAWA (ONTARIO).
Gel-electrophoresis studies for the taxonomic characterization of soil microorganisms
[NRC/CNR-TT-1924] p0120 N79-17521

CANYON RESEARCH GROUP, INC., WESTLAKE VILLAGE, CALIF.
Development of an objective grading system along with procedures and aids for its effective implementation in flight
[AD-A071106] p0318 N79-33846

CARNEGIE-MELLON UNIV., PITTSBURGH, PA.
Calcium regulation in smooth muscle: Isolation and characterization of the myosin light chain kinase
p0024 N79-11680
Application of pattern recognition to ultrasonic tissue characterization
p0194 N79-23647

CASE WESTERN RESERVE UNIV., CLEVELAND, OHIO.
Single frequency RF powered ECG telemetry system
p0131 A79-26074
Synchronous brain evoked potential correlates of directed attention in humans
p0110 N79-16537
A discrete parameter model of the head and neck with neuromuscular feedback
p0211 N79-24627

CATHOLIC UNIV. OF AMERICA, WASHINGTON, D. C.
Two approaches to category representation in aural classification
[AD-A066705] N79-25754
Predicting individual listener confusions in the classification of complex, steady-state sounds
[AD-A066704] p0222 N79-25755
Classification of amplitude-modulated noise patterns with extended practice
[AD-A066703] p0222 N79-25756
A comparison of verbal and visual imagery learning stategies: Their importance for instrumental technology
[AD-A069983] p0308 N79-32833

CENTER FOR BLOOD RESEARCH, BOSTON, MASS.
Temperature effects on shape and function of human granulocytes
[AD-A063750] p0189 N79-22757

CENTRAAL INSTITUUT VOOR VOEDINGSONDERZOEK TNO, ZEIST (NETHERLANDS).
Physiological effects of a high soybean protein

diet in man
p0240 N79-26777

CENTRE D'ESSAIS EN VOL, BRETIGNY-SUR-ORGE (FRANCE).
Detection and supervision of obstructed respiratory flow in fliers. Advantages of debit-volume graphs
p0028 N79-11707
Tentative estimation of the injuries likely to occur during the crash of a SA 341 Gazelle helicopter, from a study on mannequins
p0287 N79-31925

CENTRE D'ETUDES ET DE RECHERCHES, TOULON (FRANCE).
A description of the recent neuropsychological selection of pilots for land forces light aircraft
p0151 N79-19633

CENTRE DE MEDECINE AERONAUTIQUE, BRUSSELS (BELGIUM).
Follow-up and transversal study of vital capacity and FEV sub values among personnel of the Belgian Army forces
p0028 N79-11706

CENTRE DE RECHERCHES DE MEDECINE AERONAUTIQUE, PARIS (FRANCE).
Providing an eye separator on a color cathode tube
p0152 N79-19639

CENTRE FOR OVERSEAS PEST RESEARCH, LONDON (ENGLAND).
Possible impact of radar on pest management operations
p0148 N79-19599

CENTRE PRINCIPAL D'EXPERTISES MEDICALES DU PERSONNEL NAVIGANT, PARIS (FRANCE).
Difficulties posed by left axis deviation in the evaluation of fliers, and their relations to the concept of left anterior hemiblock
p0029 N79-11714
Measuring systolic time intervals at rest and under stress by external methods. Advantages in the evaluation of fliers
p0030 N79-11717

CENTRO DI STUDI E RICERCHE DI MEDICINA AERONAUTICA E SPAZIALE, ROME (ITALY).
Normal and pathological cardiovascular findings in applicants to the Air Force service
p0031 N79-11722
The information in aircraft accidents investigation
p0291 N79-31947

CHEMICAL LAB. RVO-TNO, RIJSWIJK (NETHERLANDS).
Binding of biologically active agents to plasma proteins
[CL-1977-22] p0261 N79-29787

CINCINNATI UNIV., OHIO.
Development and evaluation of instrument systems for noninvasive detection, characterization and quantification of atherosclerotic lesions
[PB-286851/1] p0085 N79-15582
Multibody dynamics including translation between the bodies, with application to head-neck systems
[AD-A062114] p0174 N79-20747
Knee flail design limits: Background, experimentation and design criteria
[AD-A062384] p0220 N79-25746

CITY UNIV., LONDON (ENGLAND).
The human micro-environment
p0248 N79-27851

CIVIL AEROMEDICAL INST., OKLAHOMA CITY, OKLA.
The morbidity experience of air traffic control personnel, 1967-1977
[AD-A056053] p0051 N79-12696
Reactions of methamidophos with mammalian cholinesterases
[AD-A058683/4] p0051 N79-12698
Visual performance assessment through clear and sunscreen-treated windows
[AD-A059750] p0080 N79-14775
Assessment of factors possibly contributing to the susceptibility of sickle trait erythrocytes to mild hypoxia. Volume 1: Design considerations and research protocol
[AD-A059412] p0084 N79-15577
A method to evaluate performance reliability of individual subjects in laboratory research applied to work settings
[FAA-AM-78-37] p0123 N79-17547
The measurement and scaling of workload in complex performance
[FAA-AM-78-34] p0125 N79-17558
Stress in air traffic controllers: A restudy of 32 controllers 5 to 9 years later
[FAA-AM-78-40] p0144 N79-18581
Characteristics of medically disqualified airman applicants in calendar years 1975 and 1976
[FAA-AM-78-25] p0144 N79-18582
Time-sharing ability in complex performance: An expanded replication
[FAA-AM-78-33] p0145 N79-18591
A comparison of three models for determining test fairness
[AD-A066586] N79-25751
The development of the ATC selection battery: A new procedure to make maximum use of available information when correcting correlations for restriction in range due to selection
[FAA-AM-78-36] N79-25752
Index to FAA Office of Aviation Medicine reports: 1961 through 1978
[AD-A067983] p0240 N79-26773
The optical properties of smoke-protective devices
[FAA-AM-78-41] p0242 N79-26784
A lower body negative pressure box for +Gz simulation in the upright seated position
[AD-A069326] p0259 N79-28868
The selection of air traffic control specialists: Two studies demonstrating methods to insure an accurate validity coefficient for selection devices
[AD-A068581] p0281 N79-30932
A comparison of the job attitudes and interest patterns of air traffic and airway facility personnel
[AD-A067826] p0281 N79-30933
Visual search performance during simulated radar observation with and without a sweepline
[AD-A068020] p0281 N79-30938
Effects of propranolol on Time of Useful Function (TUF) in rats
[AD-A068535/4] p0283 N79-31896
Oxygen equipment and rapid decompression studies
[AD-A070285] p0289 N79-31937
Effects of congener and noncongener alcoholic beverages on a clinical ataxia test battery
[AD-A069375] p0314 N79-33819
Laboratory performance during acute intoxication and hangover
[AD-A069373] p0314 N79-33820
Development of electrophysiological indices of neurological toxicity for organophosphate pesticides and depressant drugs
[AD-A070299] p0314 N79-33821

CIVIL AVIATION AUTHORITY, LONDON (ENGLAND).
The impact of coronary vascular risk factors on professional aircrew license loss in the United Kingdom
p0031 N79-11724
Cardiovascular fitness of pilots of transport aircraft
p0031 N79-11726

CIVIL SERVICE COMMISSION, WASHINGTON, D.C.
Some variations on derivations by Primoff and their extensions
[PB-287298/4] p0112 N79-16548

CLARKSON COLL. OF TECHNOLOGY, POTSDAM, N.Y.
Graphic display of human motion
[AD-A064344] p0190 N79-22763

COAST GUARD, ALAMEDA, CALIF.
Observation of night shipboard helicopter operations from a 210 foot US Coast Guard cutter
p0151 N79-19637

COLORADO STATE UNIV., FORT COLLINS.
Squalenes, phytanes and other isoprenoids as major neutral lipids of methanogenic and thermoacidophilic 'archaebacteria'
p0232 A79-42274
Response of crown gall tissue to the space environment: Residual carbohydrates in supporting tissue
p0020 N79-11653
Responses of crown gall tissue to the space environment: Tumor development and anatomy
p0020 N79-11654
Responses of crown gall tissue to the space environment: Glutamine synthetase activity
p0020 N79-11655
Responses to crown gall tissue to the space environment: Isozyme patterns
p0020 N79-11656

Effects of lead on subcellular components in bacteria
p0142 N79-18565

COLORADO UNIV., DENVER.
Noninvasive assessment of pulmonary hypertension
[PB-285121/0] p0057 N79-13701

COLUMBIA UNIV., NEW YORK.
Applications of two-parameter decision theories in psychology
[AD-A059010] p0052 N79-12705

COMMITTEE ON GOVERNMENT OPERATIONS (U. S. HOUSE).
Radiation protection
[GPO-35-583] p0283 N79-31899

COMMITTEE ON SCIENCE AND TECHNOLOGY (U. S. HOUSE).
Extraterrestrial intelligence research
[GPO-35-355] p0094 N79-15645

COMPUTER SCIENCES CORP., MOUNTAIN VIEW, CALIF.
The effect of a visual/motion display mismatch in a single axis compensatory tracking task
p0118 N79-17511

CONNECTICUT UNIV., STORRS.
Effects of uncertainty on manual tracking performance
p0086 N79-15592
Modeling the effects of high-G stress on pilots in a tracking task
p0087 N79-15593
A comparison of motor submodels in the optimal control model
p0087 N79-15597

CORNELL UNIV., ITHACA, N. Y.
Exobiology and the origin of life
[NASA-CR-157988] p0081 N79-14782

CREW SYSTEMS CONSULTANTS, YELLOW SPRINGS, OHIO.
A head-up display for mid-air drone recovery
p0090 N79-15615

D

DAYTON UNIV. RESEARCH INST., OHIO.
Editing procedure for anthropometric survey data
[AD-A060393] p0093 N79-15639
A real-world assessment of noise exposure
[AD-A061692] p0155 N79-19680
Photometric methods for the analysis of human kinematic responses to impact environments
[AD-A062006] p0157 N79-19690
Procedures used to generate input data sets for the articulated total body model from anthropometric data
p0284 N79-31903

DEFENCE AND CIVIL INST. OF ENVIRONMENTAL MEDICINE, DOWNSVIEW (ONTARIO).
A human engineering specification for legibility of alphanumeric symbology on video monitor displays
[AD-A064960] p0197 N79-23667
The relationship between aerobic fitness and cardiovascular risk factors in the Canadian forces
[AD-A069865] p0316 N79-33829

DEFENCE RESEARCH ESTABLISHMENT, OTTAWA. (ONTARIO).
Pattern of heat loss from a subject wearing CF temperate-climate combat clothing
[AD-A057746] p0093 N79-15636
Evaluation of British and Canadian conductive rubber heating elements for handwear: Preliminary report
[AD-A052826] p0093 N79-15637

DEFENCE RESEARCH ESTABLISHMENT SUFFIELD, RALSTON (ALBERTA).
A general model for the transfer of vapour through clothed skin from liquid on and in clothing
[AD-A071577] p0319 N79-33853

DENVER RESEARCH INST., COLO.
Hybridization of biomedical circuitry
[NASA-CR-151874] p0111 N79-16543

DENVER UNIV., COLO.
The loudness of tinnitus
p0246 N79-27837

DEPARTMENT OF AGRICULTURE, BELTSVILLE, MD.
Strategic and tactical use of movement information in pest management
p0148 N79-19597

DEPARTMENT OF AGRICULTURE, PHOENIX, ARIZ.
Selected examples of dispersal of arthropods associated with agricultural crop and animal production
p0148 N79-19595

DEPARTMENT OF ENERGY, WASHINGTON, D. C.
Methods for studying and criteria for evaluating the biological effects of electric fields of industrial frequency
[CONF-780541-1] p0307 N79-32827

DESMATICS, INC., STATE COLLEGE, PA.
An examination of statistical impact acceleration injury prediction models based on -Gx accelerator data from subhuman primates
[AD-A057276] p0026 N79-11690
Some Bayesian inference procedures for use in developing an impact acceleration injury prediction model
[AD-A067228] p0220 N79-25741

DEUTSCHE FORSCHUNGS- UND VERSUCHSANSTALT FUER LUFT- UND RAUMFAHRT, BAD GODESBERG (WEST GERMANY).
Compatibility test of oxygen exposures in the range of 2.2 to 2.8 bar absolute
[DLR-FB-78-10] p0280 N79-30925
The influence of hyperbaric environment in combination with workload and confinement on human information processing
[DLR-FB-78-12] p0280 N79-30926
Personality profiles of divers involved in research activities
[DLR-FB-78-11] p0281 N79-30935
Psychological selection of Spacelab payload specialists: The evaluation of German applicants
[DLR-FB-78-29] p0281 N79-30936

DEUTSCHE FORSCHUNGS- UND VERSUCHSANSTALT FUER LUFT- UND RAUMFAHRT, BONN (WEST GERMANY).
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] p0302 A79-53291
The response of a realistic computer model for sitting humans to different types of shocks
p0288 N79-31927

DEUTSCHE FORSCHUNGS- UND VERSUCHSANSTALT FUER LUFT- UND RAUMFAHRT, BRUNSWICK (WEST GERMANY).
A study of pilot/observed interaction in aligning a helicopter with a target
[DLR-FB-79-04] p0283 N79-30945
A method for semi-automatic analysis of eye movements
[DLR-MITT-79-02] p0283 N79-30946
Man, dummy, test vehicle: A comparison of test results for escape systems with the 3 different test methods
p0287 N79-31924
Analyses of midair collisions in German airspace: Methodology and results
p0291 N79-31949

DEUTSCHE FORSCHUNGS- UND VERSUCHSANSTALT FUER LUFT- UND RAUMFAHRT, OBERPFAFFENHOFEN (WEST GERMANY).
The limited range of the human eye for optical aircraft acquisition
p0291 N79-31948

DREXEL UNIV., PHILADELPHIA, PA.
Mechanisms of activated carbon degradation by perspiration
[AD-A059872] p0080 N79-14777

DU PONT DE NEMOURS (E. I.) AND CO., AIKEN, S. C.
Improved airline-type supplied-air plastic suit
[DPSPU-78-30-12] p0282 N79-30943

DUKE UNIV., DURHAM, N. C.
Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798
Noninvasive estimation of bilirubin and hemoglobin oxygen saturation in the skin by reflection spectrophotometry
p0054 N79-13684
Mechanisms of recombination and function of DNA in bacteria
[ORO-3941-33] p0072 N79-14715
Multi-channel stimulation of peripheral nerve trunks
p0176 N79-21753
Electrophysiological determination of retinal sensitivity to color after intense monochromatic light adaptation
[AD-A063852] p0189 N79-22756

DUNLAP AND ASSOCIATES, INC., LA JOLLA, CALIF.
A7 training effectiveness through performance analysis

[AD-A056230] p0031 N79-11728

DYNAMIC SCIENCE, PHOENIX, ARIZ.
Analysis of naval aviation head and neck injuries (1969-1978)
[AD-A057657] p0026 N79-11689
Evaluation of occupant protection devices and restraint systems
[PB-284299/5] p0053 N79-12713
Test and evaluation of head restraints, seat backs, and anchorages in vehicles subjected to rear impact collision
[PB-289779/1] p0178 N79-21773

E

EMORY UNIV., ATLANTA, GA.
A tethering system for direct measurement of cardiovascular function in the caged baboon
p0200 A79-36576

ENVIRONMENT CANADA, SAINTE ANNE (QUEBEC).
Radio tracking of a fin whale /Balaenoptera physalus/
p0061 A79-18008

ENVIRONMENTAL MONITORING AND SUPPORT LAB., CINCINNATI, OHIO.
Methods for measuring the acute toxicity of effluents to aquatic organisms
[PB-289605/8] p0170 N79-20719
Distribution of phytoplankton in Arkanses lakes
[PB-292742/4] p0240 N79-26768

ENVIRONMENTAL MONITORING AND SUPPORT LAB., LAS VEGAS, NEV.
Distribution of phytoplankton in North Carolina lakes
[PB-286387/6] p0084 N79-15573

ENVIRONMENTAL PROTECTION AGENCY, RESEARCH TRIANGLE PARK, N.C.
The effects of H2SO4 on men and H2SO4 and O3 on laboratory animals
p0141 N79-18354

ENVIRONMENTAL RESEARCH LAB., DULUTH, MINN.
Proceedings of the first and second USA-USSR Symposia on the Effects of Pollutants upon aquatic ecosystems. Volume 1: USA Symposium. Volume 2: USSR Symposium
[PB-287219/0] p0112 N79-16546

EQUITABLE ENVIRONMENTAL HEALTH, INC., ROCKVILLE, MD.
Feasibility of an epidemiological study of workers occupationally exposed to high voltage electric fields in the electric power industry
[EPRI-EA-1020] p0316 N79-33832

ESSEX CORP., HUNTSVILLE, ALA.
Man/terminal interaction evaluation of computer operating system command and control service concepts
p0064 A79-18224
Earth orbital teleoperator systems evaluation
[NASA-CR-150912] p0112 N79-16552

EUREKA LABS., INC., SACRAMENTO, CALIF.
Human health damages from mobile source air pollution: Additional Delphi data analysis, volume 2
[PB-288320/5] p0145 N79-18586

EXOTECH RESEARCH AND ANALYSIS, INC., GAITHERSBURG, MD.
Planetary protection guidelines for Outer Planet missions
p0005 A79-12511

F

FEDERAL AVIATION ADMINISTRATION, WASHINGTON, D. C.
Experience with periodic aviation medical examinations
p0026 N79-11696
Psychophysiological effects of aging: Developing a functional age index for pilots. 2: Taxonomy of psychological factors
[FAA-AM-78-16] p0054 N79-13685
Psychophysiological effects of aging: Developing a functional age index for pilots. 3: Measurement of pilot performance
[FAA-AM-78-27] p0123 N79-17546

FEDERAL AVIATION AGENCY, OKLAHOMA CITY, OKLA.
Visual and optical assessment of gas protective face masks
p0152 N79-19642

FLORIDA AGRICULTURAL AND MECHANICAL UNIV., TALLAHASSEE.
Microbial transformation of nucleosides
[NASA-CR-158696] p0197 N79-25704

FLORIDA INST. OF TECH., MELBOURNE.
Photosynthethic carbon reduction by seagrasses exposed to ultraviolet B radiation
[NASA-CR-160144] p0175 N79-21742

FLORIDA INTERNATIONAL UNIV., MIAMI.
Human factors aspects of low light level television and forward looking infrared sensor displays. 1: A feasibility study of scaled subjective complexity of still scenes applied to computer image generation
[AD-A058938] p0058 N79-13715

FLORIDA UNIV., GAINESVILLE.
The design and construction of a miniature dosimeter for the study of the effects of air cavities in radiation therapy
p0176 N79-21757

FOOD AND DRUG ADMINISTRATION, CINCINNATI, OHIO.
Thermal resistance of naturally occurring airborne bacterial spores
p0131 A79-26147
Ecology and thermal inactivation of microbes in and on interplanetary space vehicle components
[NASA-CR-158627] p0197 N79-25705

FOOD AND DRUG ADMINISTRATION, MINNEAPOLIS, MINN.
Thermal resistance of naturally occurring airborne bacterial spores
p0131 A79-26147

FOREST SERVICE, HAMDEN, CONN.
Dispersal of forest insects
p0148 N79-19596

FORSCHUNGSINSTITUT FUER ANTHROPOTECHNIK, BONN (WEST GERMANY).
Influences of joystick spring resistance on the execution of simple and complex positioning movements
p0119 N79-17517

FORSCHUNGSINSTITUT FUER ANTHROPOTECHNIK, MECKENHEIM (WEST GERMANY).
The determination of the operating range of a twin-grip control yoke through biomechanical means
p0089 N79-15609
A control theoretic model of driver steering behavior
p0116 N79-17491
A two level model of human steering behavior in a motor vehicle
[FB-27] p0197 N79-24657
Analytical methods for biotechnological design of man machine systems: Work on system ergonomy
[FB-28] p0242 N79-26787
Influence of light adaptation on dark adaptation time for pattern recognition tasks
[FB-31] p0316 N79-33835

FRANKLIN INST. RESEARCH LABS., PHILADELPHIA, PA.
Biological effects of nonionizing electromagnetic radiation. Volume 2, number 4: A digest of current literature
[AD-A055569] p0055 N79-13689

FRANKLIN INST. RESEARCH LABS., ROCKVILLE, MD.
A literature review-problem definition studies on selected toxic chemicals. Volume 2: Occupational health and safety aspects of phosphorus smoke compounds
[AD-A056019] p0025 N79-11685
A literature review-problem definition studies on selected toxic chemicals. Volume 1: Occupational health and safety aspects of diesel fuel and white smoke generated from it
[AD-A056018] p0025 N79-11686
A literature review-problem definition studies on selected toxic chemicals. Volume 5: Occupational health and safety and environmental aspects of zinc chloride
[AD-A056020] p0025 N79-11687
A literature review-problem definition studies on selected toxic chemicals. Volume 8: Environmental aspects of diesel fuel and fog oils SGF number 1 and SGF number 2 and smoke screens generated from them
[AD-A056021] p0025 N79-11688

FRANKLIN RESEARCH CENTER, PHILADELPHIA, PA.
Biological effects of nonionizing electromagnetic radiation, volume 3, number 4
[AD-A070242] p0315 N79-33826

FREIBURG UNIV. (WEST GERMANY).
Cardiological findings in 115 pilots: Diagnose-

and assessment of their flying fitness
p0030 N79-11721
FUTURE SYSTEMS, INC., GAITHERSBURG, MD.
A technology assessment of vegetable substitutes for animal protein in human food. Volume 2: Appendices
[PB-284682/2] p0059 N79-13720
FUTURES GROUP, GLASTONBURY, CONN.
A technology assessment of vegetable substitutes for animal protein in human food. Volume 1: The study
[PB-284681/8] p0059 N79-13719

G

GARD, INC., NILES, ILL.
Four-man rated dual catalyst system for the recovery of water from urine
[NASA-CR-152227] p0112 N79-16550
GENERAL ACCOUNTING OFFICE, WASHINGTON, D. C.
The Department of the Army's food irradiation program: Is it worth continuing
[PB-286399/1] p0094 N79-15644
GENERAL ELECTRIC CO., HOUSTON, TEX.
Regional program for acquisition of medical experiments
[NASA-CR-160121] p0155 N79-19677
Fluid and Electrolyte Balance model (FEB)
[NASA-CR-160206] p0211 N79-24633
Validation of a model for investigating red cell mass changes during weightlessness
[NASA-CR-160188] p0211 N79-24634
User's instructions for the Grodins' respiratory control model using the UNIVAC 1110 remote batch and demand processing
[NASA-CR-160225] p0212 N79-24635
A long term model of circulation
[NASA-CR-147674] p0212 N79-24636
Transient thermoregulatory model with graphics output
[NASA-CR-160217] p0212 N79-24637
User's instructions for the 41-node thermoregulatory model (steady state version)
[NASA-CR-1602[illegible]] p0212 N79-24638
Evaluation of exercise-respiratory system modifications and preliminary respiratory-circulatory system integration scheme
[NASA-CR-160221] p0212 N79-24639
Acid-base homeostasis in the human system
[NASA-CR-160222] p0212 N79-24640
Design specification for the whole-body algorithm
[NASA-CR-160226] p0212 N79-24641
Systems identification and application systems development for monitoring the physiological and health status of crewmen in space
[NASA-CR-160235] p0212 N79-24642
Physiological system integrations with emphasis on the respiratory-cardiovascular system
[NASA-CR-160230] p0213 N79-24643
Study report on combining diagnostic and therapeutic considerations with subsystem and whole-body simulation
[NASA-CR-160231] p0213 N79-24644
The application of sensitivity analysis to models of large scale physiological systems
[NASA-CR-160228] p0213 N79-24645
User's instructions for the erythropoiesis regulatory model
[NASA-CR-160193] p0216 N79-25711
Study report on a double isotope method of calcium absorption
[NASA-CR-160194] p0216 N79-25712
Strontium metabolism in the rebuilding of skeletal tissue
[NASA-CR-160195] p0216 N79-25713
The influence of exercise on bone atrophy
[NASA-CR-160196] p0216 N79-25714
A brief review of space flight calcium metabolism: Results and methodologies
[NASA-CR-160198] p0217 N79-25715
Preliminary design specifications of a calcium model
[NASA-CR-160199] p0217 N79-25716
Development of an hypothesis for simulating anti-orthostatic bed rest
[NASA-CR-160200] p0217 N79-25717
Use of a computer model in the understanding of erythropoietic control mechanisms
[NASA-CR-160201] p0217 N79-25718
A prioritized set of physiological measurements for future spaceflight experiments
[NASA-CR-160202] p0217 N79-25719
Dynamic regulation of erythropoiesis: A computer model of general applicability
[NASA-CR-160203] p0217 N79-25720
User's instructions for the cardiovascular Walters model
[NASA-CR-160204] p0217 N79-25721
A simple model of fluid flow and electrolyte balance in the body
[NASA-CR-160205] p0217 N79-25722
Fluid and electrolyte control systems in the human body: A study report
[NASA-CR-160210] p0217 N79-25723
User's instructions for the high speed version of the cardiovascular exercise model
[NASA-CR-160211] p0218 N79-25724
On a basic model of circulatory, fluid, and electrolyte regulation in the human system based upon the model of Guyton
[NASA-CR-160212] p0218 N79-25725
Investigations of respiratory control systems simulation
[NASA-CR-160213] p0218 N79-25726
Study report on modification of the long term circulatory model for the simulation of bed rest
[NASA-CR-160186] p0218 N79-25727
Improvements and validation of the erythropoiesis control model for bed rest simulation
[NASA-CR-160187] p0218 N79-25728
Study report on interfacing major physiological subsystem models: An approach for developing a whole-body algorithm
[NASA-CR-160232] p0218 N79-25729
The development of a whole-body algorithm
[NASA-CR-160214] p0218 N79-25730
User's instructions for the Guyton circulatory dynamics model using the Univac 1110 batch and demand processing (with graphic capabilities)
[NASA-CR-160215] p0218 N79-25731
User's instructions for the GE cardiovascular model to simulate LBNP and tilt experiments, with graphic capabilities
[NASA-CR-160216] p0219 N79-25732
Evaluation of exercise-respiratory system modifications and integration schemes for physiological systems
[NASA-CR-160223] p0219 N79-25733
Study report on guidelines and test procedures for investigating stability of nonlinear cardiovascular control system models
[NASA-CR-160229] p0219 N79-25734
User's instructions for the whole-body algorithms
[NASA-CR-160233] p0219 N79-25735
Modifications to the steady-state 41-node thermoregulatory model including validation of the respiratory and diffusional water loss equations
[NASA-CR-160219] p0219 N79-25738
The application of systems analysis and mathematical models to the study of erythropoiesis during space flight
[NASA-CR-160218] p0219 N79-25739
User's guide for the Skylab integrated medical data analysis system
[NASA-CR-160189] p0220 N79-25740
The application of MINIQUASI to thermal program boundary and initial value problems
[NASA-CR-160227] p0222 N79-25759
GENERAL ELECTRIC CO., PHILADELPHIA, PA.
Animal life support transporters for Shuttle/Spacelab
[ASME PAPER 78-ENAS-10] p0006 A79-12559
Food packages for Space Shuttle
[ASME PAPER 78-ENAS-13] p0007 A79-12562
Food and waste management biotechnology for the space shuttle
[IAF PAPER 79-93] p0302 A79-53294
Skylab medical data evaluation program (SMEDEP)
[NASA-CR-160279] p0259 N79-28869
Automated biowaste sampling system feces monitoring system
[NASA-CR-160301] p0281 N79-30937
GENERAL MOTORS RESEARCH LABS., WARREN, MICH.
The influence of vehicle aerodynamic and control response characteristics on driver-vehicle

performance
p0089 N79-15608

The application of integral performance criteria to the analysis of discrete maneuvers in a driving simulator
[BS-GMR-2394] p0115 N79-17484

GENETICON, WALNUT CREEK, CALIF.

Comparison of circadian rhythms in male and female humans
p0004 A79-11947

GEORGE WASHINGTON UNIV., WASHINGTON, D. C.

Isolation of virus-augmented tumor antigens
p0142 N79-18564

GEORGETOWN UNIV., WASHINGTON, D.C.

Effect of electroconvulsive shock on monoaminergic receptor binding sites in rat brain
p0162 A79-29925

The point mutation process in proteins
p0205 A79-37972

Evolution of early life inferred from protein and ribonucleic acid sequences
p0206 A79-37980

GEORGIA INST. OF TECH., ATLANTA.

Speech quality measurement
[AD-A056272] p0033 N79-11745

GERMAN AIR FORCE, PORZ-WAHN (WEST GERMANY).

Night rescue operation procedure over sea with bell UH-1D helicopters
p0148 N79-19609

Backache in UH-1D helicopter crews
p0149 N79-19620

GOTEBORG UNIV. (SWEDEN).

A compact low-volume, self-regenerating artificial kidney
[PB-287808/0] p0123 N79-17545

GOULD, INC., OXNARD, CALIF.

Development of an electrical energy converter for circulatory device
[PB-286738/0] p0111 N79-16545

GRUMMAN AEROSPACE CORP., BETHPAGE, N.Y.

Firefighters Integrated Response Equipment System
[ASME PAPER 78-ENAS-39] p0009 A79-12586

GULF AND WESTERN APPLIED SCIENCE LABS., WALTHAM, MASS.

Sensory mechanism modeling
[AD-A069439] p0262 N79-29796

GULF SOUTH RESEARCH INST., NEW ORLEANS, LA.

Evaluation of toxic effects of organic contaminants in recycled water
[PB-291379/6] p0190 N79-22760

H

HAHNEMANN MEDICAL COLL. AND HOSPITAL, PHILADELPHIA, PA.

The effect of moderate hypothermia on the circulatory and myocardial consequences of acute coronary ligation in dogs
p0049 N79-12683

HAMILTON STANDARD, HARTFORD, CONN.

Concept definition for an extended duration orbiter ECLSS
[NASA-CR-160164] p0197 N79-23666

HAMILTON STANDARD, WINDSOR LOCKS, CONN.

Flight prototype CO2 and humidity control system
[NASA-CR-160224] p0222 N79-25760

HARDING COLL., SEARCY, ARK.

Isokinetic exercise: A review of the literature
[NASA-CR-151841] p0051 N79-12695

HARVARD MEDICAL SCHOOL, BOSTON, MASS.

Cardio-pulmonary response to shock
[AD-A065672] p0196 N79-23659

HAWAII UNIV., HONOLULU.

The effects of temperature, salinity, and other factors on the growth and formation of UV-absorbing substances by the fungus Aspergillus
p0005 A79-12512

HEALTH EFFECTS RESEARCH LAB., RESEARCH TRIANGLE PARK, N. C.

Biomedical data validation through an on-line computer system
[PB-285249/9] p0057 N79-13700

HONEYWELL, INC., MINNEAPOLIS, MINN.

Crew workload assessment. Development of a measure of operator workload
[AD-A068616] p0261 N79-28884

HOPITAL BEGIN, ST. MANDE (FRANCE).

Radiological examination of the Rachis and fitness for employment as a helicopter pilot
p0151 N79-19634

HOPITAL D'INSTRUCTION DES ARMEES, VERSAILLES (FRANCE).

Cardiac conduction and aptitude problem of fliers. The benefits of endocavital recording of the His bundles
p0030 N79-11716

The advantages of ultrasonic echocardiography in the cardiological evaluation of fliers
p0030 N79-11718

HORIZONS RESEARCH LABS., INC., FORT LAUDERDALE, FLA.

Development and evaluation of instrument systems for noninvasive detection, characterization and quantification of atherosclerotic lesions
[PB-286851/1] p0085 N79-15582

HOUSTON UNIV., TEX.

Prebiotic condensation reactions using cyanamide
p0203 A79-37932

Squalenes, phytanes and other isoprenoids as major neutral lipids of methanogenic and thermoacidophilic 'archaebacteria'
p0232 A79-42274

Mathematical simulation of the human circulatory system
p0110 N79-16535

Early detection of disease: The correlation of the volatile organic profiles from patients with upper respiratory infections with subjects of normal profiles
[NASA-CR-160100] p0121 N79-17532

Man-machine analysis of translation and work tasks of Skylab films
[NASA-CR-151879] p0146 N79-18592

Operator performance and localized muscle fatigue in a simulated space vehicle control
p0214 N79-24653

Effects of gravity on cortractile proteins
[NASA-CR-160303] p0279 N79-30913

Application of a structured decision process for proper inclusion of human resources in the design of a power unit support stand
[AD-A069978] p0309 N79-32840

HOWARD UNIV., WASHINGTON, D. C.

Raman and infrared investigations of the nature of intracellular water
[AD-A061258] p0120 N79-17522

HUGHES AIRCRAFT CO., CULVER CITY, CALIF.

A behavioral model of target acquisition in realistic terrain
[AD-A056760] p0019 N79-10742

Binocular holographic helmet mounted display
[AD-A062761] p0174 N79-20749

HUGHES HELICOPTERS, CULVER CITY, CALIF.

TADRAP: A computer-aided technique for reducing aircrew task analysis data
p0150 N79-19628

HUMAN ENGINEERING LABS., ABERDEEN PROVING GROUND, MD.

Internal cockpit reflections of external point light sources for the model YAH-64 advanced attack helicopter
[AD-A056489] p0033 N79-11744

A survey of existing computer programs for aircrew workload assessment
[AD-A058518] p0059 N79-13718

Lightweight helmet-mounted eye movement measurement system
p0090 N79-15619

A review of individual performance in air-to-ground target detection and identification studies
[AD-A061580] p0124 N79-17551

An interface evaluation of the XM-29 protective mask and the AH-1S telescopic sight unit
[AD-A064203] p0190 N79-22764

A photometric and legibility assessment of Aerospace Optics, Incorporated Vivisun 20/20 display
[AD-A067668] p0242 N79-26786

I

ILLINOIS UNIV. AT CHICAGO CIRCLE, CHICAGO.

Directional errors of movements and their correction in a discrete tracking task
p0086 N79-15589

A quasi-linear control theory analysis of timesharing skills
p0120 N79-17520

Refinement and validation of a mathematical model of the human torso
p0247 N79-27841

Characterization of cardiovascular function by automated monitoring of cardiac contractility and left ventricular wall motion activity
p0247 N79-27842

Refinement and validation of a three-dimensional head-spin model
[AD-A062502] p0307 N79-32826

ILLINOIS UNIV. AT URBANA-CHAMPAIGN.

Dose-effect relationships for ultrasound irradiation of brain tissue
p0242 N79-27812

Applications of chlorophyll fluorescence transient measurements to the functional analysis of photosynthetic processes
p0243 N79-27813

Development and utilization of internal models in dynamic systems: A comparison of monitors and operators as failure detectors
[AD-A069730] p0282 N79-30942

ILLINOIS UNIV. AT URBANA-CHAMPAIGN, URBANA.

The effects of participatory mode and task workload on the detection of dynamic system failures
p0116 N79-17487

ILLINOIS UNIV., SAVOY.

Judgement evaluation and instruction in civil pilot training
[AD-A057440] p0019 N79-10737

ILLINOIS UNIV., URBANA.

A proposal concerning the origin of life on the planet earth
p0253 A79-45641

Modeling the human as a controller in a multitask environment
p0087 N79-15595

The internal model: A study of the relative contribution of proprioception and visual information to failure detection in dynamic systems
p0087 N79-15596

Prospects of a mathematical theory of human behavior in complex man-machine systems tasks
p0088 N79-15599

Analysis of a VTOL hover task with predictor displays using an optimal control model of the human operator
p0088 N79-15605

Linear modelling of attentional resource allocation
p0091 N79-15626

A model of human event detection in multiple process monitoring situations
p0092 N79-15632

Pilot decision making in a computer-aided flight management situation
p0093 N79-15633

IMPERIAL COLL. OF SCIENCE AND TECHNOLOGY, LONDON (ENGLAND).

Respiration
p0247 N79-27845

Mechanics of arterial blood flow
p0247 N79-27846

Mechanics of the microcirculation
p0247 N79-27847

Mass transport in arteries
p0247 N79-27848

Techniques of measurement
p0247 N79-27850

INDIAN INST. OF TECH., MADRAS.

Computer design synthesis of a below knee-Syme prosthesis
p0251 A79-44300

INDIANA UNIV., BLOOMINGTON.

The effects of active and passive heat acclimatization procedures on the cardiovascular, thermoregulatory, and sweat rate responses to work in the heat in male humans
p0195 N79-23651

INDIANA UNIV., INDIANAPOLIS.

Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798

INFORMATICS, INC., PALO ALTO, CALIF.

Computer quantitation of coronary angiograms
p0293 A79-51030

INGENIEURBUERO FUER ERGONOMIE, MUNICH (WEST GERMANY).

Investigation on the effect of mechanical properties of control elements on human control performance under stochastic roll vibrations
[BMVG-FBWT-78-11] p0146 N79-18593

Ergonomic research into human tolerances for roll and pitch as well as their influence on individual perception and reactions to control parameters
[BMVG-FBWT-78-18] p0282 N79-30944

INSTITUT FUER INFORMATIONSVERARBEITUNG IN TECHNIK UND BIOLOGIE, KARLSRUHE (WEST GERMANY).

Petri nets as a modeling tool for discrete concurrent tasks of the human operator
p0088 N79-15600

INSTITUTE FOR PERCEPTION RVO-TNO, SOESTERBERG (NETHERLANDS).

The want and feasibility to temper sunlight for the eyes
[IZF-1977-21] p0122 N79-17538

Sunglasses for drivers?
[IZF-1977-24] p0122 N79-17539

Some ergonomic aspects of adapting workrooms with visual display units to the human possibilities
[IZF-1978-1] p0125 N79-17562

Criteria for maximum tolerable heat stress. A proposal
[IZF-1978-13] p0144 N79-18583

The driving simulator developed by the Institute for Perception TNO. A validation study in straight road driving
[IZF-1978-16-PR-1] p0145 N79-18588

Steering behaviour and manual control actions. Part 1: An evaluation of the literature and a research plan
[IZF-1978-3] p0146 N79-18594

Acceptable radiation levels in the ultraviolet visible infrared regions
[IZF-1978-15] p0248 N79-27853

Effects of acute noise traumata on whole-nerve and single-unit activity
[IZF-1978-23] p0308 N79-32829

The use of artificial signals during SONAR-watch
[IZF-1978-25] p0309 N79-32837

Car driving as a cybernetic task
[IZF-1979-6] p0309 N79-32838

Effects of amphetamine on response selection and response execution processes in choice reaction tasks
[IZF-1978-8] p0309 N79-32839

Tentative evaluation of annoyance caused by noise from gunfire
[IZF-1978-21] p0310 N79-32843

INSTITUTE OF AVIATION MEDICINE, FARNBOROUGH (ENGLAND).

Human factors in Space vehicles and space stations
p0189 N79-22135

The psychologist in aircraft accident investigation
p0291 N79-31946

Pilot incapacity in flight
p0291 N79-31950

Geographical disorientation and flight safety
p0291 N79-31951

INSTITUTES FOR THE ACHIEVEMENT OF HUMAN POTENTIAL, PHILADELPHIA, PA.

The child in coma
p0094 N79-15890

The control and prevention of seizures in children, a developmental and environmental approach
p0094 N79-15892

Intelligence
p0095 N79-15896

INSTITUTO DE PESQUISAS ESPACIAIS, SAO JOSE DOS CAMPOS (BRAZIL).

The application of remote sensors to a model for fish mapping
[INPE-1379-PE/176] p0071 N79-14712

INTERUNIVERSITAIR REACTOR INSTITUUT, DELFT (NETHERLANDS).

Cu-content of the liver of young mice in

- relation to a defect in the Cu-metabolism [IRI-133-77-02] p0239 N79-26764
- Results of a 64Cu-loading test applied to patients with an inherited defect in their Cu-metabolism (Menkes' disease) [IRI-133-77-04] p0240 N79-26774
- The oral 64Cu-loading test: Applications and problems [IRI-133-78-02] p0240 N79-26775

IOWA STATE UNIV. OF SCIENCE AND TECHNOLOGY, AMES.
- Mechanics of blood flow through normal and stenotic coronary arteries p0154 N79-19676

IOWA UNIV., IOWA CITY.
- Aortic blood flow velocity during exercise in man p0216 N79-25710

ISOMET CORP., PALISADES PARK, N.J.
- Metabolic rate meter and method [NASA-CASE-MSC-12239-1] p0175 N79-21750

ISTITUTO SUPERIORE DI SANITA, ROME (ITALY).
- ESR studies on different pathological states [ISS-L-22/9] p0248 N79-27854
- Problems related to the assessment of safe exposure levels for radio frequency and microwave radiation [ISS-P-78/7] p0248 N79-27855
- Computed axial tomography (CAT) [ISS-R-78/4] p0262 N79-29791

ITALIAN AIR FORCE MEDICAL SERVICE H. Q., ROME.
- Cardiovascular diseases as a cause of unfitness for flying service in aircrews of Italian Air Force: Etiopathogenesis, influence of performance in flight, and prevention p0031 N79-11725
- Sensorial aspects of helicopter operations p0152 N79-19644
- Human factors in production and prevention of aircraft accidents due to disorientation in flight p0291 N79-31952

J

JACKMAN (K. R.), LA JOLLA, CALIF.
- Telemedicine: An expanding new science on land and sea p0146 N79-19020

JET PROPULSION LAB., CALIFORNIA INST. OF TECH., PASADENA.
- The robot's eyes - Stereo vision system for automated scene analysis p0004 A79-12006
- A model for sensorimotor control and learning p0005 A79-12122
- Adaptive control of a robotic manipulator p0046 A79-15001
- Effect of ultrasonic irradiation on mammalian cells and chromosomes in vitro p0134 A79-27239
- Advanced teleoperators p0187 A79-34982
- Robotic vision p0187 A79-34984
- Polyglutaraldehyde - A new reagent for coupling proteins to microspheres and for labeling cell-surface receptors p0274 A79-50230
- Design of polymeric immunomicrospheres for cell labelling and cell separation p0275 A79-50234
- Computer quantitation of coronary angiograms p0293 A79-51030
- Signal processing in ultrasound p0294 A79-51039
- COSMOS 936, experiment K-208: Spaceflight effects on muscle fibers p0024 N79-11679
- Automated clinical system for chromosome analysis [NASA-CASE-NPO-13913-1] p0050 N79-12694
- Gas diffusion liquid storage bag and method of use for storing blood [NASA-CASE-NPO-13930-1] p0076 N79-14749
- Coupling apparatus for ultrasonic medical diagnostic system [NASA-CASE-NPO-13935-1] p0077 N79-14751
- Event-driven displays for manipulator control p0089 N79-15610
- The effect of 1 to 5 keV electrons on the reproductive integrity of microorganisms p0147 N79-19025
- Apparatus for endoscopic examination [NASA-CASE-NPO-14092-1] p0155 N79-19678
- Terminal guidance sensor system [NASA-CASE-NPO-14521-1] p0174 N79-20746
- Compact artificial hand [NASA-CASE-NPO-13906-1] p0214 N79-24652
- Multifunctional transducer [NASA-CASE-NPO-14329-1] p0219 N79-25737
- Study of modeling and evaluation of remote manipulation tasks with force feedback [NASA-CR-158721] p0242 N79-26785
- Apparatus and method of inserting a microelectrode in body tissue or the like using vibration means [NASA-CASE-NPO-13910-1] p0246 N79-27836
- Diagnosis of cutaneous thermal burn injuries by multispectral imaging analysis [NASA-CR-162103] p0279 N79-30922
- Microbiological evaluation of the mobile biological isolator system [NASA-CR-162293] p0307 N79-32822

JET PROPULSION LAB., CAPE CANAVERAL, FLA.
- Thermal resistance of naturally occurring airborne bacterial spores p0131 A79-26147

JOHNS HOPKINS UNIV., BALTIMORE, MD.
- Radio tracking of a fin whale /Balaenoptera physalus/ p0061 A79-18008
- Lung mechanics: Dynamic response, acoustic generation, and flow limitation p0017 N79-10727
- The effects of carbon monoxide and cyanide on the brain p0024 N79-11682
- A study of some of the factors influencing the left ventricular diastolic pressure-volume relationship and myocardial metabolism p0154 N79-19674
- Methodological and operational aspects of programmed environment research [AD-A068587] p0289 N79-31936

JOINT PUBLICATIONS RESEARCH SERVICE, ARLINGTON, VA.
- Space biology and aerospace medicine, vol. 12, no. 5, 1978 [JPRS-72115] p0013 N79-10698
- Neurophysiological bases of vestibular conditioning p0013 N79-10699
- Protein fractions and enzymatic activity thereof in the rat myocardium after the flight on Kosmos-690 biosatellite p0014 N79-10700
- Recovery of hemopoiesis in rats exposed to radiation during space flight p0014 N79-10701
- Radiation lesion to liver DNA of rats exposed to radiation during flight aboard the Kosmos-690 biosatellite p0014 N79-10702
- Histological and histochemical studies of the liver of rats flown aboard Kosmos-690 biosatellite p0014 N79-10703
- State of spermatogenesis in rats flown aboard Kosmos-690 biosatellite p0014 N79-10704
- Rat behavior in maze after flight aboard Kosmos-690 biosatellite p0014 N79-10705
- Changes in blood sugar content of dogs exposed to chronic gamma radiation for six years p0014 N79-10706
- Analysis of distribution of sequences of R-R intervals in astronauts: Generalized coordinate method p0015 N79-10707
- Compensatory reactions of the kidneys to orthostatic factors p0015 N79-10708
- Clinical and morphological studies of people in the course of long-term hypokinesia and subsequent readaptation p0015 N79-10709
- Cardiac arrhythmia following postimmersion +G sub z accelerations p0015 N79-10710

Effects of vibration and noise on some indices of efficiency of MI-4 helicopter crews p0015 N79-10711

Tissular respiration of the brain after exposure of rats to hypertoxic helium and oxygen mixtures at atmospheric and elevated pressure p0015 N79-10712

Effects of endogenous factors on the process of gas bubble formation in the body related to decompression p0015 N79-10713

Characteristics of vestibular nystagmus in rats p0016 N79-10714

Characteristics of bacterial aerosol in airtight rooms occupied by humans p0016 N79-10715

Decreased activity of palladium catalyst during processing of excreta p0016 N79-10716

A method of evaluating the pupillary reaction to vestibular stimuli p0016 N79-10717

Comparative analysis of causes of animal deaths during chronic exposure to gamma radiation and the aftereffect period p0016 N79-10718

Effects of long-term and chronic radiation on hemopoiesis p0016 N79-10719

Effect of accelerations combined with radiation on occurrence of gene mutations in the drosophila p0016 N79-10720

Effect of oxygen poisoning on the spectrum of lactate dehydrogenase isozymes of rabbit blood plasma p0017 N79-10721

Light and color on a manned spacecraft p0059 N79-13996

Translations on USSR science and technology: Biomedical and behavioral sciences, no. 47 [JPRS-72134] p0071 N79-14708

Psychological experiment on components of the meaning of work p0071 N79-14709

Effects of laser radiation on morphology of peripheral blood and bone marrow under experimental and clinical conditions p0071 N79-14710

Space biology and aerospace medicine, vol. 12, no. 6 [JPRS-72487] p0072 N79-14716

Dynamics of Cosmonauts' blood biochemistry during space missions p0072 N79-14717

Studies of hemodynamics and phase structure of cardiac cycle in the crew of Salyut-4 p0072 N79-14718

Dynamic medical monitoring of flight crews in the course of long-term flights p0072 N79-14719

Investigation of composition of trace contaminants in the air environment of the Soyuz-22 spacecraft p0072 N79-14720

Effects of hyperhydration on human endurance of orthostatic and LBNP tests p0072 N79-14721

Changes in human renal function in passive head-up and head-down positions p0072 N79-14722

Stability of circadian system of the body p0073 N79-14723

Dynamics of impairment of pilot performance in the presence of hypoxia p0073 N79-14724

Combined effect of hyperoxia, low pressure and exercise on the rate of methylketone excretion from the human body p0073 N79-14725

Principal results of experiment with mammals onboard the Kosmos-782 biosatellite p0073 N79-14726

Spermatogenesis in dogs during many years of chronic exposure to gamma radiation and in the aftereffect period p0073 N79-14727

DNA content of animal organs during space flight on Kosmos-690 satellite p0073 N79-14728

State of blood clotting during prolonged hypokinesia p0073 N79-14729

The combined effect of carbon monoxide and normobaric hyperoxia on animals p0073 N79-14730

Blood lipid changes in hypoxic rats p0074 N79-14731

Effect of intermittent hypoxia on functional activity of peripheral blood neutrophils p0074 N79-14732

Effect of cerebrocranial trauma on reactive distinctions of hypothalamic and hippocampal vessels in the presence of hypoxia p0074 N79-14733

Role of vestibular system in behavior of animals submitted to prolonged slow rotation p0074 N79-14734

Effect of psychophysiological self-regulation on emotional stability of aviation cadets in flight and on effectiveness of assimilation of flight training program p0074 N79-14735

Translations on USSR science and technology: Biomedical and behavioral sciences, No. 53. Effects of nonionizing electromagnetic radiation [JPRS-72606] p0074 N79-14736

Investigation of the activity of some enzymatic systems in response to a super-high frequency electromagnetic field p0074 N79-14737

Effects of intermittent magnetic field on activity of carbohydrate metabolism enzymes and oxygen uptake in testicular tissue p0075 N79-14738

Effects of microwaves on catecholamine metabolism in the brain p0075 N79-14739

Effects of electromagnetic field induction on development of the green algae, scenedesmus quadricauda (Turbpin) Breb. and composition of free amino acids in its biomass and medium p0075 N79-14740

Dependence of the functional activity of liver mitochondria on microwave radiation p0075 N79-14741

State of process of oxidation phosphorylation of liver mitochondria on exposure to an electric field p0075 N79-14742

Mechanism of effects of microwaves on erythrocyte permeability for potassium and sodium ions p0075 N79-14743

Determination of a generalized output index of a biological experiment after multiple tests p0076 N79-14744

Translations on USSR science and technology: Biomedical and behavioral sciences, no. 51 [JPRS-72588] p0076 N79-14745

Functional outcomes of prosthetic cardiac valve replacement p0076 N79-14746

Visual information processing p0076 N79-14747

Liberation of carbon monoxide by man when working in protective gear p0076 N79-14748

Translations on USSR science and technology. Biomedical and behavioral science, no. 54 [JPRS-72650] p0077 N79-14753

Chemicals in environment affect man's physiology p0077 N79-14754

Translations on USSR science and technology: Biomedical and behavioral sciences, no. 52 [JPRS-72604] p0078 N79-14760

A complex system for planning scientific medical research p0078 N79-14761

Problem-oriented program approach to planning and management of medicine p0078 N79-14762

New principles of automation of biomedical research p0078 N79-14763

The conception of the systems analytic approach to planning and organization of medical scientific research

p0078 N79-14764
Current status and prospects of continued refinement of planning and coordination of scientific medical research
p0078 N79-14765
The systems analytic approach to the problem of classification of scientific medical research
p0078 N79-14766
Use of the systems analytic approach for organization and coordination of complex biomedical research
p0079 N79-14767
Development of aerospace-aviation equipment described
p0081 N79-14795
Information-handling capacity of a human operator in detection of signals against a noisy background
p0081 N79-14989
Space biology and aerospace medicine, volume 13, no. 1, 1979
[JPRS-72826] p0107 N79-16514
Effect of 49-day space flight on parameters of immunological reactivity and protein composition of blood in the crew of Salyut-5
p0107 N79-16515
Effects of space flight on course of radiation lesions in rat lymphoid organs
p0107 N79-16516
Morphological study of adrenals of rats irradiated during flight aboard Kosmos-690 satellite
p0108 N79-16517
Changes in metabolism of soleus muscle tissue in rats following the flight aboard the Kosmos-690 biosatellite
p0108 N79-16518
Changes in amount and composition of phospholipids in rat skeletal muscle microsomal fraction under the influence of a flight aboard the Kosmos-690 biosatellite
p0108 N79-16519
Antiorthostatic hypokinesia as an approximate model of weightlessness
p0108 N79-16520
Bioelectrical activity of the brain during 49-day antiorthostatic hypokinesia in individuals with early signs of vegetovascular dysfunction
p0108 N79-16521
Changes in properties of rat femur as a result of crural exarticulation and hypokinesia
p0108 N79-16522
Blood clotting factors of the vascular wall and myocardium of hypokinetic rabbits
p0108 N79-16523
Effect of hypokinesia on animal resistance to chemical agents
p0109 N79-16524
Cerebral hemodynamics and visual analyzer function following exposure to bright light
p0109 N79-16525
Effects of prolonged unidirectional shift of sleeping-waking cycle on physiological functions, mental productivity and sleep of man
p0109 N79-16526
Ergometric tests in expert medical certification of flight personnel
p0109 N79-16527
Concentration of trace contaminants during gas chromatography and chromato-mass spectrometry in biomedical research
p0109 N79-16528
Effects of space flight factors on electrolyte composition of rat skeletal muscles
p0109 N79-16530
Prospects of using Japanese quail in biological life support systems
p0109 N79-16531
Effects of LBNP on catecholamines and adrenal cortex
p0110 N79-16532
Correction of transcapillary exchange in man under the influence of rotation on a centrifuge while immersed in water
p0110 N79-16533
Rehabilitation measures used to restore physical fitness of man after long-term restriction of movement
p0110 N79-16534
Antiradiation suit and other special clothing at industrial safety exhibition
p0114 N79-16793
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 57
[JPRS-72808] p0121 N79-17526
Comparative study of acetylcholinesterase inactivation in warm-blooded animals and insects with substituted vinyl phosphates
p0121 N79-17527
Environment monitoring in the USSR and hygienic practice
p0121 N79-17528
Ergonomics laboratory studies pilots' stability for command
p0121 N79-17529
Intestinal autoflora as an indicator of severity of radiation lesion
p0121 N79-17530
Problems of human adaption to spaceflight
p0157 N79-19985
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 50
[JPRS-72462] p0170 N79-20720
The role of computer technology mathematical models in treatment of patients following heart surgery
p0170 N79-20721
New combined aspirator for sampling developed
p0170 N79-20722
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 59. Effects of nonionizing electromagnetic radiation
[JPRS-72956] p0171 N79-20732
Decrease in the functional abilities of the heart as a result of exposure of an organism to an electromagnetic field of industrial frequency
p0172 N79-20733
Biological effects of a magnetic field
p0172 N79-20734
Effect of radio waves of a millimeter frequency range on the body of man and animals
p0172 N79-20735
Immunological effects of microwave action
p0172 N79-20736
Magnetic field effect on radial processes in biological membranes
p0172 N79-20737
Effect of different doses of centimeter-band electromagnetic oscillations of biochemiluminescence of central nervous system and liver tissues
p0172 N79-20738
Effect of infra-low-frequency magnetic fields on cell division
p0173 N79-20739
The influence of SHF electromagnetic fields on the secretory function of the stomach
p0173 N79-20740
Changes in calcium ion activity due to magnetization of solution as the possible mechanism of biological action of magnetic fields
p0173 N79-20741
Translations on USSR science and technology: Biomedical and behavioral sciences, no. 60
[JPRS-73135] p0175 N79-21745
Liquid crystal developments for medicine
p0175 N79-21746
Training effect of recognition of different alphabets of visual stimuli
p0175 N79-21747
Orenburg symposium on mycotoxins
p0175 N79-21749
Space biology and aerospace medicine, no. 2, 1979
[JPRS-73377] p0190 N79-23627
Some problems involved in using mathematical methods for evaluation of pathophysiological changes in the body
p0192 N79-23628
Studies of microbial flora and immunity of Salyut-3 crew
p0192 N79-23629
Use of a mathematical model of erythropoiesis for evaluation of effects of space flight factors
p0192 N79-23630

Biochemical study of proteins of gastric and intestinal mucosa of rats flown aboard the Kosmos-605 biosatellite
p0192 N79-23631

Effects of vestibular factors on color-discriminating function of the human eyes following color preadaptation
p0192 N79-23632

The adrenosympathetic system in the presence of traumatic shock during simulation of effects of weightlessness on the human body
p0192 N79-23633

Effects of physical conditioning and electric stimulation on metabolic processes in the soleus muscle and structure thereof in hypokinetic man
p0192 N79-23634

Distinctions referable to excretion of end products of protein metabolism in urine of man submitted to 182-day antiorthostatic hypokinesia
p0193 N79-23635

Sterols bound with blood plasma proteins and erythrocyte membranes during hypokinesia
p0193 N79-23636

Increased hemoglobin and content of rat blood serum as a result of decreased resistance of erythrocyte membranes to hyperbaric oxygenation, and the protective effect of urea
p0193 N79-23637

Microflora of water reclaimed in sealed compartments
p0193 N79-23638

External respiration and gas exchange reactions to exercise during rotation of man on a short-radius centrifuge
p0193 N79-23639

Restoration of color perception after deadapting flashes
p0193 N79-23640

Effect of combination of hypoxia and hypercapnia on survival of Japanese quail
p0194 N79-23641

Effects of different values of urine pH during long-term storage on microflora composition
p0194 N79-23643

Tissular blood clotting factors of vascular walls and myocardium during hypokinesia
p0194 N79-23644

Space biology and aerospace medicine, v. 13, no. 3, 1979
[JPRS-73784] p0243 N79-27817

Helium-oxygen mixture and the organism hyperbaric aspect
p0243 N79-27818

Simulation of fluid-electrolyte metabolism as a means of preventing orthostatic instability in the crew of the second expedition aboard the Salyut-4 station
p0243 N79-27819

Investigation of albumin and globulin composition of blood of the crew of the Salyut-3 orbital station
p0244 N79-27820

The combined effect of space flight factors and radiation on rat skeletal muscles
p0244 N79-27821

Catecholamines and enzymes of metabolism thereof in the rat hypothalamus after flight aboard Cosmos-782 biosatellite
p0244 N79-27822

Tissular metabolism in mixed type fibers of rat skeletal muscles after flight aboard Cosmos-690 biosatellite
p0244 N79-27823

Immunological reactivity of rats flown aboard Cosmos-605 and Cosmos-690 biosatellites
p0244 N79-27824

Possibilities of preventing adverse reactions in simulating the acute period of adaptation to weightlessness
p0244 N79-27825

Probability of caisson disease while wearing a space suit when exiting from a spacecraft with an atmosphere close to that of earth
p0244 N79-27826

Pneumotachographic distinctions of external respiration in man in the presence of excess intrapulmonary pressure on ground level and at high altitudes
p0245 N79-27827

Effect of acute hypoxia on some parameters of renal excretory function and renal hemodynamics
p0245 N79-27828

Toxicity of oxygen mixed with helium
p0245 N79-27829

Effect of hyperbaric oxygen on peripheral blood neutrophil metabolism
p0245 N79-27830

Effect of brief head-down hypokinesia on pressure in various parts of the healthy man's cardiovascular system
p0245 N79-27831

Evaluation of circulatory reactions in the head to antiorthostatic position
p0245 N79-27832

Animal endurance to recurrent impact accelerations
p0246 N79-27833

Characteristics of proteins of some unicellular organisms as potential components of ecological life support systems
p0246 N79-27834

Morphological distinctions of the rat thyroid and parathyroid following long-term space flights
p0246 N79-27835

Translations on USSR science and technology: Biomedical and behavioral sciences, no. 81
[JPRS-73729] p0249 N79-27860

The systemic principles of building a man-machine control staff
p0249 N79-27861

Effects of vibration on the human organism
p0249 N79-27862

Space Biology and Aerospace Medicine, no. 4, 1979
[JPRS-74330] p0310 N79-33789

Immunobiological reactivity of the body under hyperbaric and hypobaric conditions
p0310 N79-33790

Studies of venous circulation in the crew of the Salyut-5 orbital station
p0310 N79-33791

Fluid-electrolyte metabolism in the crew of Salyut-4
p0311 N79-33792

Control of vertical position after flights aboard the Salyut-4 orbital station
p0311 N79-33793

Effects on lipid metabolism in man of some factors that simulate space flight conditions
p0311 N79-33794

Electrolyte composition of rat blood plasma and skeletal muscles after flight aboard the Cosmos-690 biosatellite
p0311 N79-33795

Intensity of DNA synthesis in animal organs after flight aboard the Cosmos-782 biosatellite
p0311 N79-33796

Effect of brief head-down position on parameters of carbohydrate metabolism and beta lipoprotein content of blood
p0311 N79-33797

Influence of pressure chamber conditions on adrenocortical function in man (according to results of assaying blood plasma 11-hydroxycorticosteroids)
p0311 N79-33798

Energy expenditures of man during long exposure to a periodically changing atmosphere
p0312 N79-33799

Distinctions of influence of the reticular formation of the midbrain on the heart and respiration with exposure to centripetal accelerations
p0312 N79-33800

Significance of the vibration component to the deleterious effect of impact accelerations
p0312 N79-33801

Effect of restricted activity on vestibular function
p0312 N79-33802

Effect of rocking on absorption of some group B vitamins and ascorbic acid in the small intestine of dogs
p0312 N79-33803

Ultrastructure of lymph nodes of dogs exposed to long-term external gamma radiation
p0312 N79-33804

Some of the problems involved in planning biological experiments
p0312 N79-33805

Adaptive optimization of exchange of gases in plants in a sealed phytotron
p0313 N79-33806

Quality of water reclaimed from urine as related to pH of initial product
p0313 N79-33807

Evaluation of oxidizability of air in closed areas
p0313 N79-33808

Effect of hydrostatic factor on orthostatic stability and physical fitness of man during 60-day antiorthostatic hypokinesia
p0313 N79-33809

Vertical orientation of man during 5-day antiorthostatic hypokinesia (-4, -8 and -12 deg head down position)
p0313 N79-33810

Effect of impact accelerations on chemical resistance of rat erythrocytes
p0313 N79-33811

External respiration and gas exchange reactions of man during rotation on a short-arm centrifuge
p0313 N79-33812

Blood coagulation and tissular factors of blood clotting in heparinized rabbits submitted to hypokinesia
p0313 N79-33813

Third Symposium on Motion Sickness
p0313 N79-33814

K

KANSAS STATE UNIV., MANHATTAN.
Investigations of respiratory control systems simulation
[NASA-CR-160213] p0218 N79-25726

KANSAS UNIV., LAWRENCE.
The effect of hyperoxia on cerebral blood flow in the unanesthetized pony
p0107 N79-16511

A study of the effects of six light conditions on caloric induced nystagmus
p0195 N79-23652

KANSAS WATER RESOURCES RESEARCH INST., MANHATTAN.
Effects of heavy metals especially selenium, vanadium and zirconium on movement, growth and survival of certain animal aquatic life
[PB-292563/4] p0197 N79-25706

KENTUCKY STATE UNIV., FRANKFORT.
Reproductive adaptation in Drosophila exposed to oxygen-enriched atmospheres
p0164 A79-30657

KENTUCKY UNIV., LEXINGTON.
Dynamic response of vertebral elements related to USAF injury
[AD-A059489] p0071 N79-14713

Frequency response of cardiovascular regulation in canines to sinusoidal acceleration at frequencies below 1 Hz (basis for biodynamic modeling)
p0286 N79-31915

The causes of decrements in aircrew performance physiological changes produced by vibration and other environmental stresses and response of the cardiovascular system to vibration and combined stress
[AD-A069952] p0318 N79-33845

L

LABORATOIRE DE MEDECINE AEROSPATIALE, BRETIGNY-SUR-ORGE (FRANCE).
Vertebral pains in helicopter pilots
p0153 N79-19656

LEHIGH UNIV., BETHLEHEM, PA.
Mathematical studies of oxygen transport to tissue
p0170 N79-20723

LETTERMAN ARMY INST. OF RESEARCH, SAN FRANCISCO, CALIF.
Nonest 1: Personality, heart rate, urinary catecholamine, and subjective fatigue measures related to night map-of-the-earth flying
[AD-A054888] p0055 N79-13692

LIFE SYSTEMS, INC., CLEVELAND, OHIO.
Instrumentation for controlling and monitoring environmental control and life support systems
[ASME PAPER 78-ENAS-40] p0009 A79-12587

Technology advancement of an oxygen generation subsystem
[NASA-CR-152257] p0261 N79-28883

Electrochemically regenerable carbon dioxide absorber
[NASA-CR-152099] p0262 N79-29794

LINCOLN LAB., MASS. INST. OF TECH., LEXINGTON.
ARPA authoring system
[AD-A064723] p0190 N79-22762

LINUS PAULING INST. FOR SCIENCE AND MEDICINE, MENLO PARK, CALIF.
Orthomolecular enhancement of human development
p0095 N79-15895

LOCKHEED ELECTRONICS CO., HOUSTON, TEX.
Meteorological limits on the growth and development of screwworm populations
[NASA-CR-151873] p0107 N79-16512

LOCKHEED MISSILES AND SPACE CO., SUNNYVALE, CALIF.
Vestibular Function Research (VFR) experiment. Phase B: Design definition study
[NASA-CR-152207] p0024 N79-11683

Spacelab scrubber analysis and test support
[NASA-CR-161309] p0318 N79-33849

LOS ALAMOS SCIENTIFIC LAB., N. MEX.
A preliminary toxicological study of silastic 386 foam elastomer: catalyst
[LA-7366-MS] p0071 N79-14714

Estimating percentiles of nonnormal anthropometric populations
[AD-A061151] p0122 N79-17535

LOS ANGELES STATE AND COUNTY ARBORETUM, ARCADIA, CALIF.
Mechanism of plant virus inactivation in soil injected with municipal wastewater and treatment plant sludges
[PB-287012/9] p0107 N79-16513

LOUISIANA STATE UNIV., SHREVEPORT.
Biomedical constraints on thermal protective flight clothing design: A bioengineering analysis
p0153 N79-19662

LOUISIANA STATE UNIV. AND A&M COLL., BATON ROUGE.
The influence of various physiological responses on ratings of perceived exertion before and after training
p0194 N79-23649

LOUISVILLE UNIV., KY.
Killfish development in zero-G on COSMOS 782: Fundulus experiment K-104
p0021 N79-11659

Mechanisms of retinal damage from chronic laser radiation: Thresholds and mechanisms
[AD-A058449] p0056 N79-13698

LOVELACE FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH, ALBUQUERQUE, N. MEX.
Effects of regional hemoconcentration during LBNP on plasma volume determinations
p0265 A79-47326

Specialized physiological studies in support of manned space flight
[NASA-CR-151876] p0111 N79-16542

M

MALLORY (KENNETH) AND ASSOCIATES, INC., VIENNA, VA.
Life sciences in the Shuttle era
[ASME PAPER 78-ENAS-34] p0008 A79-12582

MAN FACTORS, INC., SAN DIEGO, CALIF.
Development of recommendations to improve controls operability
[PB-284433/0] p0053 N79-12714

MARQUETTE UNIV., MILWAUKEE, WIS.
Density dependence of maximum expiratory flow
p0050 N79-12691

Noninvasive techniques in the evaluation of the peripheral circulation
p0154 N79-19675

MARTIN MARIETTA AEROSPACE, BETHESDA, MD.
Computer aided control of a mechanical arm
p0275 A79-50334

MARTIN MARIETTA AEROSPACE, DENVER, COLO.
Solar-driven chemical energy source for a Martian biota
p0254 A79-46464

MARTIN MARIETTA CORP., DENVER, COLO.
Spacecraft utensil/hand cleansing fixture
[NASA-CR-151845] p0032 N79-11731

Spacecraft utensil/hand cleansing fixture, addendum

[NASA-CR-151846] p0032 N79-11732
Manned maneuvering unit: User's guide
[NASA-CR-151864] p0113 N79-16553
Urine collection apparatus
[NASA-CASE-MSC-18381-1] p0195 N79-23657
MARTIN MARIETTA LABS., BALTIMORE, MD.
Photochemistry and enzymology of photosynthesis
[COO-3326-70] p0239 N79-26763
MARYLAND UNIV., COLLEGE PARK.
Abundance of organic compounds photochemically produced in the atmospheres of the Outer Planets
p0210 A79-39075
Temperature uniformity in hyperthermal tumor therapy
p0018 N79-10730
Electric field measurements within biological media
p0083 N79-15562
Region extraction using convergent evidence
[AD-A061591] p0124 N79-17552
A theoretical study of membrane diffusion and lymphocyte patching
p0142 N79-18563
MARYLAND UNIV., SOLOMONS.
Results of benthic studies at Calvert Cliffs
[PB-294261/3] p0261 N79-29788
MASON (VIRGINIA) RESEARCH CENTER, SEATTLE, WASH.
Hyperbaric decompression by means of bubble detection
[AD-A062441] p0171 N79-20726
MASSACHUSETTS INST. OF TECH., CAMBRIDGE.
Optokinetic motion sickness - Attenuation of visually-induced apparent self-rotation by passive head movements
p0135 A79-27558
A fast-reacting and versatile optokinetic stimulus pattern by computer graphics with application examples
p0160 A79-28993
Changes in apparent body orientation and sensory localization induced by vibration of postural muscles - Vibratory myesthetic illusions
p0163 A79-30653
Rotation at 30 RPM about the Z axis after 6 hours in the 10-deg head-down position - Effect on susceptibility to motion sickness
p0165 A79-30662
Low tryptophan diet decreases brain serotonin and alters response to apomorphine
p0226 A79-40672
Accuracy of RGD approximation for computing light scattering properties of diffusing and motile bacteria
p0233 A79-42448
Eye torsion and visual tilt are mediated by different binocular processes
p0256 A79-46651
Microwave thermography: Physical principles and diagnostic applications
p0083 N79-15567
Experiments in texture perception
[AD-A059630] p0086 N79-15587
Human/computer control of undersea teleoperators
p0089 N79-15612
Display aids for remote control of untethered undersea vehicles
p0090 N79-15613
A model for dynamic allocation of human attention among multiple tasks
p0092 N79-15627
Proceedings, 13th Annual Conference on Manual Control
[NASA-CR-158107] p0114 N79-17475
The facilitating effects of uncertainty in long-term manual control
p0115 N79-17485
Multi-attribute subjective evaluations of manual tracking tasks vs. objective performance of the human operator
p0116 N79-17486
Manual control of yaw motion with combined visual and vestibular cues
p0119 N79-17513
Mechanisms of deterioration of nutrients
[NASA-CR-160128] p0156 N79-19686
Bandpass channels, zero-crossings, and early visual information processing
[AD-A062338] p0170 N79-20724
Maximizing storage stability of foods to be used for resupply in a controlled ecological life supply system: Evaluation of research
[NASA-CR-158846] p0260 N79-28880
MASSACHUSETTS UNIV., AMHERST.
Cell response to chronic irradiation-modeling and simulation studies
p0142 N79-18562
MASSACHUSETTS UNIV., WORCESTER.
Low tryptophan diet decreases brain serotonin and alters response to apomorphine
p0226 A79-40672
MAX-PLANCK-INSTITUT, BAD KREUZNACH (WEST GERMANY).
Human exposure to mechanical vibration at lying posture in the ambulance helicopter UH-1D
p0149 N79-19617
MAYO FOUNDATION, ROCHESTER, MINN.
High-speed computerized tomography
p0004 A79-12030
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-284686/3] p0052 N79-12703
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-286696/0] p0085 N79-15581
MCDONNELL-DOUGLAS ASTRONAUTICS CO., HUNTINGTON BEACH, CALIF.
Biological specimen holding facilities for Spacelab experiments
[IAF PAPER 78-56] p0003 A79-11224
Generalized environmental control and life support system computer program (G189A), phase 3
[NASA-CR-151836] p0019 N79-10741
Biomedical application in space, pilot program in the southern California region
[NASA-CR-160171] p0195 N79-23653
MCDONNELL-DOUGLAS ASTRONAUTICS CO., ST. LOUIS, MO.
Microbial load monitor
[NASA-CR-160274] p0243 N79-27815
MEDICAL BIOLOGICAL LAB. RVO-TNO, RIJSWIJK (NETHERLANDS).
Early diagnosis for decompression sickness. Changes in the blood found shortly after decompression. Part 2: Experiments on rats
[MBL-1978-7] p0120 N79-17524
Chemical protection against ionizing radiation: A survey of possible mechanisms
[MBL-1977-8] p0122 N79-17540
Evaluation of the risks involved in the application of tritium gas and measures which have to be taken
[MBL-1978-6] p0122 N79-17541
MEDICAL COLL. OF VIRGINIA, RICHMOND.
The effect of hyperthermia on the radiation response of crypt cells in mouse jejunum
p0018 N79-10731
A microangiographic study of the effect of hyperthermia on the rabbit bladder
p0018 N79-10732
The combined effects of pulsed magnetic radiation (diapulse) and chemotherapy on tumor bearing mice. The measurement of rodent palatal explants as a device for measurement of the biologic effects of nonionic radiation (EMR)
p0018 N79-10733
Recruitment and discharge properties of motor units in human brachial biceps and adductor pollicis during isometric contractions
p0216 N79-25708
MEDICAL PHYSICS INST. UTRECHT (NETHERLANDS).
General activities related to medical research
[TNO-MFI-PR-6] p0262 N79-29793
MEDIZINISCHE HOCHSCHULE HANNOVER (WEST GERMANY).
Balance training of the equilibrium organ and its effect on flight strategy
p0242 N79-27074
MEDIZINISCHE POLIKLINIK DER UNIV., WUERZBURG (WEST GERMANY).
The significance of rhythm disturbances in asymptomatic persons
p0027 N79-11698
MIAMI UNIV., CORAL GABLES, FLA.
Interfacial and intracellular water: Expected anomalies in dielectric properties
p0082 N79-15558

MICHIGAN STATE UNIV., EAST LANSING.
Arm-leg reach and workspace layout
p0033 N79-11739
MICHIGAN UNIV., ANN ARBOR.
The response of selected terrestrial organisms to the Martian environment - A modeling study
p0136 A79-27928
The inertial properties of the body and its segments
p0033 N79-11738
Whole body response research program
[PB-286151/6] p0093 N79-15640
Whole body response research program. Appendix A: Methodology
[PB-286152/4] p0094 N79-15641
Whole body response research program. Appendix B: Raw data
[PB-286153/2] p0094 N79-15642
Whole body response research program. Appendix C: Processed data
[PB-286154/0] p0094 N79-15643
A stochastic model of muscle fatigue in frequent strenuous work cycles
p0261 N79-29789
Isometric strength testing in selecting workers for strenuous jobs
p0262 N79-29790
MIDWEST RESEARCH INST., MINNETONKA, MINN.
Evaluation of fluoropolymer membranes in oxygenators
[PB-286698/6] p0112 N79-16547
MINICARS, INC., GOLETA, CALIF.
Development of a solid propellant inflation technique for the subcompact car passenger restraint system, phase 1
[PB-290328/4] p0178 N79-21775
MINNESOTA UNIV., MINNEAPOLIS.
Proceedings of the 1977 Computerized Adaptive Testing Conference
[AD-A060049] p0079 N79-14771
A construct validation of adaptive achievement testing
[AD-A063148] p0173 N79-20742
A computer system for statistical analysis of EEG transients
p0216 N79-25707
MISSISSIPPI STATE UNIV., MISSISSIPPI STATE.
Distribution of bluegreen algae in a Mississippi Gulf Coast salt marsh
[PB-288982/2] p0153 N79-19667
MISSISSIPPI UNIV., JACKSON.
The pulmonary circulation: Studies on alveolar hypoxia and vascular smooth muscle metabolism
p0195 N79-23650
A long term model of circulation
[NASA-CR-147674] p0212 N79-24636
MISSOURI UNIV., COLUMBIA.
Intestinal transport of hexoses in the rat following chronic heat exposure
p0236 A79-43701
MISSOURI UNIV. - COLUMBIA.
Suppression of the immune response by ultrasound
p0142 N79-18560
A biochemical basis of obligate anaerobiosis
p0142 N79-18561
The growth kinetics of freshwater algae
p0174 N79-21740
A systematic approach to computer analysis of pulmonary vascular patterns
p0176 N79-21756
Effect of phosphorus supply on algal biomass in a turbid Missouri Reservoir
[PB-293183/0] p0243 N79-27816
Selective attention: The influences of subject sex and degree of prior habituation on performance of an attention task with distraction
p0260 N79-28876
Mechanisms of oxygen toxicity at the cellular level
[AD-A070026] p0307 N79-32823
MISSOURI UNIV. -KANSAS CITY.
Citric acid enhancement of copper sulfate toxicity to blue-green algae and other nuisance organisms
[PB-289490/5] p0170 N79-20718
Citric acid enhancement of copper sulfate toxicity to the blue-green algae ""aphanizomenon flos-aquae'' and ""microcystis aeruginosa''
[PB-291637/7] p0189 N79-22751
MISSOURI UNIV. -ROLLA.
Unsteady-state response of the vascular system to transient and sustained aerospace acceleration profiles
p0286 N79-31917
MITRE CORP., MCLEAN, VA.
Improvements in the man-machine interface for data acquisition, display and control
p0224 N79-25983
Telehealth handbook: A guide to telecommunications technology for rural health care
[PB-292557/6] p0241 N79-26778
MONSANTO RESEARCH CORP., DAYTON, OHIO.
Physical testing of polymers use in circulatory assist devices
[PB-286129/2] p0084 N79-15579
MONTEFIORE HOSPITAL, NEW YORK.
Comparison of plasma and urinary steroids in men with type A and type B behavior patterns
p0028 N79-11704
MOUNT ZION HOSPITAL AND MEDICAL CENTER, SAN FRANCISCO, CALIF.
Comparison of plasma and urinary steroids in men with type A and type B behavior patterns
p0028 N79-11704

N

NASSAU HOSPITAL, MINEOLA, N. Y.
Coma recovery
p0094 N79-15891
NATIONAL ACADEMY OF SCIENCES - NATIONAL RESEARCH COUNCIL, WASHINGTON, D. C.
Zinc
[PB-285130/1] p0057 N79-13704
Improved subcutaneous electrode structure
[NASA-CASE-ARC-11117-1] p0084 N79-15576
Evaluation of research on surrogates for humans in motor vehicle crashes
[PB-291012/3] p0178 N79-21774
The effects of whole-body vibration on health
[AD-A068478] p0284 N79-31900
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, WASHINGTON, D. C.
Challenges to life support system's future
[ASME PAPER 78-ENAS-28] p0008 A79-12577
Life sciences in the Shuttle era
[ASME PAPER 78-ENAS-34] p0008 A79-12582
NASA flight management research
p0040 A79-13218
The role of physical examinations and education in prospective medicine
p0026 N79-11694
The cosmonaut in flight
[NASA-TT-F-17438] p0032 N79-11729
Role of gravity in early development
[NASA-TM-75590] p0049 N79-12684
The organism and the habitation atmosphere
[NASA-TM-75536] p0049 N79-12685
The effects of strong shock waves on mortality rates and percentages of pulmonary lesions in rats as a function of the number of exposures
[NASA-TM-75598] p0053 N79-13676
Paul Bert
[NASA-TM-75599] p0055 N79-13687
Materials of the final reports on the joint Soviet-American experiment on the Kosmos-936 biosatellite
[NASA-TM-75582] p0071 N79-14711
Man in space and on earth
[NASA-TM-75602] p0122 N79-17533
The Meduza experiment: An orbital complex ten weeks in flight
[NASA-TM-75394] p0169 N79-20714
Prebiotic coordination chemistry: The potential role of transition-metal complexes in the chemical evolution
[NASA-TM-75381] p0169 N79-20715
Salyut-6--Soyuz-29: Our commentary, the crew and the station
[NASA-TM-75393] p0174 N79-20745
Microanalytical identification of barium sulphate crystals in statoliths of Chara Rhizoids
[NASA-TM-75611] p0175 N79-21744

Utilization of the wastes of vital activity
[NASA-TM-75410] p0177 N79-21768

Publications of the planetary biology program for 1977: A special bibliography
[NASA-TM-80338] p0179 N79-21777

Medical science in Siberia: Oxygen exchange in the Far North
[NASA-TM-75391] p0211 N79-24630

Investigations about the quantitative changes of carbon dioxide production in humans. Report 2: Carbon dioxide production during fever and its relationship with heat production
[NASA-TM-75452] p0211 N79-24632

Obtaining growth hormone from calf blood
[NASA-TM-75326] p0283 N79-31895

Experimental and theoretical investigations concerning a frequency filter behavior of the human retina regarding electric pulse currents
[NASA-TM-75372] p0314 N79-33822

Contribution to the theory of photopic vision: Retinal phenomena
[NASA-TM-75507] p0315 N79-33823

Publications of the planetary biology program for 1978: A special bibliography
[NASA-TM-80745] p0319 N79-33854

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. AMES RESEARCH CENTER, MOFFETT FIELD, CALIF.

Coupling of aspartate and serine transport to the transmembrane electrochemical gradient for sodium ions in Halobacterium halobium - Translocation stoichiometries and apparent cooperativity
p0002 A79-10425

In-vivo bone strain telemetry in monkeys /M. nemestrina/
p0002 A79-10608

Biological specimen holding facilities for Spacelab experiments
[IAF PAPER 78-56] p0003 A79-11224

Comparison of circadian rhythms in male and female humans
p0004 A79-11947

Comparison of hormone and electrolyte circadian rhythms in male and female humans
p0004 A79-11948

Characterization of a novel extremely alkalophilic bacterium
p0004 A79-11950

A study of axonal degeneration in the optic nerves of aging mice
p0005 A79-12123

In vivo response of ornithine decarboxylase activity to growth hormone as demonstrated by oxidation of L-ornithine-1-/C-14/ in hypophysectomized rats
p0005 A79-12400

Effects of fenfluramine administration on activity of the pituitary-adrenal system in the rat
p0005 A79-12474

Temperature-dependent morphological changes in membranes of Bacillus stearothermophilus
p0005 A79-12475

Planetary protection guidelines for Outer Planet missions
p0005 A79-12511

Animal life support transporters for Shuttle/Spacelab
[ASME PAPER 78-ENAS-10] p0006 A79-12559

Vestibular Function Research aboard Spacelab
[ASME PAPER 78-ENAS-25] p0007 A79-12574

Support system considerations for STS biological investigations
[ASME PAPER 78-ENAS-37] p0008 A79-12584

Studies on the erythron and the ferrokinetic responses in beagles adapted to hypergravity
p0010 A79-12869

Coordinated crew performance in commercial aircraft operations
p0040 A79-13219

Identification of a tripeptidyl aminopeptidase in the anterior pituitary gland - Effect on the chemical and biological properties of rat and bovine growth hormones
p0069 A79-19449

The Viking biological investigations - Review and status
p0100 A79-22083

Cardiovascular regulatory response to lower body negative pressure following blood volume loss
p0101 A79-23470

The use of hybrid integrated circuit techniques in biotelemetry applications
p0131 A79-26145

Senescent changes in the ribosomes of animal cells in vivo and in vitro
p0134 A79-27226

RBC-/Cr-51/ half-life and albumin turnover in growing Beagle dogs during chronic radial acceleration
p0135 A79-27553

The response of selected terrestrial organisms to the Martian environment - A modeling study
p0136 A79-27928

Plasma volume and electrolyte shifts with heavy exercise in sitting and supine positions
p0161 A79-29336

Prebiotic nucleotide oligomerization in a fluctuating environment - Effects of kaolinite and cyanamide
p0162 A79-29938

Effects of aeration on formation and localization of the acetyl coenzyme A synthetases of Saccharomyces cerevisiae
p0162 A79-30125

Effect of sodium and calcium ingestion on thermoregulation during exercise in man
p0163 A79-30624

Spaceflight and bone turnover - Correlation with a new rat model of weightlessness
p0182 A79-33049

The joint US-USSR biological satellite program
p0182 A79-33050

Sweating responses during heat acclimation and moderate conditioning
p0185 A79-33803

A rationale for human operator pulsive control behavior
p0186 A79-34520

Motion sickness in cats - A symptom rating scale used in laboratory and flight tests
p0202 A79-37711

An approach to the origin of self-replicating system. I - Intermolecular interactions
p0204 A79-37948

Relationship between proton motive force and potassium ion transport in Halobacterium halobium envelope vesicles
p0227 A79-40775

Telemetry of intracranial pressure
p0227 A79-41400

An inductively powered telemetry system for temperature, EKG, and activity monitoring
p0228 A79-41424

Continuous metabolic and cardiovascular measurements on a monkey subject during a simulated 6-day Spacelab mission
p0229 A79-41713

Analysis of population mortality kinetics with application to the longevity followup of the Navy's '1,000 aviators'
p0234 A79-43207

Limb blood flow - Rest and heavy exercise in sitting and supine positions in man
p0235 A79-43208

Inhibition of the pituitary-adrenal response to stress during deprivation-induced feeding
p0235 A79-43605

Computer design synthesis of a below knee-Syme prosthesis
p0251 A79-44300

Hyperthermia and exercise
p0252 A79-44775

Insulin-like effect of bovine growth hormone in vivo as demonstrated by oxidation of C/14/-D-glucose in diabetic rats
p0252 A79-44797

Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798

Quantitative analysis of mating behavior in aging male Drosophila Melanogaster
p0252 A79-44799

A structural model of the adaptive human pilot
[AIAA 79-1784] p0252 A79-45411

The importance of light, postural and social cues in the regulation of the plasma cortisol rhythm in man
p0267 A79-47398
Studies on the bioassayable growth hormone-like activity of plasma
p0267 A79-47848
Gating effects in Halobacterium halobium membrane transport
p0268 A79-47849
Particle deposition due to turbulent diffusion in the upper respiratory system
p0270 A79-48251
Light-driven solute transport in Halobacterium halobium
p0270 A79-49194
Deconditioning-induced exercise responses as influenced by heat acclimation
p0273 A79-49985
A simple technique for evaluation of vitality loss in aging mice, by testing their muscular coordination and vigor
p0274 A79-50205
Synaptosomal uptake of hypothalamic monoamines and recovery of pituitary-adrenal activity following medial forebrain bundle lesions in rats
p0275 A79-50232
Aerospace highlights and potential medical applications
p0293 A79-51027
Biomagnetic instrumentation and measurement
p0295 A79-51043
Energy transduction in Halobacterium halobium
p0300 A79-53000
Bioinstrumentation for evaluation of workload in payload specialists - Results of ASSESS II
[IAF PAPER 79-88] p0302 A79-53291
Contour detector and data acquisition system for the left ventricular outline
[NASA-CASE-ARC-10985-1] p0017 N79-10724
US experiments flown on the Soviet Satellite COSMOS 782
[NASA-TM-78525] p0020 N79-11651
US experiments flown on COSMOS 782
p0020 N79-11652
Absence of gastric ulceration in rats after flight on the COSMOS 782
p0021 N79-11660
Effect of space flight on cell-mediated immunity
p0021 N79-11661
Experiment K-002: Results of histological examination of inguinal lymph nodes, supplementary report
p0021 N79-11662
Alterations in erythrocyte survival parameters in rats after 19.5 days aboard COSMOS 782
p0021 N79-11663
Effects of space flight on plasma and glandular concentrations of pituitary hormones
p0021 N79-11664
Quantitative analysis of selected bone parameters
p0022 N79-11668
Cosmic ray effects on the eyes of rats flown on COSMOS 782
p0022 N79-11669
Effects of weightlessness on the embryonic development and aging of Drosophila
p0022 N79-11670
US experiments flown on the Soviet satellite COSMOS 936
[NASA-TM-78526] p0023 N79-11671
The Cosmos 936 mission
p0023 N79-11672
Effects of weightlessness on the genetics and aging process of drosophila melanogaster
p0023 N79-11673
Effect of weightlessness and centrifugation (LXG) on erythrocyte survival in rats subjected to prolonged space flight
p0023 N79-11674
COSMOS 936, experiment K204: The effects of space flight on some liver enzymes concerned with carbohydrate and lipid metabolism in the rat
p0023 N79-11675
Quantitative analysis of selected bone parameters
p0023 N79-11676
Cosmic ray effects on the eyes of stationary and centrifuged rats flown on COSMOS 936, experiment K-207
p0024 N79-11678
Subcutaneous channeling probe
[NASA-CASE-ARC-11091-1] p0025 N79-11684
Physiological responses of women to simulated weightlessness: A review of the first female bed-rest study
[NASA-SP-430] p0054 N79-13686
Indomethacin-antihistamine combination for gastric ulceration control
[NASA-CASE-ARC-11118-2] p0077 N79-14755
A simulator study of the interaction of pilot workload with errors, vigilance, and decisions
[NASA-TM-78482] p0079 N79-14769
Improved subcutaneous electrode structure
[NASA-CASE-ARC-11117-1] p0084 N79-15576
The 14th Annual Conference on Manual Control
[NASA-CP-2060] p0086 N79-15588
A safety margin and flight reference system and display for powered-lift aircraft
p0090 N79-15614
Vision
p0095 N79-15894
A dual-loop model of the human controller
p0115 N79-17480
The human as a detector of changes in variance and bandwidth
p0117 N79-17496
Speech as a pilot input medium
p0119 N79-17519
Miniature implantable ultrasonic echosonometer
[NASA-CASE-ARC-11035-1] p0144 N79-18580
Effects of hypodynamic simulations on the skeletal system of monkeys
p0146 N79-19021
Aircraft flight simulation of spacelab experiment using an implanted telemetry system to obtain cardiovascular data from the monkey
p0147 N79-19022
Computer program for calculation of oxygen uptake
[NASA-TM-78585] p0174 N79-21741
Wildlife monitoring program plan
[NASA-TM-78578] p0190 N79-23626
Spacesuit mobility knee joints
[NASA-CASE-ARC-11058-2] p0214 N79-24651
A long-range and long-life telemetry data-acquisition system for heart rate and multiple body temperatures from free-ranging animals
[NASA-TM-78590] p0239 N79-26762
Biomedical ultrasonoscope
[NASA-CASE-ARC-10994-2] p0240 N79-26771
Spine immobilization method and apparatus
[NASA-CASE-ARC-11167-1] p0279 N79-30921

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. HUGH L. DRYDEN FLIGHT RESEARCH CENTER, EDWARDS, CALIF.
Flight test evaluation of an RAF high altitude partial pressure protective assembly
[NASA-TM-72864] p0214 N79-24654

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. GODDARD INST. FOR SPACE STUDIES, NEW YORK.
Accuracy of RGD approximation for computing light scattering properties of diffusing and motile bacteria
p0233 A79-42448

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. GODDARD SPACE FLIGHT CENTER, GREENBELT, MD.
System for and method of freezing biological tissue
[NASA-CASE-GSC-12173-1] p0013 N79-10694
Determination of antimicrobial susceptibilities on infected urines without isolation
[NASA-CASE-GSC-12046-1] p0076 N79-14750
Apparatus for supplying conditioned air at a substantially constant temperature and humidity
[NASA-CASE-GSC-12191-1] p0156 N79-19688

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. LYNDON B. JOHNSON SPACE CENTER, HOUSTON, TEX.
Prolonged weightlessness and calcium loss in man
[IAF PAPER 78-48] p0002 A79-11219
A review of the consequences of fluid and electrolyte shifts in weightlessness
[IAF PAPER 78-50] p0002 A79-11220
Microflora analysis of a child with severe combined immune deficiency
p0004 A79-11900

The dependence of the CO2 removal efficiency of
LiOH on humidity and mesh size
[ASME PAPER 78-ENAS-5] p0006 A79-12554
Food packages for Space Shuttle
[ASME PAPER 78-ENAS-13] p0007 A79-12562
Life sciences experiments in the first Spacelab
mission
[ASME PAPER 78-ENAS-26] p0008 A79-12575
Microbial Check Valve for Shuttle
[ASME PAPER 78-ENAS-27] p0008 A79-12576
Life sciences experiments mission development
test program
[ASME PAPER 78-ENAS-36] p0008 A79-12583
Extended duration Orbiter life support definition
[ASME PAPER 78-ENAS-42] p0009 A79-12588
Test evaluation of space station ECLSS
maintenance concepts
[ASME PAPER 78-ENAS-43] p0009 A79-12589
Response of the rat erythrocyte to ozone exposure
p0067 A79-18963
Tissue gas and blood analyses of human subjects
breathing 80% argon and 20% oxygen
p0164 A79-30655
Man and machine design for space flight
p0300 A79-52696
Food and waste management biotechnology for the
space shuttle
[IAF PAPER 79-93] p0302 A79-53294
Considerations associated with the introduction
of female crewmembers in spacecraft and space
stations
[IAF PAPER 79-A-22] p0303 A79-53424
Anthropometric changes in weightlessness
p0032 N79-11735
Metabolic rate meter and method
[NASA-CASE-MSC-12239-1] p0175 N79-21750
Urine collection apparatus
[NASA-CASE-MSC-18381-1] p0195 N79-23657
Operator performance and localized muscle
fatigue in a simulated space vehicle control
task
[NASA-TM-58220] p0259 N79-28867
BIOSPEX: Biological space experiments, a
compendium of life sciences experiments
carried on US spacecraft
[NASA-TM-58217] p0261 N79-29784

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. JOHN
F. KENNEDY SPACE CENTER, COCOA BEACH, FLA.**
Prosthesis coupling
[NASA-CASE-KSC-11069-1] p0240 N79-26772
A system for sterilizing objects
[NASA-CASE-KSC-11085-1] p0318 N79-33848

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.
LANGLEY RESEARCH CENTER, HAMPTON, VA.**
Flight management research utilizing an oculometer
p0001 A79-10389
Monitoring the state of the human airways by
analysis of respiratory sound
[IAF PAPER 78-66] p0003 A79-11227
Use of platinum electrodes for the
electrochemical detection of bacteria
p0131 A79-26146
Particle deposition due to turbulent diffusion
in the upper respiratory system
p0270 A79-48251
Advanced transport operation effects on pilot
scan patterns
p0295 A79-51098
Hyperthermia as an Antineoplastic Treatment
Modality
[NASA-CP-2051] p0017 N79-10728
Study of the use of a nonlinear, rate limited,
filter on pilot control signals
p0119 N79-17515
Airline pilot scan patterns during simulated ILS
approaches
[NASA-TP-1250] p0155 N79-19682
Human discomfort response to noise combined with
vertical vibration
[NASA-TP-1374] p0190 N79-22761
Discomfort criteria for single-axis vibrations
[NASA-TP-1422] p0196 N79-23662
Helmet weight simulator
[NASA-CASE-LAR-12320-1] p0223 N79-25761
Effects of noise frequency on performance and
annoyance
[NASA-TM-80107] p0241 N79-26781
Effect of helicopter noise on passenger annoyance
[NASA-TM-80106] p0241 N79-26782

Models of human operators in vision dependent
tasks
[NASA-CP-2103] p0317 N79-33838
Analysis of visual estimation of system state
from arbitrary displays
p0317 N79-33843

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.
LEWIS RESEARCH CENTER, CLEVELAND, OHIO.**
Digital enhancement of computerized axial
tomograms
p0004 A79-11544
Overall loudness of steady sounds according to
theory and experiment
[NASA-RP-1001] N79-25753
Intraocular pressure reduction and regulation
system
[NASA-TM-79187] p0260 N79-28881

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.
MARSHALL SPACE FLIGHT CENTER, HUNTSVILLE, ALA.**
Construction in space - Toward a fresh
definition of the man/machine relation
p0187 A79-34985
Autoradiographic enhancement of mammograms
p0227 A79-40773
Water system virus detection
[NASA-CASE-MSC-16098-1] p0013 N79-10693
Prosthetic urinary sphincter
[NASA-CASE-MFS-23717-1] p0077 N79-14756
A method for separating biological cells
[NASA-CASE-MFS-23883-1] p0175 N79-21743

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.
PASADENA OFFICE, CALIF.**
Automated clinical system for chromosome analysis
[NASA-CASE-NPO-13913-1] p0050 N79-12694
Gas diffusion liquid storage bag and method of
use for storing blood
[NASA-CASE-NPO-13930-1] p0076 N79-14749
Coupling apparatus for ultrasonic medical
diagnostic system
[NASA-CASE-NPO-13935-1] p0077 N79-14751
Apparatus for endoscopic examination
[NASA-CASE-NPO-14092-1] p0155 N79-19678
Terminal guidance sensor system
[NASA-CASE-NPO-14521-1] p0174 N79-20746
Compact artificial hand
[NASA-CASE-NPO-13906-1] p0214 N79-24652
Multifunctional transducer
[NASA-CASE-NPO-14329-1] p0219 N79-25737
Apparatus and method of inserting a
microelectrode in body tissue or the like
using vibration means
[NASA-CASE-NPO-13910-1] p0246 N79-27836

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION.
WALLOPS STATION, WALLOPS ISLAND, VA.**
Radar, Insect Population Ecology, and Pest
Management
[NASA-CP-2070] p0147 N79-19592

NATIONAL AEROSPACE LAB., AMSTERDAM (NETHERLANDS).
A theoretical and experimental analysis of the
outside world perception process
p0091 N79-15625
An analysis of helicopter pilot control
behaviour and workload during instrument
flying tasks
[NLR-MP-78003-U] p0124 N79-17553
Influence of motion wash-out filters on pilot
tracking performance
[NLR-MP-78005-U] p0124 N79-17554
An analysis of helicopter pilot control behavior
and workload during instrument flying tasks
p0150 N79-19630
Performance and workload analysis of inflight
helicopter missions
[NLR-MP-77013-U] p0308 N79-32834
A theoretical and experimental analysis of the
outside world perception process
[NLR-MP-78020-U] p0309 N79-32835

NATIONAL AEROSPACE LAB., TOKYO (JAPAN).
A study of the effect of forcing function
characteristics on human operator dynamics in
manual control
p0086 N79-15590

**NATIONAL AVIATION FACILITIES EXPERIMENTAL CENTER,
ATLANTIC CITY, N. J.**
Development of a performance criterion for air
traffic personnel research through air traffic
control simulation
[AD-A058082] p0031 N79-11727

RNAV procedural turn anticipation techniques
experiment no. 2, GAT-2A. Phase 3: 2 and 4
nmi offset tracking procedures
[AD-A060501]
p0085 N79-15583

NATIONAL BIOMEDICAL RESEARCH FOUNDATION, SILVER SPRING, MD.
The point mutation process in proteins
p0205 A79-37972

NATIONAL BIOMEDICAL RESEARCH FOUNDATION, WASHINGTON, D. C.
Evolution of early life inferred from protein
and ribonucleic acid sequences
p0206 A79-37980

NATIONAL BUREAU OF STANDARDS, WASHINGTON, D.C.
Arousal from sleep by emergency alarms:
Implications from the scientific literature
[PB-284044/5]
p0051 N79-12700
Human responses to fire: Three designs for
research
[PB-284959/4]
p0058 N79-13708
Proximity-vision system for protoflight
manipulator arm
[NASA-CR-158652]
p0197 N79-24658
Ultrasonic tissue characterization II
[PB-296356/9]
p0316 N79-33836

NATIONAL DEFENCE HEADQUARTERS, OTTAWA (ONTARIO).
The Canadian Forces Life Quality Improvement
Programme
p0026 N79-11693
Between incident and accident
p0292 N79-31953

NATIONAL DEFENCE MEDICAL CENTRE, OTTAWA (ONTARIO).
Coronary atherosclerosis and fitness for flying
p0029 N79-11711

NATIONAL FIRE PREVENTION AND CONTROL ADMINISTRATION, WASHINGTON, D. C.
Protective clothing and equipment for
firefighters: Current standards and practices
[PB-286990/7]
p0113 N79-16557

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION, EAST LIBERTY, OHIO.
Calibration of three year old child dummies
[PB-288961/6]
p0157 N79-19692

NATIONAL INST. FOR PERSONNEL RESEARCH, JOHANNESBURG (SOUTH AFRICA).
Heart rate: Physiological characteristics and
quantification methods for use in behavioral
studies
[CSIR-SR-PERS-276]
p0121 N79-17531

NATIONAL INST. ON AGING, BALTIMORE, MD.
Senescent changes in the ribosomes of animal
cells in vivo and in vitro
p0138 A79-27226

NATIONAL PHYSICAL LAB., TEDDINGTON (ENGLAND).
MM/1, a man - machine interface: A contribution
towards a standard
[NPL-CSU-2/78]
p0197 N79-23669

NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VA.
Eutrophication. Volume 2: A bibliography with
abstracts
[NTIS/PS-78/0771/2]
p0013 N79-10695
Eutrophication. Volume 3: A bibliography with
abstracts
[NTIS/PS-78/0772/0]
p0013 N79-10696
Biocompatible materials, volume 2. A
bibliography with abstracts
[NTIS/PS-78/0675/5]
p0019 N79-10736
Ecosystem models, volume 3. A bibliography with
abstracts
[NTIS/PS-78/1146/6]
p0054 N79-13678
Ecosystem models, volume 2. A bibliography with
abstracts
[NTIS/PS-78/1145/8]
p0054 N79-13679
The toxicology of ozone. A bibliography with
abstracts
[NTIS/PS-78/1120/1]
p0057 N79-13705
Information processing in humans, volume 2. A
bibliography with abstracts
[NTIS/PS-78/1153/2]
p0058 N79-13709
Information processing in humans, volume 3. A
bibliography with abstracts
[NTIS/PS-78/1154/0]
p0058 N79-13710
Human work measurement. A bibliography with
abstracts
[NTIS/PS-78/1197/9]
p0081 N79-14781
Stress factors on pilot performance. A
bibliography with abstracts
[NTIS/PS-78/1289/4]
p0145 N79-18589
Biological effects of laser radiation, volume 1.
A bibliography with abstracts
[NTIS/PS-79/0019/4]
p0176 N79-21760
Biological effects of laser radiation, volume 2.
A Bibliography with abstracts
[NTIS/PS-79/0020/2]
p0176 N79-21761
Effects of fatigue on human behavior and
performance. A bibliography with abstracts
[NTIS/PS-79/0071/5]
p0177 N79-21762
Aircraft sonic boom: Biological effects. A
bibliography with abstracts
[NTIS/PS-79/0190/3]
p0214 N79-24650
Flight simulator training, volume 2. A
bibliography with abstracts
[NTIS/PS-79/0277/8]
p0222 N79-25758
Cardiovascular diseases, volume 3. A
bibliography with abstracts
[NTIS/PS-79/0063/2]
p0260 N79-28874
Altitude hypoxia, volume 1. A bibliography with
abstracts
[NTIS/PS-79/0427/9]
p0280 N79-30927
Altitude hypoxia, volume 2. A bibliography with
abstracts
[NTIS/PS-79/0428/7]
p0280 N79-30928
Biological effects of microwaves, volume 1. A
bibliography with abstracts
[NTIS/PS-79/0432/9]
p0280 N79-30929
Biological effects of microwaves, volume 2. A
bibliography with abstracts
[NTIS/PS-79/0433/7]
p0280 N79-30930
Hypothermia. A bibliography with abstracts
[NTIS/PS-79/0533/4]
p0308 N79-32830
Hyperbaric oxygenation. A bibliography with
abstracts
[NTIS/PS-79/0744/7]
p0317 N79-33837
Human memory. A bibliography with abstracts
[NTIS/PS-79/0640/7]
p0318 N79-33847

NAVAL AEROSPACE MEDICAL INST., PENSACOLA, FLA.
Human performance in concurrent verbal and
tracking tasks: A review of the literature
[AD-A060493]
p0085 N79-15585

NAVAL AEROSPACE MEDICAL RESEARCH LAB., NEW ORLEANS, LA.
Medical qualification procedures for
hazardous-duty aeromedical research
p0026 N79-11695
Multiaxis dynamic response of the human head and
neck to impact acceleration
p0284 N79-31906
Transient intraventricular conduction defects
observed during experimental impact in human
subjects
p0285 N79-31907
Potential relationship between human central
nervous system injury and impact forces based
on primate studies
p0286 N79-31919
The effect of impact acceleration on the
electrical activity of the brain
p0287 N79-31921

NAVAL AEROSPACE MEDICAL RESEARCH LAB., PENSACOLA, FLA.
Prevention and treatment of space sickness in
Shuttle-Orbiter missions
p0128 A79-24639
Oculogravic illusion in response to
straight-ahead acceleration of a CF-104 aircraft
p0164 A79-30660
Rotation at 30 RPM about the Z axis after 6
hours in the 10-deg head-down position -
Effect on susceptibility to motion sickness
p0165 A79-30662
Long term pulmonary function patterns in the
aviator: The thousand Aviator study
p0028 N79-11708
The relationship between Air Combat Maneuvering
Range (ACMR) output measures and initial
visual acquisition performance
[AD-A062134]
p0173 N79-20744
Human performance in time-shared verbal and
tracking tasks
[AD-A070275]
p0308 N79-32831

NAVAL AIR DEVELOPMENT CENTER, WARMINSTER, PA.
Molecular determinants for the prediction and
survival of ischemic anoxic stress pathology
p0027 N79-11700
Laser eye protection for flight personnel,
volume 1
[AD-A057417]
p0034 N79-11747

Development of the CWU-48/P high temperature resistant aramid knit flyer's coverall [AD-A059128] p0059 N79-13716
Environmental test and evaluation of a molecular sieve on-board oxygen generation system [AD-A061531] p0125 N79-17559
Protective approaches in the moderation of the physiological effects of extreme ambient conditions in helicopter operations p0149 N79-19618
Human factor engineering test and evaluation of the US Navy LAMPS helicopter system p0151 N79-19632
US Navy development of an On-Board Oxygen Generation (OBOG) system [AD-A063958] p0197 N79-24656
Thermal conduction effects in human skin. 1: Experimental data acquisition [AD-A068479] p0259 N79-28871
Thermal conduction effects in human skin. 3: Influence of epidermal thickness and exposure time [AD-A068481] p0259 N79-28872
A human body and crew station modelling system for motion studies p0287 N79-31922
Some human responses to repeated +G sub z pulses p0288 N79-31928

NAVAL AIR TEST CENTER, PATUXENT RIVER, MD.
Aircrew personnel restraint subsystems definition of deficiencies and requirements [AD-A058995] p0053 N79-12711

NAVAL CIVIL ENGINEERING LAB., PORT HUENEME, CALIF.
A head injury model p0286 N79-31918

NAVAL POSTGRADUATE SCHOOL, MONTEREY, CALIF.
Human factors evaluation of the AN/UYQ-21 display console [AD-A056383] p0020 N79-10743
A preliminary investigation of aural input/output systems for in-flight information retrieval [AD-A063174] p0178 N79-21770
Development of information theory concepts and equations for human mental processing [AD-A068606] p0260 N79-28877
Effects on A-6E bombardier/navigator flight training with the introduction of device 2F114, A-6E weapon system trainer [AD-A068607] p0289 N79-31933

NAVAL RESEARCH LAB., WASHINGTON, D. C.
Capabilities of radar as they might relate to entomological studies p0148 N79-19598

NAVAL SURFACE WEAPONS CENTER, WHITE OAK, MD.
Investigation of techniques to reduce electrostatic discharge susceptibility of EED's containing plastic plugs [AD-A059982] p0093 N79-15638

NAVAL TRAINING EQUIPMENT CENTER, ORLANDO, FLA.
Compensation for transport delays produced by computer image generation systems [AD-A056720] p0019 N79-10738

NAVAL WEAPONS CENTER, CHINA LAKE, CALIF.
Safety evaluation tests of personal protective equipment for ordnance operations [AD-A058987] p0053 N79-12712

NAVY CLOTHING AND TEXTILE RESEARCH FACILITY, NATICK, MASS.
Aluminized firefighters' crash-rescue protective hood: Facepiece-visor redesign study [AD-A066492] p0223 N79-25764
Field evaluation of experimental crash-crew firefighter's facepiece [AD-A066544] p0223 N79-25765
Aluminized firemen's (fire proximity) handwear: Redesign of experimental prototype [AD-A069895] p0290 N79-31940

NAVY CLOTHING AND TEXTILE RESEARCH UNIT, NATICK, MASS.
Insulated firefighters' crash-crew rescue boots and components: Field and laboratory evaluation [AD-A068264] p0262 N79-29795

NAVY PERSONNEL RESEARCH AND DEVELOPMENT CENTER, SAN DIEGO, CALIF.
Relating performance in basic electricity and electronics and A schools [AD-A060914] p0085 N79-15584
Hemispheric asymmetry as related to pilot and radar intercept officer performance [AD-A068087] p0289 N79-31935

NEBRASKA UNIV., LINCOLN.
The proto-type wrist joint assembly TACPAW (Triple Axis Common Pivot Arm Wrist), phase 2 [NASA-CR-150885] p0093 N79-15635

NEDERLANDS INSTITUUT VOOR PRAEVENTIEVE GENEESKUNDE TNO, LEIDEN.
Reduced mental capacity and behavior of a rider of a bicycle simulator under alcohol stress or under dual task load p0116 N79-17489

NEVADA UNIV., LAS VEGAS.
Distribution of phytoplankton in North Carolina lakes [PB-286387/6] p0084 N79-15573

NEW ENGLAND MEDICAL CENTER HOSPITALS, BOSTON, MASS.
Determination of antimicrobial susceptibilities on infected urines without isolation [NASA-CASE-GSC-12046-1] p0076 N79-14750

NEW MEXICO UNIV., ALBUQUERQUE.
Stress factors on pilot performance. Citations from the International Aerospace Abstracts data base [NTIS/PS-79/0506/0] p0260 N79-28878

NEW YORK UNIV., N. Y.
Atmospheric neutrons [NASA-CR-3126] p0211 N79-24631

NORTH CAROLINA STATE UNIV. AT RALEIGH.
A model for predicting human discomfort response to combined noise and vertical vibration p0156 N79-19685

NORTH CAROLINA STATE UNIV., RALEIGH.
The role of insect dispersal and migration in population processes p0147 N79-19593
Bacteria in a North Carolina salt marsh. Standing crop and importance in the decomposition of Spartina alterniflora [PB-288816/2] p0153 N79-19668

NORTH CAROLINA UNIV., CHAPEL HILL.
Effect of ultrasonic irradiation on mammalian cells and chromosomes in vitro p0134 A79-27239

NORTH DAKOTA UNIV., GRAND FORKS.
Applied analysis of computer simulated decompression profiles p0017 N79-10722

NORTHROP CORP., HAWTHORNE, CALIF.
Prediction, evaluation, and specification of flying qualities by means of step target tracking p0088 N79-15604
Error rate information in attention allocation pilot models p0115 N79-17483
Prediction of pilot reserve attention capacity during air-to-air target tracking p0116 N79-17488

NORTHWESTERN UNIV., EVANSTON, ILL.
Raman spectroscopy of biological membranes and other biological systems p0141 N79-18559
Dynamic measurement of human cyclofusional eye movements p0142 N79-18575
A three dimensional discrete element dynamic model of the spine, head and torso p0285 N79-31910

NOTRE DAME UNIV., IND.
Application of numerical methods to physiological flows p0146 N79-18945

O

OAK RIDGE NATIONAL LAB., TENN.
Emergence of biotechnology [TID-28983] p0211 N79-24626
Dose-rate conversion factors for external exposure to photon and electron radiation from radionuclides occurring in routine releases from nuclear fuel cycle facilities [NUREG-CR-0494] p0259 N79-28873
Mutagenic components of alternate energy sources [CONF-780636-8] p0280 N79-30923

OFFICE NATIONAL D'ETUDES ET DE RECHERCHES AEROSPATIALES, PARIS (FRANCE).

Discrete-time pilot model
p0088 N79-15601
Discrete time modeling of heavy transport plane pilot behavior
p0118 N79-17508

OFFICE OF RADIATION PROGRAMS, LAS VEGAS, NEV.
Measurements of radiofrequency field intensity in buildings with close proximity to broadcast stations
[PB-290944/8] N79-25750

OFFICE OF RADIATION PROGRAMS, SILVER SPRING, MD.
Radiofrequency radiation levels and population exposure in urban areas of the eastern United States
[PB-292855/4] p0241 N79-26779

OFFICE OF RADIATION PROGRAMS, WASHINGTON, D. C.
Radiation protection activities, 1977
[PB-290215/3] p0176 N79-21759

OFFICE OF SCIENCE AND TECHNOLOGY, WASHINGTON, D. C.
A technical review of the biological effects of non-ionizing radiation
[PB-290166/8] p0171 N79-20728

OFFICE OF TECHNOLOGY ASSESSMENT, WASHINGTON, D. C.
Assessing the efficacy and safety of medical technologies
[PB-286929/5] p0085 N79-15580

OHIO STATE UNIV., COLUMBUS.
Secondary visual workload capability with primary visual and kinesthetic-tactual displays
p0064 A79-18220
A comparison of kinesthetic-tactual and visual displays via a critical tracking task
p0162 A79-29720
Evaluation of kinesthetic-tactual displays using a critical tracking task
p0119 N79-17516
An investigation of the pulse-scatter imaging technique for medical ultrasonic imaging and tissue characterization
p0211 N79-24628
Techniques of cumulative quantitative characterization of the thorax using audiosonic methods
p0240 N79-26769
Combined discrete network-continuous control modeling of man-machine systems
p0260 N79-28879
Estimation of rate constants in the Michaelis-Menten model
[AD-A070360] p0307 N79-32824

OHIO STATE UNIV. RESEARCH FOUNDATION, COLUMBUS.
A formal model of the adaptive and discrete control behaviors of human operators
[AD-A059039] p0059 N79-13717

OHIO UNIV., ATHENS.
Evidence for the neural regulation of respiration During low intensity exercise in man
p0144 N79-18578
A study of the mechanism of thigmomorphogenesis in plants, with special reference to the role of ethylene and its significance to research with plants in space
[NASA-CR-158506] p0190 N79-23625

OKLAHOMA UNIV. HEALTH SCIENCES CENTER, OKLAHOMA CITY.
Effects of methylprednisolone sodium succinate on clearance of livine E. coli from peripheral blood of dogs
[AD-A062123] p0169 N79-20717

OREGON STATE UNIV., CORVALLIS.
The development and evaluation of objective frequency domain based pilot performance measures in ASUPT
[AD-A059477] p0080 N79-14776
Metabolism of hydrazine
[AD-A062251] p0169 N79-20716

OREGON UNIV., EUGENE.
Time-sharing is not a unitary ability
[AD-A056632] p0019 N79-10739

ORGANON DIAGNOSTICS, EL MONTE, CALIF.
Water system virus detection
[NASA-CASE-MSC-16098-1] p0013 N79-10693

OXFORD ORTHOPAEDIC ENGINEERING CENTRE (ENGLAND).
Caloric and exercise requirements of space flight - Biostereometric results from Skylab
p0128 A79-24637

P

PACER SYSTEMS, INC., ARLINGTON, VA.
Workload and the certification of helicopters for IFR operation
[AD-A072758] p0318 N79-33850

PARIS V UNIV. (FRANCE).
The use of biostereometry in helicopter cockpit design
p0150 N79-19629

PARIS-VAL DE MARNE UNIV., CRETEIL (FRANCE).
Abundance of organic compounds photochemically produced in the atmospheres of the Outer Planets
p0210 A79-39075

PENNSYLVANIA STATE UNIV., UNIVERSITY PARK.
Effects of magnesium, calcium, and serum on reversion of stable L-forms
p0131 A79-26140
Minute tubular forms in soil
p0297 A79-51698
Attachment to autoclaved soil of bacterial cells from pure cultures of soil isolates
p0297 A79-51701
Purification and cultivation of human pituitary growth hormone secreting cells
[NASA-CR-151853] p0051 N79-12697
Evaluation of biofeed therapy
[PB-287777/7] p0123 N79-17543
Evaluation of clinical biofeedback
[PB-287776/9] p0123 N79-17544
A comparison of sweating responses in men and women before and after acclimation to humid heat
p0175 N79-21752
X-ray backscatter imaging
p0176 N79-21754
Purification and cultivation of human pituitary growth hormone secreting cells
[NASA-CR-160242] p0219 N79-25736

PENNSYLVANIA UNIV., PHILADELPHIA.
Serendipitous solution to the problem of culturing Arabidopsis plants in sealed containers for spaceflights of long duration
p0229 A79-41704
Importance of temperature control for HEFLEX, a biological experiment for Spacelab 1
p0230 A79-41716
Analysis of inert gas exchange in the middle ear
p0017 N79-10723
Analysis and validation of human biodynamic models
[AD-A059013] p0058 N79-13714
Classical theory of microwave interactions with biological systems
p0082 N79-15556
Metal bioelectrode polarization: A frequency and time domain analysis
p0176 N79-21755
Oxygen delivery in the hypoxic perfused heart: Relation to functional and metabolic changes
p0307 N79-32825

PERCEPTRONICS, INC., WOODLAND HILLS, CALIF.
Adaptive estimation of information values in continuous decision making and control of advanced aircraft
[AD-A069741] p0282 N79-30941

PITTSBURGH UNIV., PA.
Effect of optical magnification on the perception of displayed orientation
[AD-A065949] p0196 N79-23660

PLANNING RESEARCH CORP., KENNEDY SPACE CENTER, FLA.
Advanced life support equipment for nitrogen tetroxide environments
p0169 N79-20432

POLYTECHNIC INST. OF NEW YORK.
Acoustic attitude orientation
p0314 N79-33816

PRINS MAURITS LAB. TNO, RIJSWIJK (NETHERLANDS).
Percutaneous absorption of toxic agents. Part 2: The nerve bases and some other toxic organophosphates. A survey of the literature.
[PML-1978-9] p0123 N79-17542

PROFESSIONAL STAFF ASSOCIATION OF THE RANCHO LOS AMIGOS HOSPITAL, INC., DOWNEY, CALIF.
Effects of oxides on nitrogen, Carbon monoxide and photochemical oxidants on the ECG during exercise and on cardiopulmonary function
[PB-291595/7] p0177 N79-21763

PURDUE UNIV., LAFAYETTE, IND.
An illness-injury severity index

p0050 N79-12688
Microwave frequencies and the structure of the double helix
p0082 N79-15559
Pilot-optimal augmentation synthesis
p0088 N79-15603
Advanced industrial robot control systems
[PB-287273/7] p0113 N79-16558
The relationship between adult articular cartilage thickness and dynamic loads of a uniaxial joint
p0154 N79-19671
A mathematical scheme for predicting the electro-acoustic frequency response of hearing aid receiver-earmold-ear systems
p0154 N79-19673
Magnitude estimation as a hearing aid selection procedure
p0246 N79-27838

Q

QUEEN ELIZABETH COLL., LONDON (ENGLAND).
Determination of bound water in biological materials from dielectric measurements
p0082 N79-15557

R

RANCHO LOS AMIGOS HOSPITAL, INC., DOWNEY, CALIF.
Computer quantitation of coronary angiograms
p0293 A79-51030
RAND CORP., SANTA MONICA, CALIF.
Individual differences in knowledge acquisition from maps
[AD-A065040] p0196 N79-23663
RASOR ASSOCIATES, INC., SUNNYVALE, CALIF.
Noninvasive assessment of pulmonary hypertension using bubble ultrasonic ringing (BURP) method, part 2
[PB-283935/5] p0051 N79-12699
REHABILITATIONSKLINIK LOIPL, BISCHOFSWIESEN-BERCHTESGADEN (WEST GERMANY).
Potential relationship between human central nervous system injury and impact forces based on primate studies
p0286 N79-31919
RENSSELAER POLYTECHNIC INST., TROY, N. Y.
Effects of low temperature on in vivo and in vitro protein synthesis in Escherichia coli and Pseudomonas fluorescens
p0131 A79-26141
RESEARCH INST. OF NATIONAL DEFENCE, STOCKHOLM (SWEDEN).
Effect on mice of microwaves in the non-thermal intensity region. Respiration, rectal temperature and mental reaction
[FOA-C-54021-H2(H6)] p0120 N79-17523
Task complexity and 24-hr performance patterns in morning and evening active subjects
[FOA-C-52001-H6] p0122 N79-17537
Quantification and validation of percept-genetic defense mechanism. A hierarchical analysis of behavior of pilots under stress
[FOA-C-55020-H6] p0124 N79-17555
Perceived quantization error. Effect of quantization function, reconstruction function and number of levels
[FOA-C-56015-H9] p0124 N79-17556
Shalit Perceptual Organisation and Reduction Questionnaire (SPORQ): The instrument, design, administration and scoring
[FOA-C-55021-H6] p0249 N79-27853
Biologically active short-chain peptides
[FOA-C-40063-C1] p0261 N79-29785
Human processing of information and the computerized mode of presentation: Ergonomic parameters
[FOA-C-56018-H9] p0263 N79-29797
Shalit Perceptual Organization and Reduction Questionnaire (SPORQ). Report 2: Characteristics and reliability
[FOA-C-55031-H6] p0309 N79-32836
RHODE ISLAND UNIV., KINGSTON.
General methods to enable robots with vision to acquire, orient, and transport workpieces
[PB-287 199/4] p0113 N79-16556
RICE UNIV., HOUSTON, TEX.
The dependence of the CO2 removal efficiency of LiOH on humidity and mesh size
[ASME PAPER 78-ENAS-5] p0006 A79-12554
Trace contaminant studies of HSC adsorbent
[NASA-CR-160148] p0177 N79-21769
Studying the state of cellular metal ions by the extended X-ray absorption fine structure
[AD-A069799] p0279 N79-30914
A nonlinear mapping approach to discrimination of sleep stages from the human electroencephalogram
p0314 N79-33817
ROCHESTER UNIV., N. Y.
Noninvasive ultrasonic blood flow characterization
p0017 N79-10726
Diffraction-based characterization of biological tissue with ultrasound
p0054 N79-13683
Studies of metabolism, function and mechanism of destruction of red cells
[AD-A070240] p0315 N79-33828
Metabolic and physical scaling in microwave/radiofrequency bioeffects studies
[UR-3490-1561] p0316 N79-33831
ROCKWELL INTERNATIONAL CORP., DOWNEY, CALIF.
Simulated EVA operation of a remote connector assembly test report
[NASA-CR-161167] p0156 N79-19687
ROSENSTIEL SCHOOL OF MARINE AND ATMOSPHERIC SCIENCES, MIAMI, FLA.
Nitrogen fixation with photosynthetic marine microorganisms
[PB-286000/5] p0083 N79-15570
Nitrogen fixation with photosynthetic marine microorganisms
[PB-287590/4] p0120 N79-17525
ROSWELL PARK MEMORIAL INST., BUFFALO, N. Y.
An approach to the origin of self-replicating system. I - Intermolecular interactions
p0204 A79-37948
ROYAL AIR FORCE, FARNBOROUGH (ENGLAND).
Mechanics of mammalian lung
p0247 N79-27844
ROYAL AIR FORCE, HALTON (ENGLAND).
Injury mechanisms analysis in aircraft accidents
p0286 N79-31913
ROYAL AIR FORCE CENTRAL MEDICAL ESTABLISHMENT, LONDON (ENGLAND).
The significance of I wave abnormalities
p0029 N79-11713
ROYAL AIR FORCE HOSPITAL, HALTON (ENGLAND).
Beta-adrenoceptor antagonists: Central effects
p0027 N79-11702
ROYAL AIR FORCE INST. OF AVIATION MEDICINE, FARNBOROUGH (ENGLAND).
Disorientation in Royal Naval helicopter pilots
p0152 N79-19648
The effect of a reclined sitting position on psychomotor performance during exposure to high, sustained +Gsub z acceleration
[FPRC-1362] p0248 N79-27856
The effect of acceleration and seat back angle on performance of a reaction time task
[FPRC-1364] p0248 N79-27857
The influence of seat back angle on acceleration tolerance
[FPRC-1365] p0248 N79 27858
ROYAL AIRCRAFT ESTABLISHMENT, FARNBOROUGH (ENGLAND).
The physiological significance of light for human beings
[RAE-LIB-TRANS-1976] p0077 N79-14757
Investigations into the importance of the direction of centrifugal forces acting on the human body
[RAE-LIB-TRANS-1945] p0077 N79-14758
Psychological aspects of the human-operator's activity while tracking
[RAE-LIB-TRANS-1979] p0079 N79-14768
Evaluation of the amount of exposure to vibrations transmitted to the whole body case of vibrations due to a loader mounted on catapillar tracks, a fork-lift truck and a hydraulic excavator
[RAE-LIB-TRANS-1930] p0080 N79-14773
Comparative experiments on performance and fatigue effects on pilots using tracking tests and physiological measurement parameters
[RAE-LIB-TRANS-1971] p0080 N79-14774
The influence of mechanical vibration and noise on the peripheral blood circulation at skin

level
[RAE-LIB-TRANS-1980] p0084 N79-15578

Human factors evaluations of today's helicopters as an aid to future systems design
p0150 N79-19627

Ultrasonic doppler directional blood flow velocity meter
[RAE-LIB-TRANS-1918] p0279 N79-30920

The use of spinal analogue to compare human tolerance of repeated shocks with tolerance of vibration, part 1
p0288 N79-31926

ROYAL NAVAL AIR MEDICAL SCHOOL, SEAFIELD PARK (ENGLAND).

A system of training in aviation physiology and human factors for Army and Navy helicopter aircrew
p0151 N79-19635

ROYAL NAVAL PERSONNEL RESEARCH COMMITTEE, LONDON (ENGLAND).

Human factors. Speech communication
[PS-5/78] p0113 N79-16555

RUSH MEDICAL CENTER, CHICAGO, ILL.

Directional errors of movements and their correction in a discrete tracking task
p0086 N79-15589

RUSH-PRESBYTERIAN-SAINT LUKE'S MEDICAL CENTER, CHICAGO, ILL.

A quasi-linear control theory analysis of timesharing skills
p0120 N79-17520

RUTGERS - THE STATE UNIV., NEW BRUNSWICK, N. J.

A study of cerebral blood flow in the goat. A. Correlations between the ventilatory and cerebrovascular responses to carbon monoxide inhalation. B. The dynamics of the cerebral blood flow response to hypoxia by frequency response analysis
p0107 N79-16510

The effects of brain ischemia on the control of breathing in unanesthetized goats
p0190 N79-23624

S

SAINT LOUIS UNIV., MO.

Limb blood flow - Rest and heavy exercise in sitting and supine positions in man
p0235 A79-43208

SAN FRANCISCO UNIV., CALIF.

Statistical studies of animal response data from USF toxicity screening test method
p0066 A79-18305

Two-week studies of survivors from exposures to pyrolysis gases
p0066 A79-18307

Weight control and restraint of laboratory rats
p0133 A79-26584

Effects of high-LET neon /Ne-20/ particle radiation on the brain, eyes and other head structures of the pocket mouse - A histological study
p0252 A79-44798

Space radiation dosimetry onboard COSMOS 936: US portion of experiment K-206
p0023 N79-11677

SAN JOSE STATE UNIV., CALIF.

Perpetual factors involved in performance of air traffic controllers using a microwave landing system
p0092 N79-15628

Vestibular influences on other sensory and motor processes
p0094 N79-15893

SAN JOSE STATE UNIV. FOUNDATION, CALIF.

The role of cognitive switching in head-up displays
[NASA-CR-3137] p0318 N79-33851

SANDIA LABS., ALBUQUERQUE, N. MEX.

Effect of impermeable clothing and respirator on work performance. Part 1: Laboratory studies
[SAND-77-2132] p0034 N79-11748

SCHOOL OF AEROSPACE MEDICINE, BROOKS AFB, TEX.

Influence of the ambient acceleration field upon acute acceleration tolerance in chickens
p0230 A79-41715

A prospective medicine approach to the problem of ischemic vascular disease in the USAF
p0027 N79-11697

Distinguishing borderline hypertensives from normotensives: A clinical study of 300 aircrewmen
p0027 N79-11699

Psychosocial aspects of syncope and vertigo in aircrew
p0027 N79-11701

The prediction of the existence or nonexistence of coronary artery disease using routine clinical laboratory measurement
p0028 N79-11703

Detection of coronary artery disease in apparently healthy, asymptomatic aircrew members using thallium-201 myocardial perfusion scintigraphy
p0029 N79-11712

Effect of age on relaxed +G sub z tolerance of aircrewmen
p0030 N79-11719

Reproducibility of human cardiovascular responses to orthostatic stress
p0030 N79-11720

Human compatibility testing of a 2-man molecular sieve oxygen generator
[AD-A058248] p0053 N79-12710

Minuteman missile crew fatigue and 24-hour alerts
[AD-A056561] p0056 N79-13696

Fighter index of thermal stress: Development of interim guidance for hot-weather USAF operations
[AD-A053471] p0056 N79-13699

The dynamic oxygen-regulator test stand
[AD-A060978] p0125 N79-17560

Specific findings in cardiology and pulmonary function with special emphasis on assessment criteria for flying
p0171 N79-20731

Fighter index of thermal stress: Relation to weather conditions at ATC and TAC bases
[AD-A062713] p0174 N79-20748

Electrical parameter values of some human tissues in the radiofrequency radiation range
[AD-A064202] p0189 N79-22754

Hybrid computation of left ventricular performance using noninvasive techniques
[AD-A063749] p0190 N79-22758

Mathematical modeling of arterial oxygen saturation and eye-level blood pressure during +G sub Z stress
p0286 N79-31916

SCIENCE APPLICATIONS, INC., ARLINGTON, VA.

Image processing program completion report
[AD-A061597] p0123 N79-17549

SCIENCE APPLICATIONS, INC., ENGLEWOOD, COLO.

A critally annotated bibliography of the literature on human factors in computer systems
[AD-A058081] p0052 N79-12707

SCIENTIFIC SYSTEMS, INC., CAMBRIDGE, MASS.

Microprocessor: Based prosthetic control
[PB-286652/3] p0113 N79-16559

SCIENTIFIC TRANSLATION SERVICE, ANN ARBOR, MICH.

Cell biology basis for the life of an organism in the radiation field
[ANL-TRANS-1152] p0261 N79-29786

SIERRA ENGINEERING CO., SIERRA MADRE, CALIF.

Evaluation of the Sierra Engineering Company lightweight helmet
[AD-A061799] p0157 N79-19689

SLOAN-KETTERING INST. FOR CANCER RESEARCH, NEW YORK.

The response of selected terrestrial organisms to the Martian environment - A modeling study
p0136 A79-27928

SOUTH DAKOTA UNIV., VERMILLION.

Squalenes, phytanes and other isoprenoids as major neutral lipids of methanogenic and thermoacidophilic 'archaebacteria'
p0232 A79-42274

SOUTHAMPTON UNIV. (ENGLAND).

The biodynamic response of the human body and its application to standards
p0288 N79-31929

SOUTHERN CALIFORNIA RESEARCH INST., LOS ANGELES.

Vehicle Steering control: A model of learning
p0089 N79-15606

SOUTHWEST RESEARCH INST., SAN ANTONIO, TEX.

The distribution of cadmium and other metals in human tissues
[PB-285200/2] p0057 N79-13703

SPAR AEROSPACE PRODUCTS LTD., TORONTO (ONTARIO).

Manned simulations of the SRMS in SIMFAC

p0089 N79-15611

SRI INTERNATIONAL CORP., MENLO PARK, CALIF.
Assessment of human exposures to atmospheric benzene
[PB-284203/7] p0051 N79-12701
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-284686/3] p0052 N79-12703
Development of high-resolution ultrasonic imaging techniques for detection and clinical assessment of cardiovascular disease
[PB-286696/0] p0085 N79-15581
Two measures of performance in a peg-in-hole manipulation task with force feedback
p0118 N79-17506
Study of modeling and evaluation of remote manipulation tasks with force feedback
[NASA-CR-158721] p0242 N79-26785
Study of pharmaceutical industrial problems
[NASA-CR-160267] p0248 N79-27852

STANFORD RESEARCH INST., MENLO PARK, CALIF.
Development of techniques to enhance man/machine communication
[NASA-CR-157886] p0032 N79-11730
A three dimensional discrete element dynamic model of the spine, head and torso
p0285 N79-31910

STANFORD UNIV., CALIF.
Telemetry of intracranial pressure
p0227 A79-41400
Quantitative analysis of mating behavior in aging male Drosophila Melanogaster
p0252 A79-44799
Iodine imaging using spectral analysis
p0294 A79-51034
A directional pulsed-Doppler ultrasonic blood flowmeter
p0050 N79-12693
The development of a six degree-of-constraint robot performance evaluation test
p0117 N79-17504
Human circadian physiology: Internal organization of temperature, sleep-wake and neuroendocrine rhythms monitored in an environment free of time cues
p0154 N79-19670
Estimation of nerve-bundle conduction
p0154 N79-19672

STATE UNIV. OF NEW YORK AT BUFFALO.
Cardiopulmonary readjustments in passive tilt
p0277 A79-50901
Study of model membrane fusion using photon correlation spectroscopy
p0147 N79-19591

STATE UNIV. OF NEW YORK AT BUFFALO, AMHERST.
A quasi-linear control theory analysis of timesharing skills
p0115 N79-17479

STATE UNIV. OF NEW YORK AT STONY BROOK.
The morphogenetic responses of cultured totipotent cells of carrot (Daucus carota L.) at zero gravity
p0021 N79-11657

STILLMAN COLL., TUSCALOOSA, ALA.
Developmental and hematological responses to low level continuous exposure of nitrogen dioxide in mice
p0147 N79-19026
Electrophoresis pattern of serum from mice exposed to different concentrations of sulfur dioxide
p0147 N79-19027
The effects of the pollutant, sodium cyanide, on the morphology and physiology of oedogonium cardiacum
p0147 N79-19028

STRATHCLYDE UNIV., GLASGOW (SCOTLAND).
A failure criterion for human, vertebral, cancellous bone
p0285 N79-31912

SYRACUSE RESEARCH CORP., N. Y.
Health effects associated with diesel exhaust emissions, literature review and evaluation
[PB-289817/9] p0171 N79-20727

SYSTEM DEVELOPMENT CORP., SANTA MONICA, CALIF.
Evaluation of four target-identification training techniques
[AD-A061175] p0123 N79-17548

SYSTEMS CONTROL, INC., PALO ALTO, CALIF.
Human operator identification model and related computer programs
[NASA-CR-152237] p0112 N79-16551

SYSTEMS RESEARCH LABS., INC., DAYTON, OHIO.
AAA gunnermodel based on observer theory
p0087 N79-15594
The effects of closed loop tracking on a subjective tilt threshold in the roll axis
p0090 N79-15620
Multipurpose digital switching and flight control workload
[AD-A069606] p0281 N79-30934

SYSTEMS TECHNOLOGY, INC., HAWTHORNE, CALIF.
Use of reward-penalty structures in human experimentation
p0089 N79-15607
A safety margin and flight reference system and display for powered-lift aircraft
p0090 N79-15614
Roll tracking effects of G-vector tilt and various types of motion washout
p0091 N79-15622
Investigation of nonlinear motion simulator washout schemes
p0091 N79-15624
The effects of alcohol on driver performance in a decision making situation
p0092 N79-15629
A decision model applied to alcohol effects on driver signal light behavior
p0092 N79-15630
Driver steering dynamics measured in car simulator under a range of visibility and roadmaking conditions
p0117 N79-17493
Progress in measuring and modeling the effects of low frequency vibration on performance
p0288 N79-31930

T

TACTICAL AIR COMMAND, LANGLEY AFB, VA.
Medical and operational factors of accidents in advanced fighter aircraft
p0290 N79-31944

TACTICAL DRONE SQUADRON (11TH), DAVIS-MONTHAN AFB, ARIZ.
A head-up display for mid-air drone recovery
p0090 N79-15615

TECHNISCHE HOCHSCHULE, AACHEN (WEST GERMANY).
Mechanics of breathing during graded exercise measured with the bodyplethysmograph
p0029 N79-11709

TECHNISCHE HOCHSCHULE, DARMSTADT (WEST GERMANY).
Reference parameters for shock inputs and shock tolerance limits
p0284 N79-31905

TECHNISCHE HOGESCHOOL, DELFT (NETHERLANDS).
Parameter estimation in a human operator describing function model for a two-dimensional tracking task
p0115 N79-17481
Modelling the human operator of slowly responding systems using linear models
p0117 N79-17492
A model of the human supervisor
p0117 N79-17495
Vestibular models and thresholds of motion perception. Result of tests in a flight simulator
[VTH-LR-265] p0146 N79-18595

TECHNISCHE HOGESCHOOL, EINDHOVEN (NETHERLANDS).
Computer design synthesis of a below knee-Syme prosthesis
p0251 A79-44300
Observability of electrical heart activity studied with singular value decomposition
[TH-78-E-81] p0144 N79-18584

TECHNOLOGY, INC., HOUSTON, TEX.
Food packages for Space Shuttle
[ASME PAPER 78-ENAS-13] p0007 A79-12562
Analysis of body form using biostereometrics
[NASA-CR-160173] p0195 N79-23654

TECHNOLOGY, INC., MOUNTAIN VIEW, CALIF.
Support system considerations for STS biological investigations
[ASME PAPER 78-ENAS-37] p0008 A79-12584

Analysis of population mortality kinetics with
application to the longevity followup of the
Navy's '1,000 aviators'
p0234 A79-43207
TECHNOLOGY, INC., SAN ANTONIO, TEX.
Engineering test and evaluation during high G.
Volume 3: Anti-G suits
[AD-A059122] p0052 N79-12706
Engineering test and evaluation during high G.
Volume 2: Anti-G valves
[AD-A059521] p0081 N79-14780
TENNESSEE UNIV., KNOXVILLE.
Erythropoietic effects of space flight
p0231 A79-42193
Estimation of the operating characteristics of
item response categories, 3: The normal
approach method and the Pearson system
[AD-A056747] p0145 N79-18587
Use of a computer model in the understanding of
erythropoietic control mechanisms
[NASA-CR-160201] p0217 N79-25718
TEXAS CENTER FOR RESEARCH, AUSTIN.
Simple models for the shuttle remote manipulator
system
[NASA-CR-151881] p0113 N79-16554
TEXAS UNIV., DALLAS.
Influences of physical conditioning and
deconditioning on coronary vasculature of dogs
p0067 A79-18955
Early cardiovascular adaptation to zero gravity
simulated by head-down tilt
[IAF PAPER 79-77] p0301 A79-53286
TEXAS UNIV., GALVESTON.
A fast-reacting and versatile optokinetic
stimulus pattern by computer graphics with
application examples
p0160 A79-28993
Tissue gas and blood analyses of human subjects
breathing 80% argon and 20% oxygen
p0164 A79-30655
TEXAS UNIV., HOUSTON.
Recovery of skeletal muscle after 3 mo of
hindlimb immobilization in rats
p0268 A79-47856
TEXAS UNIV. AT AUSTIN.
Making it in academic psychology: Demographic
and personality correlates of eminence
[NASA-CR-162287] p0289 N79-31932
Measurements in the laser irradiated eye
[AD-A069842] p0315 N79-33825
TEXAS UNIV. AT GALVESTON.
The effects of high nitrogen tensions of the
properties of neuronal membranes and synaptic
transmission
[AD-A063856] p0213 N79-24647
Fundamental biophysical aspects of decompression
sickness
[AD-A069998] p0315 N79-33827
TEXAS UNIV. HEALTH SCIENCE CENTER, DALLAS.
ST isopotential precordial surface maps in
patients with acute myocardial infarction
p0098 A79-21245
Early cardiovascular adaptation to simulated
zero gravity
p0162 A79-29727
A wide aperture focussed ultrasound system for
detection of breast carcinoma by ultrasonic
attenuation
p0142 N79-18577
TEXAS UNIV. HEALTH SCIENCE CENTER, HOUSTON.
The effect of infection with herpes simplex
viruses types 1 and 2 on cell DNA synthesis
and thymidine kinase activities in cultured
human cells
p0141 N79-18558
TEXTRON BELL HELICOPTER, FORT WORTH, TEX.
Visual requirements for the helicopter pilot
p0151 N79-19636
TOKYO UNIV. (JAPAN).
A study of the effect of forcing function
characteristics on human operator dynamics in
manual control
p0086 N79-15590
Motion cue effects on human pilot dynamics in
manual control
p0119 N79-17514
TOLEDO UNIV., OHIO.
Carbohydrate metabolism of the stimulated
diaphragm muscle
p0050 N79-12689
TORONTO UNIV. (ONTARIO).
Vehicle Steering control: A model of learning
p0089 N79-15606
TRACOR JITCO, INC., ROCKVILLE, MD.
Chemicals identified in human biological media,
a pilot literature survey
[PB-290690/7] p0214 N79-24649
Report of the Workshop on Biological Screening
Tests
[PB-294303/3] p0279 N79-30916
TRANS WORLD AIRLINES, INC., KANSAS CITY, MO.
Development opportunities in the space environment
p0095 N79-15897
TRANSPORTATION SYSTEMS CENTER, CAMBRIDGE, MASS.
Review of chest deflection measurement
techniques and transducers
[PB-283654/2] p0051 N79-12702
Effects of deceleration and rate of deceleration
on live seated human subjects
[PB-284653/3] p0057 N79-13702
TRINITY UNIV., SAN ANTONIO, TEX.
A theoretical investigation of power and control
configurations for a high g-onset centrifuge
drive system
[AD-A070912] p0309 N79-32841
TRW DEFENSE AND SPACE SYSTEMS GROUP, REDONDO BEACH, CALIF.
High-speed computerized tomography
p0004 A79-12030
TUFTS UNIV., MEDFORD, MASS.
Millimeter wave and far infrared absorption in
biological systems
p0082 N79-15554
Prosthetic EMG control enhancement through the
application of man-machine principles
p0117 N79-17505
TUSKEGEE INST., ALA.
Analytical modelling of load-deflection behavior
of intervertebral discs subjected to axial
compression
[AD-A071019] p0316 N79-33830

U

UMPQUA RESEARCH CO., MYRTLE CREEK, ORE.
Microbial Check Valve for Shuttle
[ASME PAPER 78-ENAS-27] p0008 A79-12576
Water system microbial check valve development
[NASA-CR-151883] p0032 N79-11733
UNILEVER RESEARCH, VLAARDINGEN (NETHERLANDS).
Preparation of some prostaglandin E sub 1
omega-homo-prostaglandin E sub 1 esters and
their inhibiting properties on rat blood
platelet aggregation
p0239 N79-26765
Influences of dietary fats on coronary flow rate
and left ventricular work of the isolated rat
heart
p0239 N79-26766
Effects of dietary fats on the coronary flow
rate and the left ventricular function of the
isolated rat heart
p0239 N79-26767
Effects of dietary fats on atherosclerosis and
thrombosis
p0240 N79-26776
Physiological effects of a high soybean protein
diet in man
p0240 N79-26777
Aspects of dietary prevention of arteriosclerosis
p0262 N79-29792
UNITED TECHNOLOGIES CORP., WINDSOR LOCKS, CONN.
Challenges to life support system's future
[ASME PAPER 78-ENAS-28] p0008 A79-12577
Extended duration Orbiter life support definition
[ASME PAPER 78-ENAS-42] p0009 A79-12588
Test evaluation of space station ECLSS
maintenance concepts
[ASME PAPER 78-ENAS-43] p0009 A79-12589
UNIVERSIDAD CATOLICA ANDRES BELLO, CARACAS (VENEZUELA).
Particle deposition due to turbulent diffusion
in the upper respiratory system
p0270 A79-48251
UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES.
Computer quantitation of coronary angiograms
p0293 A79-51030

Signal processing in ultrasound
p0294 A79-51039

UNIVERSITY OF SOUTHERN ILLINOIS AT CARBONDALE.
Cardiovascular, metabolic, and respiratory responses of sedentary females to equal metabolic workloads on the bicycle ergometer and treadmill
p0024 N79-11601

UNIVERSITY OF SOUTHWESTERN LOUISIANA, LAFAYETTE.
A simple model of fluid flow and electrolyte balance in the body
[NASA-CR-160205] p0217 N79-25722

UNIVERSITY OF WEST FLORIDA, PENSACOLA.
Personnel neutron monitoring in space
[NASA-CR-151865] p0111 N79-16541

UNIVERSITY OF WESTERN KENTUCKY, BOWLING GREEN.
Wavelength dependence of ultraviolet-enhanced reactivation and induction of mammalian viruses
[HEW-PUB-FDA-78-8059] p0084 N79-15575

UTAH UNIV., SALT LAKE CITY.
Clinical comparisons of pressure pulse and indicator dilution methods of determining cardiac output
p0050 N79-12690
Some recent results on the deposition of electromagnetic energy in animals and models of man
p0083 N79-15563
Time estimation as a secondary task to measure workload: Summary of research
p0093 N79-15634
Numerical studies of absorption of electro-magnetic energy by man
p0110 N79-16538
Energy transfer mechanisms in photobiological reactions
[COO-875-180] p0283 N79-31898

V

VALIDATED INSTRUCTION ASSOCIATES, INC., ALBION, MICH.
Masculinity, femininity, androgyny. What really works at work
[AD-A061177] p0156 N79-19683

VANDERBILT UNIV., NASHVILLE, TENN.
Autoradiographic enhancement of mammograms
p0227 A79-40773
Cardiovascular studies of reducing and oxidizing agents
p0049 N79-12682

VERMONT UNIV., BURLINGTON.
Determination of the secondary production and population dynamics of the zooplankton of the Lake Champlain ecosystem
[PB-286094/8] p0084 N79-15572

VETERANS ADMINISTRATION HOSPITAL, LITTLE ROCK, ARK.
Molecular absorption of non-ionizing radiation in biological systems
p0082 N79-15553

VETERANS ADMINISTRATION HOSPITAL, MARTINEZ, CALIF.
Response of the rat erythrocyte to ozone exposure
p0067 A79-18963

VIRGINIA COMMONWEALTH UNIV., RICHMOND.
Monitoring the state of the human airways by analysis of respiratory sound
[IAF PAPER 78-66] p0003 A79-11227
Survey of microwave and radiofrequency biological effects and mechanisms
p0082 N79-15552

VIRGINIA POLYTECHNIC INST. AND STATE UNIV., BLACKSBURG.
Aerodynamic forces exerted on an articulated human body subjected to windblast
[AD-A059023] p0055 N79-13688
The influence of vehicle aerodynamic and control response characteristics on driver-vehicle performance
p0089 N79-15608
Studies of limb-dislodging forces acting on an ejection seat occupant
[AD-A064882] p0196 N79-23658

VIRGINIA UNIV., CHARLOTTESVILLE.
A trade-off analysis design tool: Aircraft interior noise-motion/passenger satisfaction model
p0112 N79-16549
Thermodynamic studies on the oxygenation and subunit association of human hemoglobin
p0142 N79-18576
Analysis of visible spectra and thermodynamic parameters in hemeprotein systems
p0144 N79-18579

VIRGINIA UNIV. HOSPITAL, CHARLOTTESVILLE.
Hyperthermia in the treatment of cancer: A review of the radiobiological basis
p0017 N79-10729

VON KARMAN INST. FOR FLUID DYNAMICS, RHODE-SAINT-GENESE (BELGIUM).
Physiological fluid dynamics
[VKI-LECTURE-SERIES-32] p0247 N79-27843

W

WAKE FOREST UNIV., WINSTON-SALEM, N.C.
A transient analysis of the cerebrovascular response to carbon dioxide
p0111 N79-16539

WASHINGTON UNIV., SEATTLE.
Gas exchange under environmental stress
[AD-A058242] p0056 N79-13697
Life stress, organizational stress, and job satisfaction
[AD-A055153] p0057 N79-13706
Microwave and RF dosimetry
p0083 N79-15561
Multiple tracer diffusion methods for the evaluation of cerebral capillary permeability and capillary blood flow rate in the rat
p0169 N79-20712

WATERLOO UNIV. (ONTARIO).
Vehicle Steering control: A model of learning
p0089 N79-15606

WAYNE STATE UNIV., DETROIT, MICH.
In-vivo bone strain telemetry in monkeys /M. nemestrina/
p0002 A79-10608
Human factors analysis of visual distress signaling devices
[AD-A064174] p0190 N79-22765
Studies on the microwave-induced auditory effect
[PB-290598/2] p0213 N79-24648
Tolerance of the neck to indirect impact
[AD-A066971] N79-25749
Simulation of head and neck response to -G sub x and +G sub z impacts
p0285 N79-31908

WEATHER WING (5TH), LANGLEY AFB, VA.
Minimum sea surface temperatures and associated survival times
[AD-A070162] p0315 N79-33824

WEBB ASSOCIATES, YELLOW SPRINGS, OHIO.
Anthropometric source book. Volume 1: Anthropometry for designers
[NASA-RP-1024] p0032 N79-11734
Variability in human body size
p0032 N79-11736
Anthropometry
p0032 N79-11737
Range of joint motion
p0033 N79-11740
Human muscular strength
p0033 N79-11741
Anthropometry in sizing and design
p0033 N79-11742
Statistical considerations in man-machine designs
p0033 N79-11743
Anthropometric source book. Volume 2: A handbook of anthropometric data
[NASA-RP-1024-VOL-2] p0058 N79-13711
Anthropometric source book. Volume 3: Annotated bibliography of anthropometry
[NASA-RP-1024-VOL-3] p0058 N79-13712

WEST VIRGINIA UNIV., MORGANTOWN.
An investigation to determine the effect of physical conditioning upon fibrinolytic reactivity in normal young men
p0110 N79-16536
Stress and fatigue in the driving environment
p0211 N79-24629

WISCONSIN UNIV. - MADISON.
Metabolic responses of ponies to treadmill exercise in hyperoxia
p0049 N79-12681
Effects of information processing requirements on reaction time of the eye
[AD-A060099] p0080 N79-14778

WISCONSIN UNIV. HOSPITAL, MADISON.
Portable device for detection of petit mal

epilepsy
p0254 A79-46226

WOOD (WILLIAM C.), MEMPHIS, TENN.
Implementation of a divisional aviation program to decrease flight crew fatigue
p0150 N79-19624

WOODS HOLE OCEANOGRAPHIC INSTITUTION, MASS.
Impact of large scale aquatic biomass systems [PB-282617/0]
p0013 N79-10697

WRIGHT STATE UNIV., DAYTON, OHIO.
Motion sickness in cats - A symptom rating scale used in laboratory and flight tests
p0202 A79-37711

Y

YALE UNIV., NEW HAVEN, CONN.
A three-dimensional mathematical analogue of the spine structure: A comprehensive approach
p0285 N79-31909

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography

Abstracts
January – December 1979

TABLE OF CONTENTS

SP-7011 Supplement	Page
190	1
191	35
192	61
193	97
194	127
195	159
196	181
197	199
198	225
199	251
200	265
201	293

1. Report No.
NASA SP-7011 (202)

2. Government Accession No.

3. Recipient's Catalog No.

4. Title and Subtitle
AEROSPACE MEDICINE AND BIOLOGY
A Cumulative Index to the 1979 Issues

5. Report Date
January 1980

6. Performing Organization Code

7. Author(s)

8. Performing Organization Report No.

10. Work Unit No.

9. Performing Organization Name and Address

National Aeronautics and Space Administration
Washington, D. C. 20546

11. Contract or Grant No.

13. Type of Report and Period Covered

12. Sponsoring Agency Name and Address

14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This publication is a cumulative index to the abstracts contained in the Supplements 190 through 201 of Aerospace Medicine and Biology: A Continuing Bibliography. It includes three indexes--subject, personal author, and corporate source.

17. Key Words (Suggested by Author(s))
Aerospace Medicine
Bibliographies
Biological Effects

18. Distribution Statement
Unclassified - Unlimited

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price*
Unclassified	Unclassified	362	$11.00 HC

*For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1980

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to eleven special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley
COLORADO
University of Colorado, Boulder
DISTRICT OF COLUMBIA
Library of Congress
GEORGIA
Georgia Institute of Technology, Atlanta
ILLINOIS
The John Crerar Library, Chicago
MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge
MISSOURI
Linda Hall Library, Kansas City
NEW YORK
Columbia University, New York
OKLAHOMA
University of Oklahoma, Bizzell Library
PENNSYLVANIA
Carnegie Library of Pittsburgh
WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library
COLORADO
Denver Public Library
CONNECTICUT
Hartford Public Library
MARYLAND
Enoch Pratt Free Library, Baltimore
MASSACHUSETTS
Boston Public Library
MICHIGAN
Detroit Public Library
MINNESOTA
Minneapolis Public Library
MISSOURI
Kansas City Public Library
St. Louis Public Library
NEW JERSEY
Trenton Public Library
NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library
OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library
TENNESSEE
Memphis Public Library
TEXAS
Dallas Public Library
Fort Worth Public Library
WASHINGTON
Seattle Public Library
WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019.

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy of microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESA - Information Retrieval Service, European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

SPECIAL FOURTH CLASS MAIL
BOOK

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

U.S.MAIL

NASA

POSTMASTER: If Undeliverable (Section 158
Postal Manual) Do Not Return

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP-7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP-7037	AERONAUTICAL ENGINEERING Engineering, design, and operation of aircraft and aircraft components	Monthly
NASA SP-7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP-7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP-7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP-7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C. 20546

7011 (203)

NASA

Aerospace Medicine and Biology
A Continuing Bibliography with Indexes

NASA SP-7011 (203)
February 1980

NEWARK PUBLIC LIBRARY

APR 18 1980

U. S. GOVT. PUBS.
DEPOSITORY 376

National Aeronautics and
Space Administration

Aerospace Medicine & Biology
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bio
ine & Biology Aerospace Medic
ce Medicine & Biology Aerospa
Aerospace Medicine & Biology
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bio

NASA SP-7011 (203)

Aerospace Medicine and Biology
A Continuing Bibliography with Indexes

Pages 1-22

February 1980

NAS 1.21:

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series)	N80-10001 – N80-11998
IAA (A-10000 Series)	A80-10001 – A80-13128

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by Informatics Information Systems Company.

NASA SP-7011(203)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 203)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in January 1980 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*

NASA Scientific and Technical Information Branch 1980
National Aeronautics and Space Administration
Washington, DC

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This Supplement is available from the National Technical Information Service (NTIS), Springfield, Virginia 22161, at the price $7.00 domestic; $14.00 foreign.

INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 150 reports, articles and other documents announced during January 1980 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1980 Supplements.

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A80-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies of accessions are available at $6.00 per document up to a maximum of 20 pages. The charge for each additional page is $0.25. Microfiche (1) of documents announced in *IAA* are available at the rate of $2.50 per microfiche on demand, and at the rate of $1.10 per microfiche for standing orders for all *IAA* microfiche. The price for the *IAA* microfiche by category is available at the rate of $1.25 per microfiche plus a $1.00 service charge per category per issue. Microfiche of all the current AIAA Meeting Papers are available on a standing order basis at the rate of $1.35 per microfiche.

Minimum air-mail postage to foreign countries is $1.00 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

STAR ENTRIES (N80-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page vii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the * symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard $3.50 price, for those documents identified by a # symbol.)

---

(1) A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts*. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: Fachinformationszentrum, Karlsruhe. Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM).

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: U.S. Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free.

Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is $65.00 domestic; $130.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics
and Astronautics
Technical Information Service
555 West 57th Street, 12th Floor
New York, New York 10019

British Library Lending Division,
Boston Spa, Wetherby, Yorkshire,
England

Commissioner of Patents and
Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service
ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Scientific and Technical Information
Facility
P.O. Box 8757
B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Branch (NST-41)
Washington, D.C. 20546

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, California 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey
1033 General Services Administration
Building
Washington, D.C. 20242

U.S. Geological Survey
601 E. Cedar Avenue
Flagstaff, Arizona 86002

U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

U.S. Geological Survey
Bldg. 25, Denver Federal Center
Denver, Colorado 80225

Fachinformationszentrum Energie, Physik,
Mathematik GMBH
7514 Eggenstein Leopoldshafen
Federal Republic of Germany

NTIS PRICE SCHEDULES

Schedule A

STANDARD PAPER COPY PRICE SCHEDULE

(Effective January 1, 1980)

Price Code	Page Range	North American Price	Foreign Price
A01	Microfiche	$ 3.50	$ 5.25
A02	001-025	5.00	10.00
A03	026-050	6.00	12.00
A04	051-075	7.00	14.00
A05	076-100	8.00	16.00
A06	101-125	9.00	18.00
A07	126-150	10.00	20.00
A08	151-175	11.00	22.00
A09	176-200	12.00	24.00
A10	201-225	13.00	26.00
A11	226-250	14.00	28.00
A12	251-275	15.00	30.00
A13	276-300	16.00	32.00
A14	301-325	17.00	34.00
A15	326-350	18.00	36.00
A16	351-375	19.00	38.00
A17	376-400	20.00	40.00
A18	401-425	21.00	42.00
A19	426-450	22.00	44.00
A20	451-475	23.00	46.00
A21	476-500	24.00	48.00
A22	501-525	25.00	50.00
A23	526-550	26.00	52.00
A24	551-575	27.00	54.00
A25	576-600	28.00	56.00
A99	601-up	-- 1/	-- 2/

1/ Add $1.00 for each additional 25 page increment or portion thereof for 601 pages up

2/ Add $2.00 for each additional 25 page increment or portion thereof for 601 pages and more

Schedule E

EXCEPTION PRICE SCHEDULE

Paper Copy & Microfiche

Price Code	North American Price	Foreign Price
E01	$ 5.50	$ 11.50
E02	6.50	13.50
E03	8.50	17.50
E04	10.50	21.50
E05	12.50	25.50
E06	14.50	29.50
E07	16.50	33.50
E08	18.50	37.50
E09	20.50	41.50
E10	22.50	45.50
E11	24.50	49.50
E12	27.50	55.50
E13	30.50	61.50
E14	33.50	67.50
E15	36.50	73.50
E16	39.50	79.50
E17	42.50	85.50
E18	45.50	91.50
E19	50.50	100.50
E20	60.50	121.50
E99 - Write for quote		
N01	28.00	40.00

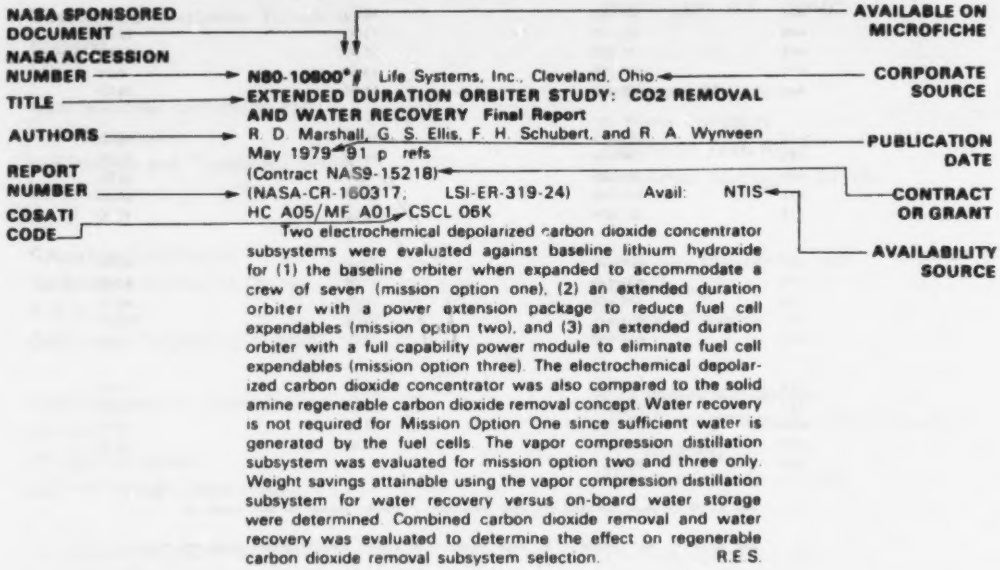
TABLE OF CONTENTS

Page

IAA ENTRIES (A80-10000) 1
STAR ENTRIES (N80-10000) 9

Subject Index I-1
Personal Author Index I-17

TYPICAL CITATION AND ABSTRACT FROM *STAR*

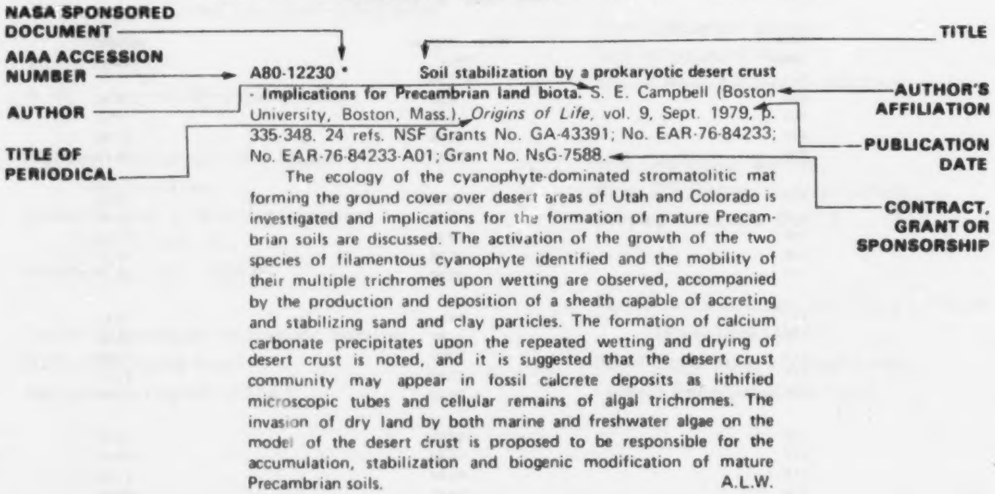


NASA SPONSORED DOCUMENT
NASA ACCESSION NUMBER
TITLE
AUTHORS
REPORT NUMBER
COSATI CODE
AVAILABLE ON MICROFICHE
CORPORATE SOURCE
PUBLICATION DATE
CONTRACT OR GRANT
AVAILABILITY SOURCE

N80-10800*# Life Systems, Inc., Cleveland, Ohio.
EXTENDED DURATION ORBITER STUDY: CO2 REMOVAL AND WATER RECOVERY Final Report
R. D. Marshall, G. S. Ellis, F. H. Schubert, and R. A. Wynveen
May 1979 91 p refs
(Contract NAS9-15218)
(NASA-CR-160317; LSI-ER-319-24) Avail: NTIS
HC A05/MF A01 CSCL 06K

Two electrochemical depolarized carbon dioxide concentrator subsystems were evaluated against baseline lithium hydroxide for (1) the baseline orbiter when expanded to accommodate a crew of seven (mission option one), (2) an extended duration orbiter with a power extension package to reduce fuel cell expendables (mission option two), and (3) an extended duration orbiter with a full capability power module to eliminate fuel cell expendables (mission option three). The electrochemical depolarized carbon dioxide concentrator was also compared to the solid amine regenerable carbon dioxide removal concept. Water recovery is not required for Mission Option One since sufficient water is generated by the fuel cells. The vapor compression distillation subsystem was evaluated for mission option two and three only. Weight savings attainable using the vapor compression distillation subsystem for water recovery versus on-board water storage were determined. Combined carbon dioxide removal and water recovery was evaluated to determine the effect on regenerable carbon dioxide removal subsystem selection. R.E.S.

TYPICAL CITATION AND ABSTRACT FROM *IAA*



NASA SPONSORED DOCUMENT
AIAA ACCESSION NUMBER
AUTHOR
TITLE OF PERIODICAL
TITLE
AUTHOR'S AFFILIATION
PUBLICATION DATE
CONTRACT, GRANT OR SPONSORSHIP

A80-12230 * **Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota.** S. E. Campbell (Boston University, Boston, Mass.). *Origins of Life,* vol. 9, Sept. 1979, p. 335-348. 24 refs. NSF Grants No. GA-43391; No. EAR-76-84233; No. EAR-76-84233-A01; Grant No. NsG-7588.

The ecology of the cyanophyte-dominated stromatolitic mat forming the ground cover over desert areas of Utah and Colorado is investigated and implications for the formation of mature Precambrian soils are discussed. The activation of the growth of the two species of filamentous cyanophyte identified and the mobility of their multiple trichromes upon wetting are observed, accompanied by the production and deposition of a sheath capable of accreting and stabilizing sand and clay particles. The formation of calcium carbonate precipitates upon the repeated wetting and drying of desert crust is noted, and it is suggested that the desert crust community may appear in fossil calcrete deposits as lithified microscopic tubes and cellular remains of algal trichromes. The invasion of dry land by both marine and freshwater algae on the model of the desert crust is proposed to be responsible for the accumulation, stabilization and biogenic modification of mature Precambrian soils. A.L.W.

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 203)

FEBRUARY 1980

IAA ENTRIES

A80-10326 **Regulation of the energy metabolism and physiological state of the organism (Reguliatsiia energeticheskogo obmena i fiziologicheskoe sostoianie organizma).** Edited by M. N. Kondrashova. Moscow, Izdatel'stvo Nauka, 1978. 239 p. In Russian.

A collection of papers is presented concerning the investigation of relationships between intracellular and hormonal regulations of the use of oxidation substrates. Attention is given to a discussion of the phenomenon and mechanisms of alternate use of carbohydrates and lipids, as well as the role of mitochondrias in glyconeogenesis. The energetics of lymphocytes and substrate exchange between lymphoid tissue and other organs is described. The effectiveness of analyzing mitochondrial and mitochondrial-cytoplasmic transformations for evaluation of the physiological state of the body and the mechanism of pharmacological and toxic effects is demonstrated. S.D.

A80-10327 # **Alternate use of carbohydrates and lipids as a form of regulating the physiological state (Peremennoe ispol'zovanie uglevodov i lipidov kak forma reguliatsii fiziologicheskogo sostoianiia).** M. N. Kondrashova and E. I. Maevskii. In: Regulation of the energy metabolism and the physiological state of the organism. Moscow, Izdatel'stvo Nauka, 1978, p. 5-14. 17 refs. In Russian.

Intracellular regulators of energy metabolism are effective in regulating the physiological state of the body (principle of equivalence of regulatory mechanisms). Periodical alternation of carbohydrates and lipids forms the basis of biological clocks (rhythms). At the time of switching from the use of one storage to the use of another, additional influences may drastically hinder the normal periodicity of metabolic events. S.D.

A80-10328 # **Temporal organization of energy metabolism and the cellular clocks (Vremennaia organizatsiia energeticheskogo metabolizma i kletochnye chasy).** E. E. Sel'kov. In: Regulation of the energy metabolism and the physiological state of the organism. Moscow, Izdatel'stvo Nauka, 1978, p. 15-32. 15 refs. In Russian.

The paper presents a theoretical analysis of mechanisms responsible for the allosteric regulation of futile (potentially useless) cycles of energy metabolism. It is shown that the activation of phosphofructokinase production and the substrate depression of fructobisphosphatase by means of fructoso-1,6-bisphosphate - absolutely necessary for the normal functioning of carbohydrate energy metabolism - cause periodical reciprocal changes in the metabolism of carbohydrates, lipids, and amino acids. A conclusion is drawn that these changes are the only possible form of prolonged functioning of the energy metabolism containing futile cycles. S.D.

A80-10329 # **Oxidation of pyruvate in mitochondrias: Mathematical model - Regulation of the Kreb's cycle by adenine and pyridine nucleotides (Okislenie piruvata v mitokhondriiakh: Matematicheskaia model' - Reguliatsiia tsikla Krebsa adeninovymi i piridinovymi nukleotidami).** V. V. Dynnik and A. V. Temnov. In: Regulation of the energy metabolism and the physiological state of the organism. Moscow, Izdatel'stvo Nauka, 1978, p. 33-50. 21 refs. In Russian.

A80-10330 # **Factors affecting the regulation of biological oxidation processes in tissue specimens (O faktorakh, vliiaiushchikh na reguliatsiiu protsessov biologicheskogo okisleniia v tkanevykh preparatakh).** L. D. Luk'ianova, O. A. Popova, V. E. Romanova, A. G. Ovchinnikova, A. T. Ugolev, and G. N. Kostiaeva. In: Regulation of the energy metabolism and the physiological state of the organism. Moscow, Izdatel'stvo Nauka, 1978, p. 90-101. 21 refs. In Russian.

The study demonstrates that the energy regulation of sections (brain, liver, heart) is recovered after a specific metabolic period associated with the extirpation of the tissues. Variation of metabolic sensitivity in a responsive tissue reflects the energetic state of mitochondrias in tissue cell, as well as the tissue-specific characteristics of metabolic regulation in the cell. The temperature regime affects the state of the respiratory chain in the cell, the activity of its various sections, and the interaction with oxygen-dependent extra-mitochondrial processes. S.D.

A80-10331 # **Role of mitochondrias in glyconeogenesis (Rol' mitokhondrii v gliukoneogeneze).** E. I. Maevskii and M. N. Kondrashova. In: Regulation of the energy metabolism and the physiological state of the organism. Moscow, Izdatel'stvo Nauka, 1978, p. 145-165. 103 refs. In Russian.

A80-10332 # **Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses (Sintez fosfoenolpiruvata i reaktsii dykhatel'noi tsepi mitokhondrii v pecheni zhivotnykh pri fiziologicheskikh adaptatsionnykh reaktsiiakh).** E. A. Kosenko, Iu. G. Kaminskii, M. N. Kondrashova, E. I. Maevskii, E. B. Okon, F. M. Taras'iants, E. S. Kotliarevskaia, and L. P. Barsukova. In: Regulation of the energy metabolism and the physiological state of the organism. Moscow, Izdatel'stvo Nauka, 1978, p. 166-170. In Russian.

A80-10333 # **Age-dependent dynamics of the succinate-dehydrogenase activity of lymphocytes in physically active and inactive persons (Vozrastnaia dinamika suktsinatdegidrogenaznoi aktivnosti limfotsitov u fizicheski aktivnykh i neaktivnykh liudei).** I. A. Komissarova, G. N. Lavrukhina, Iu. V. Gudkova, A. I. Zivenko, and R. E. Petrosian. In: Regulation of the energy metabolism and the physiological state of the organism. Moscow, Izdatel'stvo Nauka, 1978, p. 179-183. 14 refs. In Russian.

Blood lymphocytes are cytochemically analyzed for succinate-dehyrogenase (SDH) activity in children, adolescents and middle-aged individuals, as well as in physically well trained athletes and untrained persons. It is shown that during the growth and development period, the SDH activity is enhanced, whereas it diminishes in the aging process. Empirical data are used to develop a theoretical curve which shows the trend of changes in the SDH activity during human lifetime. Systematic physical exercises inhibit the involute changes in SDH activity. As for athletes, the effect of SDH changes on muscular work depends on the fitness level. S.D.

A80-10334 # **Variation of the enzymatic activity of blood lymphocytes at various stages of adaptation to physical loads**

(Izmenenie fermentativnoi aktivnosti limfotsitov krovi na raznykh etapakh adaptirovannosti k fizicheskim nagruzkam). A. S. Ianovskaia. In: Regulation of the energy metabolism and the physiological state of the organism. Moscow, Izdatel'stvo Nauka, 1978, p. 189-192. 7 refs. In Russian.

A80-10335 # **Variation of substrate contents and activity of enzymes of the energy metabolism in the heart under the action of glutamate during hypoxia and sodium nitride poisoning of animals (Izmenenie soderzhaniia substratov i aktivnosti fermentov energeticheskogo obmena v serdtse pod vliianiem glutamata pri gipoksii i otravlenii zhivotnykh nitritom natriia).** L. G. Shmeleva. In: Regulation of the energy metabolism and the physiological state of the organism. Moscow, Izdatel'stvo Nauka, 1978, p. 215-217. In Russian.

A80-10344 **Behavioral measures of aircrew mental workload.** R. C. Williges and W. W. Wierwille (Virginia Polytechnic Institute and State University, Blacksburg, Va.). *Human Factors,* vol. 21, Oct. 1979, p. 549-574. 154 refs. AF Project 2050; NAVAIR Task 340F.

Behavioral research literature pertaining to the measurement of aircrew workload was classified into general categories of subjective opinion, spare mental capacity, and primary task metrics. Fourteen specific classes of workload measures related to these general categories were reviewed specifically in regard to aircrew workload assessment in the flight test and evaluation. Each class of measures was summarized in terms of background, applications, and implications for research and implementation. It was concluded that no one, single measure can be recommended as the definitive behavioral measure of mental workload. Due to the multidimensionality of workload, it appears that the most promising assessment procedure should include multiple measures of subjective opinions, spare mental capacity, and primary task measures as well as physiological correlates. (Author)

A80-10345 **Physiological measures of aircrew mental workload.** W. W. Wierwille (Virginia Polytechnic Institute and State University, Blacksburg, Va.). *Human Factors,* vol. 21, Oct. 1979, p. 575-593. 81 refs. AF Project 2050; NAVAIR Task 340F.

Physiological measures of aircrew mental workload were divided into fourteen specific classes. Each class was then summarized in terms of background, applications, and implications for research and implementation. It is concluded that several physiological measures appears promising, but that more research is needed to provide convincing evidence of viability. Physiological techniques can, however, be combined with other workload assessment techniques to provide a more complete understanding of the workload associated with given aircrew tasks. (Author)

A80-10421 **Strength-interval curves of isolated rat papillary muscle during hypoxia and reoxygenation - Effect of lidocaine.** B. Avitall (Tufts University, Medford; New England Medical Center Hospital, Boston, Mass.). *Journal of Electrocardiology,* vol. 12, Oct. 1979, p. 353-360. 23 refs.

A80-10422 **The normal values of spatial velocity in the second part of QRS /A cooperative study of 229 healthy individuals/.** A. J. Chorão de Aguiar, H. Guimarães, and A. Raposo (Coimbra, Universidade, Hospital, Coimbra, Portugal). *Journal of Electrocardiology,* vol. 12, Oct. 1979, p. 381-386. 21 refs.

The spatial velocity (SV) represents the inscription velocity from spatial vectors of the QRS loop. According to Sano (1967), this parameter has exhibited a diagnostic capacity for some well-defined pathologies. Using Hellerstein and Hamlin's formula (1960), the SV has been determined from the orthogonal Frank leads in a 250 mm/sec recording. Using Simonson's criteria (1961), 229 normal individuals, arranged in seven groups according to age and sex, were used in an attempt to get normal values for the second half of the QRS loop. SV was determined in six time intervals of 2.5 msec from the 25 msec vector before the end of QRS. Significant differences were found between the values obtained from each time interval, except in the 35-37.5 msec and 37.5-40 msec vectors. On the other hand, no significant differences were found among the normal individual groups. (Author)

A80-10423 **Torso mounted electrocardiographic electrodes for routine clinical electrocardiography.** D. Diamond (Mt. Auburn Hospital, Cambridge, Mass.), D. H. Griffith (Memorial Hospital, Pawtucket, R.I.), M. L. Greenberg, and R. A. Carleton (Memorial Hospital, Pawtucket; Brown University, Providence, R.I.). *Journal of Electrocardiology,* vol. 12, Oct. 1979, p. 403-406. 10 refs.

A system of torso-mounted electrocardiographic leads similar to that proposed by Mason and Likar (1966) for stress electrocardiography is compared with the standard lead system in order to define any limitations to the more general application of the modified system. Placement of the right and left arm electrodes immediately below the outer third of the respective clavicles, the left leg electrode 4 cm below the umbilicus and the right leg electrode over the right side of the abdomen in the mid-clavicular line is found to lead to only small random differences in the ECGs recorded from those of the standard lead system, which are similar to those observed between successive standard tracings. The modified system is considered to be faster and simpler to apply than the standard system, as well as more suitable for certain clinical conditions and patients, without requiring a modification of diagnostic criteria. A.L.W.

A80-10424 **Relationship between calcium and hydrogen ions in heart muscle.** A. R. Mattiazzi, H. E. Cingolani, and E. Spacapan de Castuma (La Plata, Universidad Nacional, La Plata, Argentina). *American Journal of Physiology,* vol. 237, Oct. 1979, p. H497-H503. 35 refs.

Experiments were performed on cat papillary muscles excised from the right ventricle of cats anesthetized with intraperitoneally administered sodium pentobarbital. The objective was to study the nature of the inverse effect of H(+) and Ca(2+) ions on cardiac performance. Evidence is presented that in cat papillary muscles this antagonistic action cannot be characterized as competitive. In particular, the experiments support the view that acid-base alterations are negative inotropic interventions in which a dissociation between maximal rate of force development and maximal velocity of relaxation occurs. The findings suggest that H(+) ion might have an effect on the relaxation process. S.D.

A80-10521 **Cardiac reflexes in normotensive and spontaneously hypertensive rats.** P. Thoren, E. Noresson, and S.-E. Ricksten (Goteborg, Universitet, Goteborg, Sweden). *American Journal of Cardiology,* vol. 44, Oct. 22, 1979, p. 884-888. 32 refs. Research supported by the Swedish Medical Research Council. SMRC Project 14X-04764; SMRC Project 14X-00016.

A80-10522 **Control of blood pressure by carotid sinus baroreceptors in human beings.** G. Mancia, A. Ferrari, L. Gregorini, G. Parati, M. C. Ferrari, G. Pomidossi, and A. Zanchetti (Milano, Università; CNR, Centro di Ricerche Cardiovascolari, Milan, Italy). *American Journal of Cardiology,* vol. 44, Oct. 22, 1979, p. 895-902. 38 refs.

A80-10525 **Gamma rays - Further evidence for lack of a threshold dose for lethality to human cells.** P. S. Furcinitti and P. Todd (Pennsylvania State University, University Park, Pa.). *Science,* vol. 206, Oct. 26, 1979, p. 475-477. 10 refs. Grant No. NIH-R01-CA-17536.

In experiments designed to measure human cell survival with + or - 2% accuracy it was found that low doses (21 to 87 rad) of gamma rays inactivated the colony-forming ability of cultured human cells with a probability of 0.00226 + or - 0.00012 per rad. There appears to be no threshold for the lethality of radiation to human cells in vitro. (Author)

A80-10650 **Work-science research on maximum work capacity and recovery time for informational-mental work based on the channel- and man-machine model along with superposed stress, using work in a hot environment as an example (Arbeitswissenschaftliche Untersuchungen von maximaler Arbeitsdauer und Erholungszeiten bei informatorischmentaler Arbeit nach dem Kanalund Regler-Mensch-Modell sowie superponierten Belastungen am Beispiel Hitzearbeit).** H. Luczak. *VDI-Zeitschriften Fortschritt-Berichte, Reine 10 - Angewandte Informatik*, no. 6, May 1979. 140 p. 207 refs. In German.

A80-10738 * # **The Viking mission and the search for life on Mars.** H. P. Klein (NASA, Ames Research Center, Directorate of Life Sciences, Moffett Field, Calif.). *(International Union of Geodesy and Geophysics, General Assembly, 17th, Canberra, Australia, Dec. 2-15, 1979.) Reviews of Geophysics and Space Physics*, vol. 17, Oct. 1979, p. 1655-1662. 80 refs.

Experiments conducted by the Viking mission to search for life on Mars are examined and the results of direct chemical analyses are surveyed to determine the presence of any complex organic compound. Observations taken from lander imaging and experiments from biological investigation are analyzed for pyrolytic release, gas exchange (both humid and nutrient) and labeled release (LR). Attention is given to the results in an attempt to simulate LR initial reaction, and to the implications and extrapolations of the Viking mission. C.F.W.

A80-10764 **Flight hour reductions in fleet replacement pilot training through simulation.** A. F. Smode (U.S. Navy, Training Analysis and Evaluation Group, Orlando, Fla.). In: 50 years of flight simulation; Proceedings of the Conference, London, England, April 23-25, 1979. Session 1. London, Royal Aeronautical Society, 1979, p. 58-72. 14 refs.

The 2F87F simulator was found to be an effective substitute for the P-3 aircraft in the transition training of pilots. The general conclusion of the TAEG study is that flight simulation efficiently utilized can be employed to advantage in military flight training. This is particularly so for pilot training in large multiengine, multipilot aircraft. New state-of-the-art flight simulators for these aircraft provide sufficient fidelity and capability to account for most training requirements. Safety is not compromised since transitioned pilots assume less than the aircraft commander role upon operational assignment. B.J.

A80-10774 **Simulator fidelity in the learning of complex flight tasks.** E. A. Stark (Singer Co., Link Div., Binghamton, N.Y.). In: 50 years of flight simulation; Proceedings of the Conference, London, England, April 23-25, 1979. Session 3.
London, Royal Aeronautical Society, 1979, p. 17-29. 7 refs.

The fidelity of training devices has traditionally been approached either by attempting to reproduce all of the stimuli available to a system operator in the operational task environment, or by a less expensive method based on representing only the stimuli considered essential to a given task. Neither approach to the design and development of training devices has involved more than cursory consideration of the learning and perceptual processes associated with training. Task analyses directed at training equipment design have been devoted largely to defining the information available to the operator, but far less attention has been given to the ways in which this information is perceived by trainees at the various stages of training, or to the mechanisms by which specific patterns of information come to elicit specific responses, through learning. The necessity of considering the mechanics of learning in the development of training devices is emphasized. V.P.

A80-10925 **Numerical calculation of electromagnetic energy deposition for a realistic model of man.** M. J. Hagmann, O. P. Gandhi, and C. H. Durney (Utah, University, Salt Lake City, Utah). *IEEE Transactions on Microwave Theory and Techniques*, vol. MTT-27, Sept. 1979, p. 804-809. 18 refs.

A80-11328 # **Convective and radiative heat transfer coefficients for a clothed man.** T. Mochida (Hokkaido University, Sapporo, Japan). *Hokkaido University, Faculty of Engineering, Bulletin*, June 1979, p. 1-9. 11 refs.

The paper considers convective and radiative heat transfer coefficients for a clothed man. The convection heat transfer coefficient is determined on the basis of the clothed man-equivalent thermal cylinder using Oosthuizen-Madan dimensionless equation for mixed heat transfer (1970). The radiative heat transfer coefficient expressed by the product of the emissivity of the human surface, the temperature factor, and the Stefan-Boltzmann constant was derived by linearizing the Gebhart absorption factor, and applying it to the space between a human body and its surroundings. The effect of clothing on the radiation heat transfer coefficient is discussed, and actual values computed. A.T.

A80-11371 **Microsecond sensitivity of the human visual system to irregular flicker.** A. L. Diamond (Simon Fraser University, Burnaby, British Columbia, Canada). *Science*, vol. 206, Nov. 9, 1979, p. 708-710. 7 refs. National Research Council Grant No. A-9940.

Six experiments that were conducted to determine the brain responses to various alternating voltages of a flickering light are discussed. The stimulus response association was examined as well as the synchronous and asynchronous intervals of 32 to 512 flashes and the evoked potential alternations due to differing flash sequences. Results were found to suggest an underlying mechanism that may enhance visual detection of high frequency flicker. C.F.W.

A80-11374 **Resting heart rate in apparently healthy middle-aged men.** J. Erikssen (Rikshospitalet, Oslo, Norway) and K. Rodahl (Norwegian College of Physical Education, Oslo, Norway). *European Journal of Applied Physiology*, vol. 42, no. 1, 1979, p. 61-69. 19 refs.

The resting heart rates of 2014 apparently healthy men between the ages of 40 and 59 were measured as part of a cardiovascular survey by means of a standardized ausculation technique. Values obtained were found to correlate well with ECG heart rate determinations of 200 subjects, and to be essentially the same in all clinically observed subgroups, including those with suspected coronary heart disease and pathological angiograms. Regression analysis indicated a drop in heart rate with age of 0.126 beats/year, accompanied by an increase in systolic blood pressure of 0.75 mm Hg/year. Blood pressure and heart rate were also found to correlate, possibly providing the link between heart rate and coronary heart disease. Discrepancies between the results of the present investigation and literature values were attributed in part to different experimental techniques. A.L.W.

A80-11378 **Modeling and parameter identification of the human respiratory system.** D. M. Wiberg, J. W. Bellville, O. Brovko, R. Maine, and T. C. Tai (California, University, Los Angeles, Calif.). *IEEE Transactions on Automatic Control*, vol. AC-24, Oct. 1979, p. 716-720. 16 refs. Grant No. NIH-HL-15659.

The human respiratory response to breathing an excess of carbon dioxide gas is modeled on physiological grounds as an almost linear second-order system. The parameters corresponding to the gains, time constants, threshold, and noise powers are identified by both least squares and maximum likelihood methods. The purpose is both to find the site of action of drugs and to gain understanding of this part of the respiratory control system. It is concluded that the maximum likelihood method is necessary in cases where the noise is not white and when unbiased estimates of the gains and variances are essential, such as in drug studies and in some physiological modeling. (Author)

A80-11520 # **Animal experiment on the effects of repeated exposure to sustained Gz of moderate magnitude. I - Histopathological studies in rabbits.** C. Mizumoto, N. Nitami, K. Ohara, and R. Yurugi (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports,* vol. 19, Mar. 1979, p. 139-145. 15 refs. In Japanese, with abstract in English.

Normal rabbits were repeatedly exposed to sustained 3-Gz acceleration by centrifugation during 30 min/day for a minimum of three days and a maximum of 20 days. Body weight and heart rate were measured daily during centrifugation, showing changes followed by return to normal level. Several organs of sacrificed animals were examined for gross and microscopic pathologies. Microscopic examination on the 20th day of exposure to stressful acceleration revealed a mild to moderate congestion of the alveolar wall, capillary hyperemia, and plasma exudation to the alveolar cavity at the lower lung lobes; the adrenal cortex exhibited mild congestion and moderate hemorrhage. In contrast, third-day autopsy showed no histopathological changes. S.D.

A80-11521 # **Effects of exposure to hypoxic environment upon operant behavior in rats.** I. Sakurai, E. Sakaguchi, T. Sakaguchi, H. Osada, K. Ohara, and R. Yurugi (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports,* vol. 19, Mar. 1979, p. 147-162. 13 refs. In Japanese, with abstract in English.

Rats were reinforced for food by two types of lever-press behavior of fixed ratio for 45 sec and low-rate differential reinforcement for 15 sec under normoxic and hypoxic environmental conditions with a view toward assessing changes in the functioning of the brain by examining the alteration of operant behavior in a hypoxic environment. The results suggest a close relation between decreased food intake and functional inhibition in the cerebral cortex during exposure to a hypoxic environment. S.D.

A80-11522 # **Behavioral scientific study on T-2 flight simulator. II - Comparison of pilot workload between aircraft and simulator.** H. Hagihara, S. Aramaki, and Y. Nagasawa (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports,* vol. 19, Mar. 1979, p. 163-174. 17 refs. In Japanese, with abstract in English.

Pilot workload of T-2 aircraft and T-2 flight simulator was measured in terms of subjective feeling, subjective scores of flight difficulties, flight score given by an instructor pilot, and heart rate. Most pilots estimated that the feeling of simulator motion was more or less similar to the aircraft motion. Simulator takeoff and landing were evaluated as more difficult than actual flight, most probably due to absence of visual cue in the simulator. Heart rate variations were greater during actual flight. High score is obtained in simulator instrument flight and actual inflight workload. S.D.

A80-11627 **A modeling approach to the assessment of smooth pursuit eye movement.** E. J. Engelken and J. W. Wolfe (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *(Aerospace Medical Association, Annual Scientific Meeting, 50th, Washington, D.C., May 14-17, 1979.) Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1102-1107. 9 refs.

A quasilinear model of the oculomotor system in the performance of a smooth pursuit tracking task has been proposed. Model parameters (gain, phase, and spectral purity) have been measured for 21 normal subjects at stimulus frequencies of 0.2, 0.4, 0.8, 1.2, and 1.6 Hz. The normal oculomotor system was found to be quite linear when tracking at the three lowest frequencies, with up to 95% of the output power being linearly correlated with the input stimulus. Data from patients with known pathology are presented to demonstrate model parameter sensitivity to oculomotor dysfunction. (Author)

A80-11628 **Effect of transdermally administered scopolamine in preventing motion sickness.** M. E. McCauley, J. W. Royal, J. E. Shaw, and L. G. Schmitt (Human Factors Research, Inc., Goleta; ALZA Corp., Palo Alto, Calif.). *Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1108-1111. 12 refs.

The efficacy of transdermally administered scopolamine was compared with the efficacy of oral dimenhydrinate and placebo therapy in the prevention of motion-induced nausea in a vertical oscillator. Medications were administered on a double-blind crossover basis, with the order of treatments counterbalanced. A placebo effect reduced the motion sickness incidence (MSI) from 100% to 59%. Administration of dimenhydrinate reduced the MSI to 32%, and use of the transdermal therapeutic system scopolamine (TTS-scopolamine) further reduced the MSI to 16%. TTS-scopolamine afforded 73% protection against motion-induced nausea, compared to 46% protection with dimenhydrinate. The TTS-scopolamine is designed to remain in the body for 72 hours, providing advantages over intramuscular or oral administration of scopolamine, which include reduced daily dosage, and an effective alternate to the gastrointestinal tract for administrating medication at times of gastrointestinal distress. (Author)

A80-11629 * **Self-motion magnitude estimation during linear oscillation - Changes with head orientation and following fatigue.** D. E. Parker, D. L. Wood, W. L. Gulledge, and R. L. Goodrich (Miami University, Oxford, Ohio; Harvard University, Cambridge, Mass.). *Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1112-1121. 27 refs. Research supported by Miami University; Contracts No. F615-75-C-5029; No. NAS9-14538.

Two types of experiments concerning the estimated magnitude of self-motion during exposure to linear oscillation on a parallel swing are described in this paper. Experiment I examined changes in magnitude estimation as a function of variation of the subject's head orientation, and Experiments II a, II b, and II c assessed changes in magnitude estimation performance following exposure to sustained, 'intense' linear oscillation (fatigue-inducting stimulation). The subjects' performance was summarized employing Stevens' power law R = k x S to the nth, where R is perceived self-motion magnitude, k is a constant, S is amplitude of linear oscillation, and n is an exponent). The results of Experiment I indicated that the exponents, n, for the magnitude estimation functions varied with head orientation and were greatest when the head was oriented 135 deg off the vertical. In Experiments II a-c, the magnitude estimation function exponents were increased following fatigue. Both types of experiments suggest ways in which the vestibular system's contribution to a spatial orientation perceptual system may vary. This variability may be a contributing factor to the development of pilot/astronaut disorientation and may also be implicated in the occurrence of motion sickness. (Author)

A80-11630 * **Some influences of vision on susceptibility to motion sickness.** J. R. Lackner (U.S. Naval Aerospace Medical Center, Naval Aerospace Medical Research Laboratory, Pensacola, Fla.) and A. Graybiel (Brandeis University, Waltham, Mass.). *Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1122-1125. 21 refs. Contract No. NAS9-15147. NASA Order T-9140-E.

Two experiments were performed to evaluate the influence of vision on susceptibility to motion sickness during exposure to constant patterns of vestibular stimulation. The motion profile involved accelerating subjects at 20 deg/sec per sec to 300 deg/sec, maintaining them at that constant velocity for 30 sec, and decelerating them to a rapid stop in about 1.5 sec. The number of stops tolerated by a subject before reaching the motion sickness endpoint served as his score. In Experiment 1, subjects were tested twice with their eyes open and twice with their eyes blindfolded. They tolerated fewer sudden stops when permitted sight of the experimental chamber. In Experiment 2, the effect of having the eyes open or closed at different stages of the motion profile was evaluated. Having the eyes open during any stage of the test was more stressful than having the eyes closed, but this was especially true during the sudden stops. The findings are discussed in terms of their general implications for understanding (1) situations in which vision alone elicits symptoms of motion sickness, and (2) situations involving vestibular stimulation where vision heightens susceptibility. (Author)

A80-11631 * Oxygen levels safe for continued reproduction of Drosophila in normal and hypobaric atmospheres. G. P. Kloek (Kentucky State University, Frankfort, Ky.). *Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1126-1128. 13 refs. Grant No. NsG-801.

A80-11632 Regional cerebral blood flow in conscious miniature swine during high sustained +Gz acceleration stress. M. H. Laughlin, W. M. Witt, and R. N. Whittaker (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1129-1133. 19 refs.

A80-11633 Responses of domestic fowl to repeated +Gz acceleration. A. H. Smith, W. L. Spangler, R. R. Burton, and E. A. Rhode (California, University, Davis, Calif.; USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1134-1138. 6 refs. Contract No. F41609-76-C-0012.

The responses of domestic fowl to repeated exposures of 4 min to +6Gz (8 times daily, 5 d weekly) are reported. Survivorship curves for the test group of 48 birds divided into three response categories: mode I, highly susceptible, with all individuals dying on the first day; mode II, more tolerant, with mortality occurring within the first 20 d of treatment; and mode III, highly tolerant, with mortality occurring only after 20 d of treatment. Observations of lymphocyte frequency, an index of systemic stress, and postmortem observations indicate that this heterogeneity has a biological basis. (Author)

A80-11634 The 24-hour cycle and nocturnal depression of human cardiac output. J. C. Miller and M. Helander (Human Factors Research, Inc., Goleta, Calif.). *Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1139-1144. 22 refs.

The NASA-developed version of the impedance plethysmographic method for the determination of left ventricular stroke volume was applied to the investigation of the daily variation of cardiovascular function. Hourly determinations of cardiac output and arterial pressure (auscultation) were obtained from two male subjects over the course of a 48-h period in the laboratory. Cardiac output displayed a strong 24-h cycle of nearly 1/min, peak-to-peak, cresting in the late evening hours. Nocturnal sleep was associated with a reduction of cardiac output characterized by a minimum in the early morning hours. It was concluded that a nocturnal, 24-h cyclic depression of waking cardiac output is exacerbated during sleep periods, and mechanisms for this exacerbation were suggested. (Author)

A80-11635 Systolic time intervals and other cardiovascular changes following leg elevation. M. A. B. Frey and G. D. Krizsa (Wright State University, Dayton, Ohio). *Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1145-1149. 15 refs. Research supported by the American Heart Association; Grants No. NIH-IS-07155-01; No. NIH-R01-HL-19931-01.

Cardiovascular responses were noninvasively monitored as the legs of 16 supine human subjects were passively elevated to increase return of blood to the heart. Forearm vasodilation occurred promptly as previously observed by Roddie and Shepherd (1956). Arterial pressure and heart rate were unchanged. Ventricular performance, monitored by systolic-time-interval analysis, was enhanced after a delay of approximately 6 s, an effect which lasted throughout the 40-s leg-elevation period. All affected variables returned to control levels after the legs were lowered. This delayed response could result reflexly from stimulation of receptors in the left atrial region causing an increase in sympathetically mediated contractility or directly from the Frank-Starling mechanism in response to increased left ventricular filling. (Author)

A80-11636 Noise dosimeter measurements in the Air Force. T. M. Fairman and D. L. Johnson (USAF, Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio). *Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1150-1157. 5 refs. Research sponsored by the U.S. Environmental Protection Agency and U.S. Air Force.

The paper presents the results obtained from the use of personal noise dosimeter monitoring devices, operating on the Air Force rule of 4 dB per doubling time and 84 dB(A) criterion level, to determine the occupational noise exposures of Air Force personnel working in hazardously noisy jobs. It is reported that the 8-h occupational noise levels ranged from 66-111 dB(A) with the median level at 84.5 dB(A). In addition, it is reported that noise dosimeters have been used at Air Force bases across the country in an experimental effort to determine how well their use would fit in with existing Air Force hearing conservation programs. Finally, some of the merits of noise dosimeters, as well as some of the problems involved in setting up ongoing noise monitoring programs, are discussed. M.E.P.

A80-11637 Effects of pseudoephedrine and triprolidine on visual performance. S. M. Luria, H. M. Paulson, A. P. Ryan, and C. L. Schlichting (U.S. Naval Material Command, Naval Submarine Medical Research Laboratory, Groton, Conn.). *Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1158-1160. 20 refs.

The effects of q.i.d. administration of 60 mg pseudoephedrine (Sudafed) tablets or pseudoephedrine-triprolidine (Actifed) tablets after 5 d of medication were measured on tests of night vision, color perception, stereopsis, and reaction time. Neither drug appeared to impair performance. (Author)

A80-11638 Survey on eye comfort in aircraft. II - Use of ophthalmic solutions. W. G. Eng (Eye Clinic, Alameda, Calif.). *Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1166-1169. 15 refs. Research supported by Bausch and Lomb, Inc. and Association of Flight Attendants.

Flight attendants frequently use ophthalmic solutions (eyedrops) to relieve their eye discomfort while working in the aircraft. The purpose of this paper is to present some insight concerning the use of ophthalmic solutions by flight attendants. A questionnaire was developed in conjunction with the Air Safety Department of the Association of Flight Attendants. The common eye problem characterized by conjunctival redness and eye irritation occurred with 95% of the 774 respondents. Furthermore, 60% of these respondents indicated that they have used eyedrops while in flight. The majority of the respondents were using an ocular decongestant; however, it is suggested that the use of artificial tears would be more effective in relieving eye discomfort in the aircraft. (Author)

A80-11639 Sickle cell trait and the aviator. R. B. Rayman (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1170-1172. 8 refs.

The paper discusses the possibility that space travel enhances the sickle cell trait (SCT) found in humans. Attention is given to the risk of SCT in air travel and it is found that the danger becomes more perceptible when cabin altitudes exceed 21,000 ft. The possibility of SCT risk for USAF personnel is examined as well as the potential threat of cabin or cockpit decompression. It is determined that SCT occurs in a significant percentage of blacks and in individuals of Mediterranean descent. Although there is no apparent danger, since most people travel at altitudes below 21,000 ft, it is suggested that the problems that could result in the USAF be assessed of the risks involved. C.F.W.

A80-11640 Student pilots referred to the neuropsychiatry branch, USAFSAM 1968-78 - Implications for selection. R. A. Levy, D. B. Tolson, and E. H. Carlson (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine,* vol. 50, Nov. 1979, p. 1173-1175.

The case records of 76 student aviators referred to the Neuropsychiatry Branch of the USAF School of Aerospace Medicine during the period 1968-78 are reviewed. Demographic and diagnostic data are provided including source of recruitment, age, marital status, aircraft flown, flying hours, and diagnostic categories. Psychophysiological categories are particularly scrutinized and cameo case histories provided. Implications for pilot selection are discussed. (Author)

A80-11641 **Lower body negative pressure box for +Gz simulation in the upright seated position.** M. T. Lategola and C. C. Trent (FAA, Civil Aeromedical Institute, Oklahoma City, Okla.). *Aviation, Space, and Environmental Medicine*, vol. 50, Nov. 1979, p. 1182-1184. 6 refs.

A description and the operational characteristics of the lower body negative pressure (LBNP) box for plus Gz simulation in the upright seated position are presented. In this version, a negative pressure of minus 40 torr is considered the equivalent of a 2(plus Gz) stress, and the box has withstood a minus 120 torr test pressure. The LBNP box, the hatch cover, and its adjustable waist-surrounding iris system are described, noting that the pedal ergometry within the box is easily accomplished. The box was engineered to accomodate human height from 160 to 195 cm, and locating it within an altitude chamber allows application of LBNP at any level of chamber altitude. A.T.

A80-11876 # **Cortical mechanisms of integrative brain activity (Kortikal'nye mekhanizmy integrativnoi deiatel'nosti mozga).** A. S. Batuev. Leningrad, Izdatel'stvo Nauka, 1978. 53 p. 139 refs. In Russian.

The convergence and integration of somatic, visceral and external signals in elements of the cerebral cortex is examined in the case of the sensorimotor cortex. The internal organization of the various structural and functional neuronal modules in the sensorimotor cortex is discussed. Intersensory integration and the formation of cortifugal impulses are considered, with attention given to the principle of the dominant state of the central nervous system, mechanisms of sensory adaptation and sensitization, conditioned reflexes and the fixation of new behavior patterns. A.L.W.

A80-12223 **Was the pre-biotic atmosphere of the earth heavily reducing.** M. H. Hart (Trinity University, San Antonio, Tex.). *Origins of Life*, vol. 9, Sept. 1979, p. 261-266. 24 refs.

The oxidation state of the prebiotic earth atmosphere is estimated on the basis of oxygen production rates. It is shown that the approximately 32 x 10 to the 21st g of oxygen corresponding to the approximately 12 x 10 to the 21st g of carbon in sediments produced by green-plant photosynthesis can be accounted for mainly by the escape of 1.2 x 10 to the 21st g as free atmospheric oxygen, the incorporation of 8.0 x 10 to the 21st g in sedimentary rocks, and the oxidation of gases present in the prebiotic atmosphere and subsequently released volcanic gases by 23 x 10 to the 21st g of oxygen. Such a heavily reducing prebiotic atmosphere is shown to be compatible with juvenile volcanic emissions, and it is noted that only if the carbon sediment abundance has been greatly overestimated can the primordial earth atmosphere have been nonreducing. A.L.W.

A80-12227 **Antiquity and evolutionary status of bacterial sulfate reduction - Sulfur isotope evidence.** M. Schidlowski (Max-Planck-Institut fur Chemie, Mainz, West Germany). *(College Park Colloquium on Chemical Evolution: Limits of Life, 4th, University of Maryland, College Park, Md., Oct. 18-20, 1978.) Origins of Life*, vol. 9, Sept. 1979, p. 299-311. 48 refs. Research supported by the Deutsche Forschungsgemeinschaft.

The Precambrian sedimentary sulfur isotope record is surveyed in order to narrow in time the possible rise of sulfate-respiring organisms during the Early Precambrian. The sulfur isotope abundances of the Archean age are taken as a baseline, exhibiting delta S-34 values close to zero per mil. Isotopic evidence of dissimilatory sulfate reduction is first observed in the upper Archean of the Aldan Shield, Siberia of 3.0 billion years ago and in the Michipicoten and Woman River banded iron formations of Canada of 2.75 billion years ago, narrowing the possible time of appearance of sulfate respirers to the interval 2.8 to 3.1 billion years ago. Sedimentary sulfur isotope data suggest that sulfate respiration followed sulfur photosynthesis, both of which significantly antedated oxygen respiration. Archean sulfate evaporites are thus attributed to the activity of photosynthetic sulfur bacteria, and not to the effects of oxidation weathering. A.L.W.

A80-12228 **Archean photoautotrophy - Some alternatives and limits.** A. H. Knoll (Oberlin College, Oberlin, Ohio). *(College Park Colloquium on Chemical Evolution: Limits of Life, 4th, University of Maryland, College Park, Md., Oct. 18-20, 1978.) Origins of Life*, vol. 9, Sept. 1979, p. 313-327. 85 refs. Research supported by Oberlin College.

Alternative hypotheses as to the nature of the photoautotrophs of the Archean era are discussed. Limits on the composition of the Early Proterozoic atmosphere provided by the change in composition of the continental sedimentary rocks are considered, and it is concluded that the Archean atmosphere contained small concentrations of oxygen, which rose significantly during the Early Proterozoic. Explanations of the rise of atmospheric oxygen include the hypotheses that (1) the transition reflects the appearance of the first blue-green algae; (2) primitive cyanobacteria flourished prior to the transition but backed the biochemical mechanisms to deal with the O2 produced; and (3) cyanobacterial Archean O2 production was consumed by volcanic emissions. An additional hypothesis that physiologically modern cyanobacteria of the Archean had low oxygen productivity, which rose sharply in the Early Proterozoic era to oxygenate the atmosphere, due to the replacement of Archean environments characterized by high rates of clastic and pyroclastic influx by widespread, stable, shallow marine platforms where productivity is high, is proposed. A.L.W.

A80-12229 * **Oxygen as a factor in eukaryote evolution - Some effects of low levels of oxygen on Saccharomyces cerevisiae.** L. Jahnke and H. P. Klein (NASA, Ames Research Center, Exobiology Research Div., Moffett Field, Calif.). *Origins of Life*, vol. 9, Sept. 1979, p. 329-334. 23 refs.

A comparative study of the effects of varying levels of oxygen on some of the metabolic functions of the primitive eukaryote, Saccharomyces cerevisiae, has shown that these cells are responsive to very low levels of oxygen: the level of palmitoyl-Co A desaturase was greatly enhanced by only 0.03 vol % oxygen. Similarly, an acetyl-CoA synthetase associated predominantly with anaerobic growth was stimulated by as little as 0.1% oxygen, while an isoenzyme correlated with aerobic growth was maximally active at much higher oxygen levels (greater than 1%). Closely following this latter pattern were three mitochondrial enzymes that attained maximal activity only under atmospheric levels of oxygen. (Author)

A80-12230 * **Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota.** S. E. Campbell (Boston University, Boston, Mass.). *Origins of Life*, vol. 9, Sept. 1979, p. 335-348. 24 refs. NSF Grants No. GA-43391; No. EAR-76-84233; No. EAR-76-84233-A01; Grant No. NsG-7588.

The ecology of the cyanophyte-dominated stromatolitic mat forming the ground cover over desert areas of Utah and Colorado is investigated and implications for the formation of mature Precambrian soils are discussed. The activation of the growth of the two species of filamentous cyanophyte identified and the mobility of their multiple trichromes upon wetting are observed, accompanied by the production and deposition of a sheath capable of accreting and stabilizing sand and clay particles. The formation of calcium carbonate precipitates upon the repeated wetting and drying of desert crust is noted, and it is suggested that the desert crust community may appear in fossil calcrete deposits as lithified microscopic tubes and cellular remains of algal trichromes. The invasion of dry land by both marine and freshwater algae on the model of the desert crust is proposed to be responsible for the accumulation, stabilization and biogenic modification of mature Precambrian soils. A.L.W.

A80-12270 **Biochemical chromophores and the interstellar extinction at ultraviolet wavelengths.** F. Hoyle and C. Wickramasinghe (University College, Cardiff, Wales). *Astrophysics and Space Science*, vol. 65, no. 1, Sept. 1979, p. 241-244. 5 refs.

An attempt is made to identify the UV interstellar absorption feature at 2200 A with molecules in biological systems. A smoothed mean interstellar extinction curve is compared with a histogram and a computed average absorption curve for naturally occurring biological chromophores in 186 molecules. The existence of a broad peak in the histogram spanning the wavelength range from 2150 to 2400 A with a maximum close to 2200 A is taken as providing a prima facie case for identifying the 2200-A interstellar feature with molecules in biological systems. It is suggested that chromophores in biomolecules dominate the interstellar absorption at wavelengths of 1900 to 2800 A, that less pronounced interstellar features at reciprocal wavelengths of 5.8 and 6.3 per micron are most likely due to biological chromophores involving single-bond electrons in saturated hydrocarbons, and that the interstellar extinction curve in the range from 0 to 9 per micron is readily explained on the basis of scattering by bacteria and viruses in interstellar space, together with chromophoric absorption. F.G.M.

A80-13018 * **The radioracemization of isovaline - Cosmochemical implications.** W. A. Bonner, N. E. Blair, R. M. Lemmon, J. J. Flores, and G. E. Pollock (NASA, Ames Research Center, Moffett Field; Stanford University, Stanford; California, University, Lawrence Berkeley Laboratory, Berkeley, Calif.). *Geochimica et Cosmochimica Acta*, vol. 43, Nov. 1979, p. 1841-1846. 30 refs. Research supported by the U.S. Department of Energy and NASA.

The optically pure D- and L-enantiomers of isovaline, which cannot be racemized by ordinary chemical mechanisms involving alpha-hydrogen removal and which has been isolated in apparently racemic form from the Murchison meteorite, have been subjected to partial radiolysis by the ionizing radiation from a 3000-Ci Co-60 gamma-ray source. Both in the anhydrous and hydrated solid states and as solid sodium or hydrochloride salts each enantiomer suffered significant radioracemization of the undestroyed residue during its partial radiolysis. The sodium salt of isovaline in 0.1-M aqueous solution suffered extensive radiolysis with relatively small radiation doses, but showed no detectable radioracemization. The significance of these observations with respect to the primordial enantiomeric composition of the isovaline (and other amino acids) indigenous to meteorites is discussed. (Author)

A80-13075 * **Parabolic flight - Loss of sense of orientation.** J. R. Lackner (Brandeis University, Waltham, Mass.) and A. Graybiel (U.S. Navy, Naval Aerospace Medical Research Laboratory, Pensacola, Fla.). *Science*, vol. 206, Nov. 30, 1979, p. 1105-1108. 9 refs. Contract No. NAS9-15147. NASA Order T-5904-B.

On the earth, or in level flight, a blindfolded subject being rotated at constant velocity about his recumbent long body axis experiences illusory orbital motion of his body in the opposite direction. By contrast, during comparable rotation in the free-fall phase of parabolic flight, no body motion is perceived and all sense of external orientation may be lost; when touch and pressure stimulation is applied to the body surface, a sense of orientation is reestablished immediately. The increased gravitoinertial force period of a parabola produces an exaggeration of the orbital motion experienced in level flight. These observations reveal an important influence of touch, pressure, and kinesthetic information on spatial orientation and provide a basis for understanding many of the postural illusions reported by astronauts in space flight. (Author)

blank page

STAR ENTRIES

N80-10574*# Texas Univ. at Austin.
SOUTH AMERICAN RIVER MORPHOLOGY AND HYDROLOGY
R. K. Holz, V. R. Baker, S. M. Sutton, Jr., and M. M. Penteado-Orellana (Fundacao Univ. de Brasilia) *In* NASA. Johnson Space Center Apollo-Soyuz Test Project, Vol. 2 1979 p 545-594 refs
Avail: NTIS HC A99/MF A01

A guide to the hydrologic properties of streams in the Amazon and Paraguay Basins is presented. Photographs are presented from the Apollo Soyuz Test Project of the Amazon Basin. Stream regimes, including analyses of meander wavelengths, flood plain development, and basin morphology are discussed. Basin size, drainage network density, flood plain width, vegetation types and density, climatic factors, and terrain variability are assessed. Adjustments of changes in river morphology caused by altered water and sediment discharges and by quaternary climatic changes are discussed. A.W.H.

N80-10745*# National Aeronautics and Space Administration, Washington, D. C.
THE EFFECT OF DYNAMIC FACTORS OF SPACE FLIGHT ON ANIMAL ORGANISMS
A. M. Genin, ed. Sep. 1979 243 p refs Transl. into ENGLISH from the book "Vliyaniye Dinamicheskikh Faktorov Kosmicheskigo Poleta na Organizm zhivotnhy", Moscow, Nauka Press, 1979 p 1-73, 79-148, 165-183, 186-191, 192, 196-217, 219-223, 231, 248 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75692) Avail: NTIS HC A11/MF A01 CSCL 06C

Physiological, biochemical and morphological studies made on the Cosmos-782 biosatellite are presented. Rats, which were exposed on the biosatellite for 19.5 days, were examined immediately after completion of the flight and also during the 25 day period of readaptation to earth's conditions. The effect of factors of space flight, primarily weightlessness, on the organism was investigated for all systems of the body. R.E.S.

N80-10746# Desmatics, Inc., State College, Pa.
AN EXAMINATION OF STATISTICAL IMPACT ACCELERATION INJURY PREDICTION MODELS BASED ON TORQUE AND FORCE VARIABLES
Dennis E. Smith and John J. Peterson Jul. 1979 23 p refs
(Contract N00014-79-C-0128)
(AD-A071625; TR-112-1) Avail: NTIS HC A02/MF A01 CSCL 06/19

This technical report describes the construction of impact acceleration injury prediction models from a set of twenty eight -G sub x accelerator runs involving Rhesus monkeys with securely restrained torso and unrestrained head. Peak torque and force variables measured during these runs were used to predict injury likelihood. The relative contribution of these variables was examined with respect to the original and a modified version of the data set. Two possible prediction models were used to construct two critical envelopes, i.e., those values of the variables for which the predicted probability of injury (or fatality) is less than or equal to some specified probability. The preferred model was identified and discussed. GRA

N80-10747# Oak Ridge National Lab., Tenn.
TYPES OF AQUATIC MICROCOSMS AND THEIR RESEARCH APPLICATIONS
J. M. Giddings 1978 34 p refs Presented at the Symp. on the Savannah River Ecology Laboratory, Augusta, Ga., 8 Nov. 1978
(Contract W-7405-eng-26)
(CONF-781101-1; ESD-Publ-1254) Avail: NTIS HC A03/MF A01

Aquatic microcosm research has developed along two basic lines, the model ecosystem and the model food chain. Originally used mainly to test ecological hypotheses, microcosms are now finding applications in assessing the environmental effects of human activities, particularly chemical pollution. A critical problem today is selection of appropriate microcosm types for different research needs. Model ecosystems are used for studying community or ecosystem-level phenomena, such as diversity, stability, nutrient cycling, and energy flow, under controlled conditions. Model food chains, which are simpler, easier to analyze, but less realistic than model ecosystems, are applicable to studies of population dynamics, interspecific competition, predator-prey interactions, and trophic dynamics. In contaminant research, microcosms are more useful as predictive tools than as screening tools. DOE

N80-10748# Joint Publications Research Service, Arlington, Va.
USSR REPORT: BIOMEDICAL AND BEHAVIORAL SCIENCES, NO. 122
12 Oct. 1979 134 p
(JPRS-74365) Avail: NTIS HC A07/MF A01

Various topics in biomedical and behavioral sciences are considered. Pharmacology in aerospace medicine, psychometric test equipment for assessing the human functional state, and air filters for removal of aerosols and fumes from the air are among the topics covered.

N80-10749# Joint Publications Research Service, Arlington, Va.
PROBLEMS OF PHARMACOLOGY IN SPACE MEDICINE
V. S. Shashkov and B. B. Yegorov *In its* USSR Report: Biomedical and Behavioral Sci., No. 122 12 Oct. 1979 p 1-20 refs Transl. into ENGLISH from Farmakol. Toksikol. (USSR), no. 4, 1979 p 325-339
Avail: NTIS HC A07/MF A01

The effective use of drugs during the various stages of space flight is considered. The formulation and preparation of the composition of drugs for onboard medicine kits is discussed in terms of the specific factors of space flight, i.e. weightlessness. The use of drugs to enhance resistance to the factors of space flight is also discussed. J.M.S.

N80-10750# Joint Publications Research Service, Arlington, Va.
A PORTABLE STAND FOR ASSESSING THE DYNAMICS OF A WORKING INDIVIDUAL'S FUNCTIONAL STATE
A. B. Leonova and V. G. Romanyuta *In its* USSR Report: Biomedical and Behavioral Sci., No. 122 12 Oct. 1979 p 41-48 refs Transl. into ENGLISH from Tekhnicheskaya estetika (USSR), no. 7, 1979 p 24-26
Avail: NTIS HC A07/MF A01

A portable, experimental test standard based on the use of a microprocessor as a working memory is described. Experiments aimed at studying the dynamics of human functional state during learning activity were conducted in order to test the portable stand. Results are presented and discussed. J.M.S.

N80-10752# Joint Publications Research Service, Arlington, Va.
USSR REPORT: SPACE BIOLOGY AND AEROSPACE MEDICINE, VOLUME 13, NO. 5, 1979
O. G. Gazenko, ed. 29 Oct. 1979 145 p Transl. into ENGLISH of Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 1-87
(JPRS-74470) Avail: NTIS HC A07/MF A01

The physiological and biological effects of various space flight factors are considered. Motion sickness in weightlessness, effects of hypoxia and hypokinesia on metabolism, toxicity of the atmosphere of pressurized chambers, and aspects of the closed ecological system are among the topics covered.

N80-10753# Joint Publications Research Service, Arlington, Va.
CURRENT CONCEPTIONS ON THE GENESIS OF VESTIBULOVEGETATIVE DISORDERS IN WEIGHTLESSNESS
B. I Polyakov *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 1-12 refs Transl. into ENGLISH of Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 3-10

Avail: NTIS HC A07/MF A01

The hypotheses of the genesis of vestibulo-vegetative disorders in weightlessness are analyzed. Preference is given to the concept which attaches greatest importance to the changes in stereotyped interactions of analyzers responsible for space perception. It is however, emphasized that neither hypothesis can account for all the phenomena seen in crewmembers in orbital flight. It is, therefore, indicated that mechanisms of vestibulo-vegetative disorders need further study. It is believed that the most promising line of research is to study the role of endogenous factors determining individual variations of motion sickness susceptibility. J.M.S.

N80-10754# Joint Publications Research Service, Arlington, Va.
EFFECT OF HYPOXIA ON FLUID-ELECTROLYTE METABOLISM AND RENAL FUNCTION IN MAN AS RELATED TO DIFFERENT DEGREES OF MOTOR ACTIVITY
A. I. Grigoryev, V. I Korolkov, G. I. Kozyreyskaya, and M. A. Dotsenko *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 13-18 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 10-14

Avail: NTIS HC A07/MF A01

It was demonstrated that a prolonged (24 days) bed rest at altitudes of 2200 m and 3200 m as well as at sea level was accompanied by an increased renal excretion of fluids and osmotically active substances, including electrolytes. Exercises done during bed rest induced a smaller increase of the renal excretion of sodium and potassium. However, as bed rest continued the differences between the groups of test subjects disappeared. The levels of hypoxia and exercises used in the study proved inefficient to prevent changes in the fluid-electrolyte metabolism occurring during bed rest. Author

N80-10757# Joint Publications Research Service, Arlington, Va.
AGE-RELATED DISTINCTIONS OF CHANGES IN PSYCHOPHYSIOLOGICAL FUNCTIONS OF PILOTS IN THE CIVIL AVIATION UNDER THE INFLUENCE OF VIBRATION AND NOISE
Yu. N. Kamenskiy and Ye. A. Sokolova *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 30-34 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 21-24

Avail: NTIS HC A07/MF A01

The effect of vibration and noise of helicopters on the psychophysiological functions of their crewmembers was studied in relation to their age. The changes were mostly pronounced in pilots younger than 20-25 and older than 45 years. The peculiar changes in the psychophysiological functions can be associated with the age-related features of adaptation to vibration and noise effects and with the different level of professional training. Author

N80-10758# Joint Publications Research Service, Arlington, Va.
DIETARY SUPPLEMENTS USED TO PREVENT SOME CHANGES IN THE HUMAN BODY IN THE PRESENCE OF NERVOUS AND EMOTIONAL STRESS
V. P. Bychkov and M. V. Markaryan *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 35-39 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 25-28

Avail: NTIS HC A07/MF A01

Stress situations similar to those encountered in space flight were simulated. These included: (1) ascent to an altitude of 8000 m in a pressure chamber; (2) anticipation of gravitational acceleration on a centrifuge; and (3) performance mental activity under the conditions of time defficiency in 'success' and 'failure' situations. Changes in protein, carbohydrate, and vitamin metabolism, heart rate, adrenal function, and peripheral blood were noted. Nutrient ingredients (vitamins, glucose, minerals, phosphatid concentrate) added to the diet before and during stressful exposures were shown to correct the parameters studied. J.M.S.

N80-10759# Joint Publications Research Service, Arlington, Va.
ROENTGENOLOGICAL EXAMINATION OF THE HUMAN HEART AFTER 100-DAY HYPOKINESIA
I. G. Krasnych *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 40-44 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 28-31

Avail: NTIS HC A07/MF A01

Two groups of male test subjects (each of 3 persons) took part in a 100-day bed rest experiment. During the study, group 2 did exercise. X-ray examinations showed that bed rest induced changes in the roentgenoanatomical structure of the heart, a decrease of its size and a disorder of its contractile function. In group 2 these changes were far less expressed. The recovery took 3 to 6 months. Author

N80-10760# Joint Publications Research Service, Arlington, Va.
EFFECT OF SPACE FLIGHT CONDITIONS ON DEOXYRIBONUCLEOPROTEIN AND NUCLEIC ACID CONTENT OF RAT TISSUES
E. Misurova, R. A. Tigranyan, K. Kropaceva, and M. Praslicka *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 29 Oct. 1979 (JPRS-74470) p 45-49 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm Med. (Moscow), vol. 13, no. 5, 1979 p 32-35

Avail: NTIS HC A07/MF A01

The spleen of rats flown for 19.5 days aboard the biosatellite Cosmos-782 showed a significant increase of polydeoxyribonucleotides and a decrease of DNP and DNA. The spleen of synchronous rats did not exhibit any differences. This suggests that the increase of polydeoxyribonucleotides in flight rats immediately post-recovery was a result of the so-called gravity stress. The liver and white blood cells did not display any significant changes in DNP or nucleic acids. The changes in the content of nucleic acids in the thymus and bone narrow were insignificant. Author

N80-10761# Joint Publications Research Service, Arlington, Va.
REACTIONS OF RATS TO OVERHEATING FOLLOWING PROLONGED HYPOKINESIA
P. V. Vasilyev, G. D. Glod, Ye. P. Melnikova, L. N. Nikolskiy, S. V. Petrukhin, S. I. Sytnik, and N. N. Uglova *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 50-57 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 35-41

Avail: NTIS HC A07/MF A01

The influence of hypokinesia on the nature of development of hyperthermia and dynamics of functional state of the animal thermoregulatory system is described. It was shown that following acute thermal exposures, the survival rate and life-time of hypodynamic rats increased. The changes were more expressed after 15-day than after 30-day hypokinesia. By the 7th recovery day thermal stability of rats approached the initial level. M.M.M.

N80-10762# Joint Publications Research Service, Arlington, Va.

EFFECT OF HYPOKINESIA ON HIGHER NERVOUS ACTIVITY OF ALBINO RATS

M. A. Kuznetsova and Ye. S. Meyzerov *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 58-62 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 41-44

Avail: NTIS HC A07/MF A01

The effect of a 22-day hypokinesia study on the labyrinthine behavior of white rats was investigated. The test animals showed certain behavioral changes which developed throughout 22 days. However, significant changes occurred only during the first 6-7 days. Later, the changes diminished but retained their trend. The behavioral changes can be associated with inhibition of the nervous processes of higher cerebral compartments responsible for the higher nervous activity. M.M.M.

N80-10763# Joint Publications Research Service, Arlington, Va.

THE COMBINED EFFECT OF CARBON MONOXIDE AND HYPOKINESIA

B. I. Abidin, V. V. Kustov, V. I. Belkin, and A. N. Kondratyev *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 63-68 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 44-48

Avail: NTIS HC A07/MF A01

The 30-day experiment, in which white male rats were exposed to a combined effect of hypokinesia and carbon monoxide at a concentration of 0.05 + or - 0.002 mg/l, showed that carbon monoxide did not influence significantly hypokinesia-induced changes. It is concluded that maximally allowable concentrations of carbon monoxide need not be reduced for 30-day hypokinesia exposures. Author

N80-10764# Joint Publications Research Service, Arlington, Va.

LEVELS AND PROPORTION OF RNA AND PROTEINS IN THE SYSTEM OF THE NEURON: VESTIBULAR NUCLEAR NEUROGLIA AND CEREBELLUM DURING HYPOKINESIA

L. M. Mamalyga *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 69-75 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 49-53

Avail: NTIS HC A07/MF A01

The changes in the cell structures of the vestibular Bechterew's and Deiter's nuclei and in the cerebellal cortex were studied in rats in the presence of reduced muscular activity. The RNA and protein content were used to assess the direction and severity of changes in the functional activity of these brain elements. It was concluded that the restriction of motor activity has a substantial effect on RNA and protein content of the neuroglia system. The nature of changes in these substances was related both to the force of the extreme factor and morphofunctional organization of the brain, and the biochemical structure as well. M.M.M.

N80-10765# Joint Publications Research Service, Arlington, Va.

SOME HEMODYNAMIC PARAMETERS DURING RESPIRATION OF OXYGEN UNDER EXCESSIVE PRESSURE

K. I. Murakhovskiy and L. I. Letkova *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 76-81 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 53-57

Avail: NTIS HC A07/MF A01

The experimental findings on the pattern and value of circulation changes in ten test subjects exposed to oxygen breathing at positive pressure of 20 mm Hg are cited. The major parameters of central circulation were registered by the method of radioactive label (I131) dilution. During the exposure, the test subjects showed an average 27% decrease in the cardiac output as compared with the control level. The test subjects who were pretrained to the exposure displayed a smaller reduction of cardiac output. The circulation changes found under the experimental conditions were mainly induced by peripheral changes rather than by the cardiac function. It is concluded that the reduction of cardiac output is associated with a decrease of the venous return to the heart caused by the diminished circulating blood volume and by the increased total peripheral resistance. M.M.M.

N80-10766# Joint Publications Research Service, Arlington, Va.

BICHROMATE OXIDABILITY AS A CRITERION OF QUANTITATIVE LEVELS OF ORGANIC IMPURITIES IN RECLAIMED WATER

V. A. Kryuchkov and N. S. Mareyeva *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 82-87 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 57-61

Avail: NTIS HC A07/MF A01

Experiments were carried out to study permanganate and bichromate oxidation of chemicals that may contaminate reclaimed water, initial and intermediate products of reclamation. Permanganate oxidability can be used as a qualitative indicator of water contamination with readily oxidizable admixtures only. Bichromate oxidability can be employed as a quantitative indicator of the total content of organic admixtures, provided that oxidation is carried out in a certain way. For the water reclaimed from the atmospheric condensate the following correlation between bichromate oxidability and the concentration of admixtures has been established: 1 mg O2 consumed corresponds approximately to 0.66 mg of organic admixtures in water. M.M.M.

N80-10767# Joint Publications Research Service, Arlington, Va.

AMOUNT OF MICROORGANISMS DISCHARGED FROM THE UPPER RESPIRATORY TRACT AND INTEGUMENT OF PEOPLE CONFINED IN A SEALED CHAMBER

S. N. Zaloguyev, A. N. Viktorov, K. V. Zarubina, and V. P. Gorshkov *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 88-92 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 61-65

Avail: NTIS HC A07/MF A01

In an enclosure the rate of microorganisms discharged into the ambient atmosphere increased significantly. There was a correlation between the rate, on the one hand, and the environmental parameters and hygienic measures used, on the other. The data characterizing the rate with which microorganisms are discharged into an enclosed environment can be applied for the design of air purification systems. Author

N80-10768# Joint Publications Research Service, Arlington, Va.

ULTRASTRUCTURAL CHANGES IN CANINE HEPATOCYTES DURING CONTINUOUS CHRONIC EXPOSURE TO LOW DOSES OF GAMMA RADIATION

L. A. Bespalova, V. V. Shikhodyrov, and V. S. Romanov *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 93-99 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 65-69

Avail: NTIS HC A07/MF A01

Electron microscopy of the liver of dogs exposed to chronic 6-year gamma-irradiation from the Co60 source demonstrated early changes in the hepatocyte structure at a relatively low dosage of 63 rad for 3 years. A comparative study of the submicroscopic reaction of hepatocytes of 3 groups of test dogs showed equally pronounced changes in the endoplasmatic reticulum: vacuolar transformation balloon dystrophy. The heterogeneity of ultrastructural changes of different hepatocytes was probably associated with a simultaneous development of processes of injury, reparation and adaptation of intracellular structures during the long-term gamma-irradiation exposure.

Parallel development of these processes assured reparative biosynthesis to maintain the normal hepatic function. Author

N80-10769# Joint Publications Research Service, Arlington, Va.

RUSH NUTS (CYPERUS ESCULENTUS) AS A SOURCE OF VEGETABLE OIL IN A CLOSED LIFE SUPPORT SYSTEM

M. P. Shilenko, G. S. Kalacheva, G. M. Lisovskiy, and I. N. Trubachev *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 100-105 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 70-74

Avail: NTIS HC A07/MF A01

The cultivation schemes, productivity, total biochemical, lipid in particular, composition of nodules of chufa (Cyperus esculentus) were studied, using a phytotron. Upon continuous illumination, chufa yielded a high total productivity and a satisfactory coefficient of economic effectiveness (not less than 50%). Chufa nodules have an optimal ratio of proteins, carbohydrates, and fats containing essential fatty acids. To meet man's requirements for vegetable oils and essential fatty acids, it is necessary to produce daily 150-200 g dry chufa nodules which are quite acceptable as a dietary ingredient. Author

N80-10770# Joint Publications Research Service, Arlington, Va.

A METHOD OF DEFINING THE OPTIMUM LEVEL OF IONIZING RADIATION FROM DETERMINATE SOURCES DURING SPACE FLIGHTS

A. V. Kolomenskiy and V. A. Sakovich *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 106-110 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 74-76

Avail: NTIS HC A07/MF A01

A method of determining the permissible dose, Dd (or dose rate) of such determinate radiations over the entire flight is described. The criterion of radiation safety in the form of maximum risk is obtained with a minimum weight of such protection. It is also possible to extend this method to a large number of sources, each with its own protection, unrelated to other sources. J.M.S.

N80-10771# Joint Publications Research Service, Arlington, Va.

PSYCHOPROPHYLAXIS OF FATIGUE AND FUNCTIONAL CARDIOVASCULAR DISEASES IN PILOTS BY MEANS OF SELF-CONDITIONING

A. N. Gurov *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 111-113 ref Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 77-78

Avail: NTIS HC A07/MF A01

The great physical and emotional tension inherent in flight work, and the effects of various adverse flight factors (temperature changes, lowering of partial oxygen pressure, restriction of movements, gravitational influence, etc.) are considered in terms of development of early fatigue and functional cardiovascular diseases. Psychological, moral, and political pilot training to increase mental and physical resistance to various flight factors is shown to be effective in reducing flight fatigue and structural cardiovascular diseases. J.M.S.

N80-10772# Joint Publications Research Service, Arlington, Va.

USE OF SHORT-ARM CENTRIFUGE TO PREVENT DECONDITIONING WHEN IMMERSED IN WATER (ACCORDING TO H-REFLEX)

B. I. Zborovskaya *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 114-116 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 78-79

Avail: NTIS HC A07/MF A01

The possibility of using periodic rotation on a short-arm centrifuge (SAC) as a means of preventing the adverse effects of immersion was assessed. Healthy volunteer subjects were immersed in water for 3 days. The rate of build-up of accelerations constituted 0.2 units/s, time of exposure to accelerations of +3Gz constant in magnitude and direction constituted 5 min. Each subject was submitted to +3Gz after pure immersion and immersion combined with periodic rotation on a SAC, where accelerations of +0.8 Gz, +1.2 Gz or 1.6 Gz were generated for 60 min twice a day (first series) and for 40 min 3 times a day (second series). The subjects were positioned on the SAC in such a manner as to have the axis of rotation traverse the region of the bridge of the nose. Under these conditions, neuromuscular functions were tested by the methods of the H (Hoffmann) reflex and electromyography. Results are discussed. J.M.S.

N80-10773# Joint Publications Research Service, Arlington, Va.

COURSE OF ALTITUDE CAISSON DISEASE IN DOGS EXPOSED TO ACCELERATIONS

V. I. Prodin and I. N. Chernyakov *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 117-120 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 79-81

Avail: NTIS HC A07/MF A01

The combined or successive effects of low pressure and G forces were investigated. The dynamics of development of symptoms of altitude decompression sickness were traced against the background of changing hydrostatic pressure due to acceleration. Altitude decompression sickness was induced in mongrel dogs. Animals with marked symptoms were divided into two groups. The natural outcome of the sickness was observed in one group, while the other group was rotated on a centrifuge. Results are discussed. J.M.S.

N80-10774# Joint Publications Research Service, Arlington, Va.

INVESTIGATION OF ALVEOLOARTERIAL DIFFERENCE FOR OXYGEN AND CARBON DIOXIDE WHEN BREATHING HIGH-DENSITY GAS MIXTURES

I. A. Bryantsev, A. G. Dianov, V. V. Isayenko, A. V. Suvorov, and R. I. Finogenova *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 121-123 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 81-83

Avail: NTIS HC A07/MF A01

Respiratory reactions to breathing high density gas mixtures were investigated using nonanesthetized animals. Respiration rate, minute volume, and oxygen and carbon dioxide concentration in alveolar air were determined using a capnograph and a gas analyzer. It is concluded that inclusion of inert gas of high density in respiratory mixtures, at normal atmospheric pressure, does not elicit any appreciable changes in transport of oxygen and carbon dioxide. J.M.S.

N80-10775# Joint Publications Research Service, Arlington, Va.

TOXIC EFFECTS OF CHEMICALS IN THE ALTERED GAS ENVIRONMENT OF PRESSURIZED CHAMBERS

G. I. Solomin *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 124-126 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 83-84

Avail: NTIS HC A07/MF A01

The toxic effect of chemicals that are the products of gas emission from polymers on experimental animals in an altered gas environment were investigated in relation to spacecraft cabins. Studies were conducted with the use of 1,4-dioxane, ethyl acetate and isopropyl benzene. These agents are often identified in the air of manned compartments of spacecraft. Results are discussed. J.M.S.

N80-10776# Joint Publications Research Service, Arlington, Va.
EFFECT OF HYPOXIA ON ATPASE ACTIVITY OF THE BRAIN
I. B. Buravkova, E. S. Mailyan, and Ye. A. Kovalenko *In its* USSR Report: Space Biol. and Aerospace Med., Vol. 13, No. 5 (JPRS-74470) 29 Oct. 1979 p 127-131 refs Transl. into ENGLISH from Kosm. Biol. i Aviakosm. Med. (Moscow), vol. 13, no. 5, 1979 p 85-87

Avail: NTIS HC A07/MF A01

Experiments were conducted on rats and mice in order to study the effect of hypoxia on ATPase activity of the brain. It is shown that an increase in activity is the most typical reaction of Mg(2+)-ATPase to acute hypoxia. Factors affecting enzyme activity include dissociation of oxidation and phosphorylation and activation of phospolipase A. J.M.S.

N80-10777 Rochester Univ., N. Y.
USE OF THE PUPIL TO STUDY THE SCOTOPIC AND CHROMATIC MECHANISMS OF VISION IN HUMANS Ph.D. Thesis
Vasant Durgadas Saini 1979 361 p
Avail: Univ. Microfilms Order No. 7922962

Automated instrumentation was developed to conduct pupillometric experiments rapidly, accurately, and repeatably. Key features of the pupil light reflex were then studied, and its useful attributes were identified. A suitable procedure for measuring pupillary threshold was developed. It was verified that the pupil response to simple foveal flashes against a dark background was scotopic, but that other experiments indicated cone contribution to pupillary miosis. The unidirectional rate sensitivity of the pupil to retinal illumination was found to be a useful property of the pupil control system, and made it a convenient tool for studying the relationships between the scotopic and different chromatic channels of vision. This property was exploited, and a suitable model incorporating it was developed and used. Dissert. Abstr.

N80-10779 California Univ., Los Angeles
THE EXTENDED KALMAN FILTER AS PULMONARY BLOOD FLOW ESTIMATOR Ph.D. Thesis
Oleg Brovko 1979 276 p
Avail: Univ. Microfilms Order No. 7921375

The anesthetic uptake model was examined and developed to include dead space and shunt in the lung. The number of body compartments was examined and a representative model for anesthetic uptake was chosen which is computationally manageable for the on-line algorithm. Ljung's formulation of the extended Kalman filter was compared with the optimal nonlinear filter and modified to estimate time-varying lung perfusion. The results were then generalized to a large class of nonlinear filtering problems which are of theoretical and practical interest. The algorithm accuracy, ability to follow lung perfusion changes, stability and robustness were examined and the technique was shown to be as accurate as thermal dilution in the clinical environment. These experiments establish the potential value of the on-line algorithm as an estimator of pulmonary blood flow during both steady and nonsteady states. Dissert. Abstr.

N80-10780 Wayne State Univ., Detroit, Mich.
A MODEL FOR AUDITORY EVOKED POTENTIALS Ph.D. Thesis
Peter Michael Nefcy 1979 282 p
Avail: Univ. Microfilms Order No. 7921705

Volume-conducted potentials from brain stem auditory structures were recorded from the scalp. These auditory evoked potentials (AEP) are due to neuronal activity from subcortical structures located in the brain stem, as well as the primary cortical areas. A mathematical model utilizing moving and fixed dipoles in a homogeneous volume-conducting medium was developed to simulate the response of the auditory system to acoustic clicks of intensity 60 dBSL during the first fifteen msec after stimulus delivery. The model demonstrates that the waves of the AEP can be generated from multiple sites in the brain stem. Various neurological disorders can be modeled with changes in the pathways, dipole magnitudes, and tract delays which reflect mechanisms of the disease processes. Dissert. Abstr.

N80-10781 Pennsylvania State Univ., University Park.
PLASMA VOLUME CHANGES IN FIT MEN AND WOMEN DURING A HUMID HEAT STRESS BEFORE AND AFTER AN ACCLIMATION Ph.D. Thesis
Janet Torma-Krajewski 1979 158 p
Avail: Univ. Microfilms Order No. 7922358

Plasma volume responses of fit men and women demonstrating similar maximum aerobic capacities were measured during a humid heat stress while walking on a treadmill at 30% maximal oxygen consumption. Prior to the acclimation no statistical differences in the core temperature, heart rate and blood pressure responses of the three groups were found. However, as judged by these responses, the observed trends indicated less strain in the pre-ovulation females when compared to the post-ovulation females and males. The females were better acclimated than the males as indicated by the rectal temperature responses. No statistical differences were observed in heart rate or blood pressure responses among the three groups. Dissert. Abstr.

N80-10782*# Pennsylvania State Univ., University Park.
KIDNEY CELL ELECTROPHORESIS Progress Report
Paul Todd Jun. 1979 25 p refs
(Contract NAS9-15584)
(NASA-CR-160353) Avail: NTIS HC A02/MF A01 CSCL 06B

A kidney cell electrophoresis technique is described in four parts: (1) the development and testing of electrophoresis solutions, (2) optimization of freezing and thawing; (3) procedures for evaluation of separated kidney cells; and (4) electrophoretic mobility characteristics of kidney cells. R.E.S.

N80-10783# Naval Air Development Center, Warminster, Pa. Aircraft and Crew Systems Technology Directorate.
THERMAL CONDUCTION EFFECTS IN HUMAN SKIN. PHASE 2: EXPERIMENTAL VALIDATION AND APPLICATION OF DATA IN SELECTION OF MATERIALS
A. M. Stoll, M. A. Chianta, and J. R. Piergallini 15 Jan. 1979 17 p refs
(Contract CPSC-C-77-0091; WF51523000)
(AD-A068480) Avail: NTIS HC A02/MF A01 CSCL 06/14

Experimental production of threshold blisters at material temperatures, and contact times predicted from measurements of pain thresholds validated the concept underlying this study, that is, that the relationship between pain and blister thresholds established earlier for radiant and for convective heating could be extended into the region appropriate to conductive heating to provide a simple factor by which to convert pain threshold contact times to threshold blister times. From the successful demonstration of this thesis, it is concluded that extrapolation of converted pain threshold temperature-time values determined empirically constitutes a reliable means of predicting maximum permissible temperature of materials for safe contact with bare skin. The information so derived, pertinent to areas of minimal epidermal thickness, is presented to chart form suitable for use in preselection of thermally safe construction and manufacturing materials. GRA

N80-10784# Wisconsin Univ. - Madison.
PULMONARY ADAPTATION TO HIGH ALTITUDE Annual Report, 1 Feb. - 31 Dec. 1978
Jerome A. Dempsey 22 Dec. 1978 20 p refs
(Contract DAMD17-77-C-7006; DA Proj. 3E1-61102-BS-08)
(AD-A068317) Avail: NTIS HC A02/MF A01 CSCL 06/19

This project is aimed at two closely related questions concerning man's adaptation to high altitude hypoxia: (1) What mechanisms regulate the ionic composition of brain intra- and extra-cellular fluid in long-term hypoxia, and (2) What role do these regulatory factors play in mediating ventilatory acclimatization to hypoxia. In the second year of our contract, we have accomplished the following: (a) found that CSF (H-) changed as a function of ventilation during normoxia deacclimatization from chronic hypoxia; (b) established the rat as an animal model for human ventilatory acclimatization to chronic hypoxia, and observed the relative insensitivity of ventilation to alkaline brain perfusion in chronic hypoxia; (c) established the near-perfect regulation of brain pHi in short-term hypoxia and/or hypocapnia and determined the contribution of changes in brain metabolism of this regulation; (d) established the necessary biochemical and physiologic methods and then showed a close link between CNS serotonin metabolism and the control of air-breathing eupnea in the awake rat; and (e) showed the difference in and importance of ventilatory adaptation in other physiologic states--sleep and exercise. GRA

N80-10785# Oak Ridge National Lab., Tenn.
NATIONAL LIBRARY OF MEDICINE TOXICOLOGY DATA BASE MANAGEMENT SYSTEM
J. S. Stanton and J. L. McNeany Apr. 1979 44 p
(Contract W-7405-eng-26)
(ORNL/CSD/TM-80) Avail: NTIS HC A03/MF A01

A data management system developed for the National Library of Medicine toxicology data base (TDB) is described. The TDB data management system includes features to handle initial data entry, data editing, generation of proof listings, and conversion of data to and from the MARK IV file management system's input format. DOE

N80-10786# Medical Coll. of Wisconsin, Milwaukee. Div. of Environmental and Occupational Medicine.
EFFECT OF A RAPID 4 PERCENT CARBOXYHEMOGLOBIN SATURATION INCREASE ON MAXIMAL TREADMILL EXERCISE
R. D. Stewart, P. E. Newton, J. Kaufman, H. V. Forster, J. P. Klein, M. H. Keelen, Jr., D. J. Stewart, A. Wu, and C. L. Hake 1978 46 p refs
(PB-296627/3; MCOW/ENVM/CO-78/2; CRC-APRAC-CAPM-22-75) Avail: NTIS HC A03/MF A01 CSCL 06T

The effect and adaptation to this hypoxic stress over four hours was measured in six physically fit fire fighters. The subjects were randomly exposed and exercised to exhaustion in a double blind experiment to either carbon monoxide (CO) or uncontaminated air twice a week for three weeks. On exposure days the subjects breathed 20,000 ppm CO for 45 seconds, followed by 30 ppm CO for four hours. The rapid increase in COHb resulted in a decrease (p less than .05) in the mean exhaustion times obtained immediately after the CO bolus (745.2 to 736.3 sec). However, this small exercise decrement was not consistently observed, and in 16 of the 44 measurements the trained subjects performed better following CO exposure. GRA

N80-10787# Ames Lab., Iowa.
ANALYSIS OF AIRBORNE PARTICULATES AND HUMAN URINE BY INDUCTIVELY COUPLED PLASMA-ATOMIC EMISSION SPECTROMETRY
Kenneth W. Olson, William J. Haas, Jr., and Velmer A. Fassel Oct. 1978 123 p refs Sponsored by HEW
(PB-297775/9; NIOSH-79/110) Avail: NTIS HC A06/MF A01 CSCL 06T

The results of sampling and multielement analysis of trace elements found in urine of workers and in workplace environments are presented. Inductively coupled plasma-atomic emission spectrometry (ICP-AES) was used to investigate both direct and indirect analysis schemes for air particulates. A unique facility was developed and used for the preparation of air particulate standard reference materials and is described. A complete sampling and ICP-AES analytical method for the simultaneous determination of trace elements typically present in urine samples was also developed and characterized. GRA

N80-10788# Civil Aeromedical Inst., Oklahoma City, Okla.
THE DEVELOPMENT OF THE ATC SELECTION BATTERY: A NEW PROCEDURE TO MAKE MAXIMUM USE OF AVAILABLE INFORMATION WHEN CORRECTING CORRELATIONS FOR RESTRICTION IN RANGE DUE TO SELECTION
James O. Boone and Mary A. Lewis Sep. 1978 46 p refs
(AD-A066132; FAA-AM-78-36) Avail: NTIS HC A03/MF A01 CSCL 05/9

A five test selection battery is currently given to select the air traffic controllers. Data was collected on two new tests being considered for incorporation into the battery. To determine the utility of the old and new tests, it is necessary to correlate the tests with a criterion of job success. However, since criterion information is available only on persons already selected for air traffic control work, the correlation is restricted to this upper range of persons, and is, thereby, spuriously low for prediction purposes. To properly evaluate the utility of the tests, the correlation must be corrected for this restriction in range. A new procedure that was developed to more accurately correct correlations for restriction in range is described. The new procedure was compared with Gulliksen and Thorndike's procedures by the Monte Carlo method and was shown to be more accurate. R.E.S.

N80-10789# Washington Univ., Seattle. Dept. of Psychology.
LIFE STRESS, SELF-PREOCCUPATION, AND SOCIAL SUPPORTS
Irwin G. Sarason 15 Apr. 1979 49 p refs Presented at meeting of the Western Psychological Assoc., San Diego, Calif., 6 Apr. 1979
(Contract N00014-75-C-0905; NR Proj. 170-804)
(AD-A068624; SCS-LS-008) Avail: NTIS HC A03/MF A01 CSCL 05/10

A theoretical framework for stress research is presented which emphasizes the role of cognitions related to situational demands, constraints, and opportunities. The nature of these cognitions is influenced by personality characteristics, recent life experiences, and social supports. Relevant research dealing with these factors is reviewed. Two studies in which elements of social supports were experimentally manipulated are described. Their clinical and developmental implications are discussed. GRA

N80-10790# Human Factors Research, Inc., Goleta, Calif.
RESEARCH ON THE PSYCHOPHYSIOLOGICAL BASIS OF HUMAN VIGILANCE Final Report, 1968 - 1978
James F. O'Hanlon, Jr. Apr. 1979 17 p refs
(Contract N00014-68-C-0296; NR Proj. 201-052)
(AD-A068562; TR-787-F) Avail: NTIS HC A02/MF A01 CSCL 05/10

The research products of a program of studies directed at identifying the psychophysiological basis of human vigilance are briefly summarized. Much of the work focused on identifying the relationship between the biogenic catecholamines, adrenaline (A) and noradrenaline (NA), and human vigilance. A new fluorometric assay for subnanogram concentrations of (A) and (NA) was developed. Several studies were performed showing substantial correlations between vigilance performance and circulating concentrations of (A). It was shown that vigilance could be increased through pulsatile infusions of (A). Vigilance was shown to be adversely affected by typical urban concentrations of carbon monoxide (CO) and by hypoxia experienced at high altitudes. It was also shown that vigilance decrements occur not only with typical laboratory tasks (used early in the program) but also with realistic radar monitoring tasks. Target detection performance, using a typical radar PPI, was shown to deteriorate over time as excretion rates of (A) decreased. Concurrent monitoring of the EEG showed that the performance decrement was also accompanied by a decreased percentage of Beta and increased percentage of Alpha and Theta. GRA

N80-10791# Yale Univ., New Haven, Conn. Dept. of Psychology.
AN APTITUDE-STRATEGY INTERACTION IN LINEAR SYLLOGISTIC REASONING Research Report, 1 Jan. - 30 Mar. 1979
Robert J. Sternberg and Evelyn M. Weil 1 Apr. 1979 51 p refs
(Contract N00014-78-C-0025; NR Proj. 150-412)
(AD-A068498; RR-1-79; TR-15) Avail: NTIS HC A04/MF A01 CSCL 05/10

The major goal of the present study was to demonstrate an aptitude-strategy interaction in linear syllogistic reasoning. Specifically, it was hypothesized that the efficiency of each of four alternative strategies for solving linear syllogisms--problems such as 'John is taller than Bill; Bill is taller than Pete' who is tallest?--would depend upon subjects' patterns of verbal and spatial abilities. This hypothesis was confirmed. The research also had three subsidiary goals. The first was to determine whether it is possible to train subjects to use various classes of strategies for solving linear syllogisms. It was found that such training is possible. The second goal was to determine whether certain strategies for solving linear syllogisms might be more efficient on the average than others. It was found that one strategy, used spontaneously by only a small minority of subjects but rather easily trainable, is more efficient than alternative strategies that subjects seem to use. The third goal was to provide a series of converging operations for testing the validity of one particular account of linear-syllogistic reasoning--a spatial-linguistic mixture model--for subjects receiving no explicit instruction in the solution of linear syllogisms. The validity of this model for the untrained subjects was upheld. It was concluded that componential analysis, a series of concepetual and methodological techniques for investigating intelligent performance, can provide a useful means for studying interactions between aptitudes and experimental treatments. GRA

N80-10792# California Univ., San Diego, La Jolla. Center for Human Information Processing.

A STUDY OF COMPLEX LEARNING THEORY AND METHODOLOGIES

Ross A. Bott Mar. 1979 88 p
(Contract N00014-76-C-0628; ARPA Order 2284; NR Proj. 154-387)
(AD-A068323; REPT-7901) Avail: NTIS HC A05/MF A01 CSCL 05/10

This paper presents an analysis and model of the cognitive processes underlying complex learning situations. A theory is proposed that attempts to specify particular internal knowledge structures generated and modified during instruction, and to use them to explain specific difficulties that the learner experiences and also the overall progress being made. The theory states that (1) the underlying process reflects largely the prior knowledge structures of the student interacting with the information implied by the instruction; (2) the learning mechanisms involved are mostly simple and automatic; (3) the key information within the knowledge structures which allows complex learning to occur is the similarity between higher-order structures. This theory was applied to novices learning to use a computer text editor by reading a basic instruction manual and completing some exercises. After each sentence of instruction, they were asked to describe their current understanding, any difficulties they were aware of, and their expectations about what would follow. Their protocols were analyzed for evidence of underlying cognitive processes. These learning processes and the associated knowledge structures on which they operate were then modeled in terms of the theory at several levels of detail. Several issues of knowledge representation related to the model are discussed and possible solutions proposed. GRA

N80-10793# Naval Ocean Systems Center, San Diego, Calif.

REMOTE OPERATOR PERFORMANCE COMPARING MONO AND STEREO TV DISPLAYS: THE EFFECTS OF VISIBILITY, LEARNING AND TASK FACTORS Final Report

D. C. Smith, R. E. Cole, J. O. Merritt, and R. L. Pepper Feb. 1979 46 p refs
(RR04207)
(AD-A068201; NOSC/TR-380) Avail: NTIS HC A03/MF A01 CSCL 05/10

An analysis of visual perception related to the underwater environment is presented, followed by a discussion of 3-dimensional space perception, and the absolute and relative cues employed by the operator during task performance. Using a category 1 task, experiment 1 employed highly practiced subjects to reduce the effects of learning. Mono and stereo TV performance was measured under three levels of visibility degradation (simulated by contrast reduction). As predicted, stereo was superior to mono under all conditions tested. Performance using both mono and stereo displays were both affected by degraded visibility. Experiment 2 was conducted with naive subjects using an experimental design which enabled an assessment of the degree of learning under operator testing conditions. We hypothesized that the category 1 task would show significantly less advantage for stereo, but that the effects of degraded visibility would continue to occur. The results are consistent with our interpretation. In experiment 3, the more visually complex category 2 task was employed. The design of the experiment was similar to experiment 2 so that evidence for learning could be assessed under these different conditions. Predictions concerning the degree of performance advantage for stereo vs mono displays were supported. This advantage was observed to increase with decreasing visibility, a finding which is consistent with our earlier predictions. GRA

N80-10794# City Univ. of New York, N. Y. Dept. of Psychology.

EVOKED CORTICAL POTENTIALS AND INFORMATION PROCESSING Annual Report, 1 Jan. 1978 - 30 Jun. 1979

John L. Andreassi, Joseph A. Gallichio, and Nancy E. Young 30 Jun. 1979 104 p refs
(Contract N00014-77-C-0114)
(AD-A070789; AR-16) Avail: NTIS HC A05/MF A01 CSCL 05/2

In summary, the present findings show that there are perceptual differences between continuous and apparent motion and that these differences may be reflected in the latency and amplitude of the VEP. Furthermore, theoretical and cell system models were presented to account for the observed differences. These models propose that continuous motion is processed by specialized motion detecting cells which may respond to velocity as an intensity factor in motion. In apparent motion, the models suggest that cells would respond to the spatial and temporal change in position over time aspects of this type of motion and the role of velocity as an intensity factor would be diminished. Thus, it is suggested that future studies be undertaken to compare continuous and apparent motion using a wider range of velocity conditions and recording locations. Also, the direction of motion should be systematically examined for both continuous and apparent motion. GRA

N80-10795# Oklahoma Univ., Norman. Decision Processes Lab.

A MEMORY RETRIEVAL AID FOR HYPOTHESIS GENERATION Progress Report, Aug. 1978 - Aug. 1979

Charles Gettys, Tom Mehle, Suzanne Baca, Stanley Fisher, and Carol Manning 27 Jul. 1979 37 p refs
(Contract N00014-77-C-0615; NR PROJ. 197-040)
(AD-A072657; TR-27-7-79) Avail: NTIS HC A03/MF A01 CSCL 05/10

This study investigates an aid for the hypothesis retrieval process which is based on a model for hypothesis retrieval developed by Gettys, Fisher, and Mehle (1978). A computer simulates the human hypothesis retrieval process by searching an enriched associative memory which contains the associations of a number of individuals in the form of a list of hypotheses for each datum. When the data of a decision problem become known, the appropriate lists are searched by the computer. Hypotheses that are common to most or all of the lists are suggested to the user, who assesses them for plausibility. An experiment was performed to determine the utility of the aid for both expert and non-expert users. The aid produced a substantial gain in performance for both groups of users, suggesting that further development of the aid would be worthwhile in decision situations which are repeated often enough to warrant the creation of an enhanced artificial memory. Also discussed are several techniques for implementing the aid, and determining the maximum gain in performance that the aid can produce. GRA

N80-10796# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.

MODALITY EFFECTS IN SCANNING NONVERBAL INFORMATION: EVIDENCE FOR MULTIPLE MEMORY CODES Ph.D. Thesis
R. L. Hann Jun. 1979 74 p refs
(AF PROJ. 7184)
(AD-A072297; AMRL-TR-79-53) Avail: NTIS
HC A04/MF A01 CSCL 05/2

The purpose of this experiment was to study memory coding processes as a function of input sensory modality. Some investigators have proposed a single auditory/articulatory code, regardless of stimulus modality, while others have suggested that multiple sensory-specific codes are generated. Subjects in this study learned to associate 10 twelve-sided random polygons with ten complex sounds. These paired associates were then used in several versions of a Sternberg binary choice reaction time task. Results indicated that subjects were able to maintain sensory-specific memory information when it was advantageous to do so. The observed effects were best interpreted in terms of a multiple-code model, in which both a primary (same-modality) code and a weaker associate (opposite-modality) code are simultaneously generated as the to-be-remembered information is input. GRA

N80-10797# Sandia Labs., Albuquerque, N. Mex.
SUMMARY OF PROJECT TO DEVELOP HANDBOOK OF HUMAN RELIABILITY ANALYSIS FOR NUCLEAR POWER PLANT OPERATIONS
A. D. Swain 12 Sep. 1978 25 p refs
(Contract EY-76-C-04-0789)
(SAND-78-1812C; Conf-781146-1) Avail: NTIS
HC A02/MF A01

A handbook to aid qualified persons to evaluate the effect of human error on the availability of engineered safety systems and features in nuclear power plants is described. The handbook includes a mathematical model, procedures, derived human failure data, and principles of human behavior and ergonomics. DOE

N80-10798# California Univ., Livermore. Lawrence Livermore Lab.
HUMAN VIGILANCE INVESTIGATION ANALYSIS OF THE PATTERN ARRAY TEST (FURTHER DATA ANALYSIS) Final Report
Andrew C. Have Apr. 1979 68 p refs Prepared in cooperation with Calif. Polytechnic State Univ., San Luis Obispo
(Contract W-7405-eng-48)
(UCRL-13891-3) Avail: NTIS HC A04/MF A01

A test which is designed to help solve problems of human vigilance encountered in a material safeguard system is presented. The efficiency of an operator is measured when large amounts of information are being processed from a video screen over extended periods of time. For the test, eight objects, either circles, squares, or triangles, are set in a 5 x 5 matrix which appeared on a video screen. The eight objects are shown for a specified length of time, blanked out for another specified period, and then eight objects are again shown in the same 5 x 5 matrix. The observer is tested on his ability to discern changes in patterns and/or symbols from frame to frame. It was found that changes in pattern were more easily identified than changes in symbols. DOE

N80-10799* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
PORTABLE BREATHING SYSTEM Patent
John S. Lovell, inventor (to NASA) (United Technologies Corp., East Hartford, Conn.) Issued 25 Sep. 1979 8 p Filed 24 Mar. 1977 Supersedes N77-21847 (15 - 12, p 1643) Sponsored by NASA
(NASA-Case-MSC-16182-1; US-Patent-4,168,706;
US-Patent-Appl-SN-780938; US-Patent-Class-128-142R;
US-Patent-Class-128-191R; US-Patent-Class-128-212) Avail: US Patent and Trademark Office CSCL 06K

A semiclosed-loop rebreathing system is discussed for use in a hostile environment. A packed bed regenerative heat exchanger providing two distinct temperature humidity zones of breathing gas with one zone providing cool, relatively dry air and the second zone providing hot, moist air is described. A.W.H.

N80-10800*# Life Systems, Inc., Cleveland, Ohio.
EXTENDED DURATION ORBITER STUDY: CO2 REMOVAL AND WATER RECOVERY Final Report
R. D. Marshall, G. S. Ellis, F. H. Schubert, and R. A. Wynveen May 1979 91 p refs
(Contract NAS9-15218)
(NASA-CR-160317; LSI-ER-319-24) Avail: NTIS
HC A05/MF A01 CSCL 06K

Two electrochemical depolarized carbon dioxide concentrator subsystems were evaluated against baseline lithium hydroxide for (1) the baseline orbiter when expanded to accommodate a crew of seven (mission option one), (2) an extended duration orbiter with a power extension package to reduce fuel cell expendables (mission option two), and (3) an extended duration orbiter with a full capability power module to eliminate fuel cell expendables (mission option three). The electrochemical depolarized carbon dioxide concentrator was also compared to the solid amine regenerable carbon dioxide removal concept. Water recovery is not required for Mission Option One since sufficient water is generated by the fuel cells. The vapor compression distillation subsystem was evaluated for mission option two and three only. Weight savings attainable using the vapor compression distillation subsystem for water recovery versus on-board water storage were determined. Combined carbon dioxide removal and water recovery was evaluated to determine the effect on regenerable carbon dioxide removal subsystem selection. R.E.S.

N80-10801*# Life Systems, Inc., Cleveland, Ohio.
PREPROTOTYPE VAPOR COMPRESSION DISTILLATION SUBSYSTEM Final Report
George S. Ellis, R. A. Wynveen, and F. H. Schubert Aug. 1979 69 p
(Contract NAS9-15267)
(NASA-CR-160332; LSI-ER-312-4) Avail: NTIS
HC A04/MF A01 CSCL 06K

A three-person capacity preprototype vapor compression distillation subsystem for recovering potable water from wastewater aboard spacecraft was designed, assembled, and tested. The major components of the subsystem are: (1) a distillation unit which includes a compressor, centrifuge, central shaft, and outer shell; (2) a purge pump; (3) a liquids pump; (4) a post-treat cartridge; (5) a recycle/filter tank; (6) an evaporator high liquid level sensor; and (7) the product water conductivity monitor. A computer based control monitor instrumentation carries out operating mode change sequences, monitors and displays subsystem parameters, maintains intramode controls, and stores and displays fault detection information. The mechanical hardware occupies 0.467 m3, requires 171 W of electrical power, and has a dry weight of 143 kg. The subsystem recovers potable water at a rate of 1.59 kg/hr, which is equivalent to a duty cycle of approximately 30% for a crew of three. The product water has no foul taste or odor. Continued development of the subsystem is recommended for reclaiming water for human consumption as well as for flash evaporator heat rejection, urinal flushing, washing, and other on-board water requirements. K.L.

N80-10802# Logicon, Inc., San Diego, Calif.
DESIGN CONSIDERATIONS FOR THE MAN-MACHINE RELATIONS USER INTERFACE TO TAS Interim Technical Report, 15 Mar. - 15 Jul. 1979
15 Jul. 1979 134 p
(Contract MDA903-79-C-0261; ARPA Order 3705)
(AD-A071207) Avail: NTIS HC A07/MF A01 CSCL 09/2

This effort consists of the analysis and design of a user interface which employs several man-machine relations factors; an existing system will be employed as a testbed for these beliefs - the COINS II Terminal Access System (TAS). This new interface must not interfere with the existing TAS user interface; it must coexist with the original and both must be accessible to TAS users. In addition to the software effort, intelligent terminals (i.e., microprocessor controlled) will emulate an electronic desk environment for the user. We feel that such modifications will result in greatly increased user acceptance of TAS, while providing a good indication of how such considerations can be applied to other systems and the possible effects of such efforts. GRA

N80-10803# Anthropology Research Project, Yellow Springs, Ohio.

REVISED HEIGHT/WEIGHT SIZING PROGRAMS FOR MEN'S PROTECTIVE FLIGHT GARMENTS

Milton Alexander, John T. McConville, and Ilse Tebbetts Wright-Patterson AFB, Ohio AMRL Apr. 1979 117 p refs
(Contract F33615-78-C-0508; AF Proj. 7184)
(AD-A070732; AMRL-TR-79-28) Avail: NTIS HC A06/MF A01 CSCL 06/14

Presented in this report is an updated series of height/weight sizing programs for use by designers of protective clothing for USAF men. The sizing values are based on an analysis of data obtained in the 1967 survey of flying personnel and cover some 71 dimensions (excluding head, hand and foot measurements.) GRA

N80-10804# Rockwell International Corp., Columbus, Ohio Autonetics Missile Systems Div.

VISUAL SEARCH PERFORMANCE IN SIMULATED REMOTELY PILOTED VEHICLE UTILIZATION AS A FUNCTION OF AUXILIARY TASK LOADING ON THE OBSERVER Final Report, 25 Aug. 1975 - 3 May 1976

Richard B. Huntoon, Benjamin Schohan, and Uldi Shvern Apr. 1979 65 p refs
(Contract DAHC19-76-C-0011)
(AD-A072402; ARI-TR-357) Avail: NTIS HC A04/MF A01 CSCL 05/5

Baseline data were obtained on how well observers could extract information from a TV monitor while performing auxiliary tasks under task loading conditions that might be encountered in use of a remotely piloted vehicle (RPV) as the sensor platform. A simulation facility was used. It contained a terrain model, a TV camera transport, hybrid computing equipment, and a television display and control console. Six pilots and six nonpilots participated in the three-phase effort. Phase A required participants to detect and recognize tank-sized targets in open and cluttered backgrounds from a simulated altitude of 2,000 feet and a simulated RPV velocity of 100 knots. Phase B required participants to monitor and correct deviations in the RPV course and altitude and to respond to two visual warning indicators. Increasing the auxiliary load level decreased the probabilities and ranges of target detection and recognition. Target acquisition task demands similarly increased auxiliary task response times. Cluttered background significantly degraded target acquisition task performance, particularly when the auxiliary task was performed concurrently. GRA

N80-10995# Joint Publications Research Service, Arlington, Va.

HEALTH PROGNOSIS IN FLIGHT DISCUSSED

R. Bayevskiy *In its* USSR Report: Biomedical and Behavioral Sci., No. 112 23 Jul. 1979 p 10-12 Transl. into ENGLISH from Meditsinskaya Gazeta (Moscow), 30 May 1979 p 3

Avail: NTIS HC A06/MF A01

A system of preventive measures to insure the rapid readaptation of a cosmonaut to the earth is discussed along with a method for predicting the state of health on long space flights. F.O.S.

N80-10996# Joint Publications Research Service, Arlington, Va.

THE THIRD SYSTEM OF REGULATION OF ANIMAL AND HUMAN FUNCTIONS, THE ACTIVE POINT SYSTEM

A. V. Zhirmunskiy (USSR Academy of Sciences, Vladivostok) and V. I. Kuzmin (USSR Academy of Sciences, Vladivostok) *In its* USSR Report: Biomedical and Behavioral Sci., No. 112 23 Jul. 1979 p 13-30 refs Transl. into ENGLISH from Zh. Obshchey Biologii (Moscow), no. 2, 1979 p 176-188

Copyright. Avail: NTIS HC A06/MF A01

The identification of the mechanisms and structures for control of vital functions of organisms is discussed in terms of active points. F.O.S.

N80-10997# Joint Publications Research Service, Arlington, Va.

TWO IMPORTANT DIRECTIONS OF DEVELOPMENT OF SOVIET BIOMETRY

V. M. Shmidt (Leningrad State Univ.) *In its* USSR Report: Biomedical and Behavioral Sci., No. 112 23 Jul. 1979 p 31-46 refs Transl. into ENGLISH from Zh. Obshchey Biol. (Moscow), no. 2, 1979 p 219-228

Copyright. Avail: NTIS HC A06/MF A01

The history and application of Soviet biometry are discussed in terms of correlation pleaids, and taxonomic analysis. F.O.S.

N80-11000# Joint Publications Research Service, Arlington, Va.

EVALUATION OF HEAT FLOW COMPONENTS FROM HEATER TO SKIN IN AN ELECTRIC THERMAL SUIT

I. M. Naumenko (Academy of Sciences Ukrainian SSR, Kiev) *In its* USSR Report: Biomedical and Behavioral Sci., No. 112 23 Jul. 1979 p 76-80 refs Transl. into ENGLISH from Dopovidi Akad. Nauk Ukrayinskoyi RSR (Kiev), no. 4, 1979 p 294-297

Avail: NTIS HC A06/MF A01

The nature of heat transfer from the heater in an electric thermal suit to the human body is studied. An evaluation of the heat flow components of biological significance are presented. Information that prolonged exposure to low intensity radiant heat promotes an increase in the adenine nucleotides is discussed. A.W.H.

N80-11001# Joint Publications Research Service, Arlington, Va.

ULTRASTRUCTURE OF CHLORELLA PYRENOIDOSA CELLS (STRAIN g-11-1) FOLLOWING GROWTH UNDER CONDITIONS OF A PROLONGED SPACE FLIGHT

K. M. Sytnky (Academy of Sciences Ukrainian SSR, Kiev), Ye. L. Kordyum (Academy of Sciences Ukrainian SSR, Kiev), O. L. Mashynskyy (Academy of Sciences Ukrainian SSR, Kiev), A. F. Popova (Academy of Sciences Ukrainian SSR, Kiev), and H. M. Hrechko (Academy of Sciences Ukrainian SSR, Kiev) *In its* USSR Report: Biomedical and Behavioral Sci., no 112 23 Jul. 1979 p 98-104 refs Transl. into ENGLISH from Dopovidi Akad. Nauk Ukrayinskoyi RSR (Kiev), no. 4, 1979 p 311-315

Avail: NTIS HC A06/MF A01

The effects of space flight on the growth and viability of the unicellular alga Chlorella pyrenoidosa, analysed by studying the ultrastructure of the cell, is examined. Difference between the control and experimental cells in the ultrastructure and volume relationships of cytoplasmic organelles and storage material are described. The accelerated accumulation of biomass and the accelerated ageing of the cells in space flight is discussed. A.W.H.

N80-11756*# National Aeronautics and Space Administration. Langley Research Center, Hampton, Va.

INDIRECT MICROBIAL DETECTION Patent Application

Judd R. Wilkins, inventor (to NASA) Filed 17 Aug. 1979 18 p
(NASA-Case-LAR-12520-1; US-Patent-Appl-SN-067596) Avail: NTIS HC A02/MF A01 CSCL 06C

The 'invention' disclosed is an indirect microbial detection method. The growth of microorganisms in a sample is detected and monitored by culturing microorganisms in a growth medium and detecting a change in potential between two electrodes separated from the microbial growth by a barrier which is permeable to charged particles but microorganism impermeable. NASA

N80-11757# Army Research Inst. of Environmental Medicine, Natick, Mass.

THE 5-THIO-D-GLUCOSE THERMOREGULATORY EFFECTS IN MICE AT VARIOUS TEMPERATURES

Ralph P. Francesconi and Milton Mager 14 May 1979 24 p refs

(AD-A069511; USARIEM-M-12/79) Avail: NTIS HC A02/MF A01 CSCL 06/5

Adult, male mice were administered various doses of 5-thio-D-glucose (5-TG) at three environmental temperatures: 4 C, 22 C, and 35 C. Both intracerebroventricular (ICV) and intraperitoneal (IP) administration of 5-TG resulted in significant (p less than .05 to p less than .001) decreases in rectal temperature (Tre) which were usually dose-dependent. After 30 min the hypothermic effects were significantly (p less than .001, ICV, 100 microgram) exacerbated by cold exposure (4 C vs 22 C) and were likewise intensified significantly (p less than .005, 45 min, fed vs 18 h fasted) by food deprivation. These decrements in rectal temperature (Tre) were accompanied by significant (p less than .001) increases in circulating levels of glucose. The present results indicate that 5 TG may be eliciting both central *and* peripheral cellular glucopenia concomitant with circulatory hyperglycemia; thus, the resultant hypothermia may be arising from competitive inhibition of glycolysis by 5 TG intermediates as well as reduced availability of tissue glucose. GRA

N80-11758# Medical Biological Lab. RVO-TNO, Rijswijk (Netherlands).
EARLY DIAGNOSIS OF DECOMPRESSION SICKNESS. CHANGES IN THE BLOOD FOUND SHORTLY AFTER DECOMPRESSION. EXPERIMENTS ON RATS
M. Wijnans, P. M. Draeck, and P. vanEck Jul. 1978 29 p refs In DUTCH; ENGLISH summary
(MBL-1978-7) Avail: NTIS HC A03/MF A01

In rats subjected to compression followed by decompression hemoconcentration was observed. The effects were then related to the severity of the applied compression-decompression procedure. In nearly all cases this hemoconcentration became apparent before signs of decompression-sickness were observed. Hemoconcentration occurred even in rats without symptoms. In a relatively large number of rats a drop in platelet count was noticed soon after decompression; but usually only after the platelet count was corrected for the hemoconcentration. It was found that in rats a rise in hematocrit had the highest prognostic value for the occurrence of symptoms of decompression sickness. Recommendations are given for an investigation of the possible prognostic value of hemoconcentration in divers. Author (ESA)

N80-11759# Deutsche Forschungs- and Versuchsanstalt fuer Luft- und Raumfahrt, Frankfurt am Main (West Germany). Inst. fuer Flugmedizin.
DISCRETE MULTIVARIATE ANALYSIS ON RADIOBIOLOGICAL RESULTS FROM THE BIOSTACK 3 BACILLUS SUBTILIS EXPERIMENT
R. Facius, H. Buecker, and M. Schaefer 1979 6 p refs Presented at 22d COSPAR Plenary Meeting, Bangalore, India, May-Jun. 1979
Avail: NTIS HC A02/MF A01

The dependency of spore survival on HZE particle linear energy transfer (LET) and on their distance from the particles' trajectory during Biostack 3 experiments is discussed. Multivariate methods are applied as far as the stochastic point of view is concerned, it is shown that the major features of the bivariate results cannot be reduced to the heterogeneous frequency distributions of the respectively remaining physical parameters of the HZE particles. These findings bear on considerations about mechanisms, by which biological damage might be induced by high LET heavy ions. Author (ESA)

N80-11760 Medical Univ. of South Carolina, Charleston.
CARBON DIOXIDE CONTRIBUTIONS IN RESPIRATORY CONTROL Ph.D. Thesis
Edwin Merrill Adams 1979 148 p
Avail: Univ. Microfilms Order No. 79620656

The contribution of carbon dioxide to respiratory control made by the carotid bodies and vagus nerves is investigated. The relationship between the central respiratory neutron in the ventral respiratory group and airflow, the latency response to CO2, the contribution of the carotid body to the hypercapnic response are discussed. Dissert. Abstr.

N80-11761# National Research Inst. for Mathematical Sciences, Pretoria (South Africa).
IDENTIFICATION OF CONTROLS IN NEUROMUSCULOSKELETAL CONTROL SYSTEM MODELS
H. Hatze Oct. 1978 25 p refs
(CSIR-TWISK-52) Avail: NTIS HC A02/MF A01

The commonly adopted practice of identifying the myoactuator torques in neuro-musculoskeletal control systems as the system controls is discussed. It is demonstrated that it leads to biologically unrealistic results. A systems model describing the excitation and contraction dynamics of skeletal muscle is then presented. In this model the control parameters are the actual neural controls, motor unit recruitment and stimulation frequency, and the model correctly predicts experimentally observed muscular force outputs for a wide variety of neural control inputs. A general myocybernetic performance criterion, and certain special cases pertaining to specific contractive modes are also discussed. R.E.S.

N80-11762# Civil Aeromedical Inst., Oklahoma City, Okla.
INTERSTIMULUS INTERVAL AS IT AFFECTS TEMPORARY THRESHOLD SHIFT IN SERIAL PRESENTATIONS OF LOUD TONES
Jerry V. Tobias Jun. 1979 10 p refs
(AD-A072006; FAA-AM-79-16) Avail: NTIS HC A02/MF A01 CSCL 06/16

Temporary threshold shifts were measured repeatedly during a session in order to determine effects of interstimulus interval (ISI) on the shift. The fatiguing sound was a 3 minute, 110 dB SPL, 4,000 Hz tone. Immediately following the 3 minute stimulation, Bekesy-audiometric tracings were made for 3 minutes at 5,656 Hz. Then the subject sat quietly for the ISI that was used during that session. The effect of the subject's rest time or time off was compared at two points on the recovery curve: at 30 seconds and at 2 minutes following the cessation of the fatiguing sound. For susceptible subjects tested with short-duration ISIs, each successive threshold showed a greater shift than the earlier ones for at least four tests. As ISI was increased, improvement seemed not to follow the expected linear form. At some critical value that varies from subject to subject, successive tests no longer differ from each other: each one is similar to a first trial in which no previous exposure to the high-level tone has occurred. For most subjects run under these conditions, the critical ISI value is at least 30 minutes. Author

N80-11763*# Boeing Aerospace Co., Houston, Tex.
STARPAHC SPACE-ORIENTED MEDICAL EVALUATION Final Report
12 Oct. 1979 6 p refs
(Contract NAS9-14513)
(NASA-CR-160360) Avail: NTIS HC A02/MF A01 CSCL 06E

Development of the STARPAHC telemedicine system is documented. Using STARPAHC assessment results and monitoring experience, on board and ground based flight medical system monitoring requirements and operational procedures were developed for use with the Space Transportation System during OFT and mature operation phases of the shuttle. K.L.

N80-11764# Army Research Inst. of Environmental Medicine, Natick, Mass.
HYPOTHERMIA INDUCED BY CHLORPROMAZINE OR L-TRYPTOPHAN EFFECTS ON TREADMILL PERFORMANCE IN THE HEAT
Ralph P. Francesconi and Milton Mager 28 Mar. 1979 21 p refs
(DA Proj. 3E1-61102-BS-08)
(AD-A069849; USARIEM-M-8/79) Avail: NTIS HC A02/MF A01 CSCL 06/19

To study the effects of preinduced hypothermia on the physiological and thermoregulatory responses to exercise in the heat, rats were intravenously administered 100 microgram of chlorpromazine (Cpz) or 200 mg/kg of L-tryptophan (L-tryp) under restraint in a cold (4 C) environment. When rectal temperatures (Tre) reached 32-33 C, the rats were removed to a hot environment (35 C) where they ran on a level treadmill (9.14 m/min) to hyperthermic exhaustion (Tr - 42.5-43 C). Both Cpz and L-tryp hypothermia was effective in increasing significantly (p less than .001) the time to hyperthermic exhaustion. However, the maximal tre and skin temperatures (Tsk) attained were unaffected by either treatment. While exercising on the treadmill increments (C/min) in Tre and Tsk were significantly (p less than .02, minimal) greater for the initially hypothermic animals when compared to normothermic controls. Cooling rates were unaffected by either treatment. We concluded from these studies that while preinduced hypothermia is extremely effective in prolonging the time to hyperthermic exhaustion, no additional beneficial thermoregulatory responses accrued as a result of this treatment. Author (GRA)

N80-11765# Army Research Inst. of Environmental Medicine, Natick, Mass.

COLD AIR INHALATION, ESOPHAGEAL TEMPERATURE LUNG FUNCTION IN EXERCISING HUMANS Final Report

J. J. Jaeger, E. Chandler Deal, Jr., D. E. Roberts, and E. R. McFadden, Jr. 14 Mar. 1979 24 p refs Prepared in cooperation with Peter Bent Brigham Hospital, Boston, Mass. and Harvard Medical School, Boston, Mass.

(AD-A069510; USARIEM-M-7/79) Avail: NTIS HC A02/MF A01 CSCL 06/16

Eight normal individuals performed 10 min of bicycle exercise at 80% of their predicted maximum workload while breathing air at 22 C, saturated with water vapor and air at -40 C, dry. Rectal temperature and temperature at various locations along the length of the esophagus were measured during the exercise period. Pulmonary mechanics were measured before and 5 to 10 min after exercise. Temperature in the lower third of the esophagus was in close agreement with rectal temperature and was unaffected by level of respiratory heat exchange. Upper esophageal temperature decreased substantially during exercise, the magnitude of the decrease being dependent upon proximity to intrathoracic airways and the level of respiratory heat exchange. Subjects bronchodilated in response to exercise breathing warm air but this response was abolished by exercise breathing -40 C air. We conclude that at sufficiently high levels of respiratory heat exchange, normal individuals exhibit mild bronchoconstriction qualitatively similar to the severe bronchospasm induced in asthmatics by modest increases in respiratory heat exchange. GRA

N80-11766# Army Aeromedical Research Lab., Fort Rucker, Ala.

A PORCINE BIOASSAY METHOD FOR ANALYSIS OF THERMALLY PROTECTIVE FABRICS: A CLINICAL GRADING SYSTEM Final Report

Thomas L. Wachtel, Francis S. Knox, III, and G. R. McCahan, Jr. Jun. 1978 35 p refs

(DA Proj. 3E7-62173-A-819)

(AD-A069202; USAARL-78-8) Avail: NTIS HC A03/MF A01 CSCL 06/3

A clinical grading system of severity of cutaneous burn was developed in a porcine cutaneous burn bioassay model using a flame thermal source. From surface appearance, color, sensation, tactile response, tenacity of hair anchoring, and appearance on cut section, a progression of the severity of burn injury was developed and documented with serial still photographs, high-speed cinephotomacrography and clinical descriptions. Variations in this grading scheme were required for skin protected or partially protected with fabrics, blackened with stove polish, or deprived of its circulation. GRA

N80-11767# Gesamthochschule, Siegen (West Germany). Dept. of Physics.

CALCULATED LINEAR ENERGY TRANSFER SPECTRA OF HZE PARTICLES FOR THE FREE FLYER BIOSTACK EXPERIMENT ON THE LDEF-MISSION

W. Heinrich 1979 14 p refs

Avail: NTIS HC A02/MF A01

The LDEF-mission, scheduled for launch on the Space Shuttle in 1981, will fly for about nine months in a near earth orbit with an inclination angle of 28. During this flight the Free Flyer Biostack experiment will measure biological effects of individual heavy ions from cosmic radiation. The corresponding results of a calculation of linear energy transfer (LET) spectra in free space and inside the experiment are presented. The calculation considers the geomagnetic shielding of the spacecraft against charged particles with low energies and the disintegration of the heavy ions inside the experiment by fragmentation. For this mission the LET spectra will differ significantly from those of previous experiments. Primary particles with high LET are scarce. Inside the experiment the LET spectra change with depth of matter due to the energy loss and fragmentation of the nuclei. Author (ESA)

N80-11768# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Frankfurt am Main (West Germany). Inst. fuer Flugmedizin.

SUMMARY OF RADIOBIOLOGICAL FINDINGS: FROM SPACEFLIGHT TO GROUND-BASED STUDIES Annual Report

H. Buecker and R. Facius 1979 8 p refs Presented at 22d COSPAR Plenary Meeting, Bangalore, India, May/Jun. 1979

Avail: NTIS HC A02/MF A01

Radiobiological studies relative to manned space flight are reviewed. The prediction of relevant physical parameters, radiation effects and space flight factors, late effects, and heavy effects are discussed. It is concluded that a reliable a priori assessment of the radiobiological risk from longer duration space missions remains as yet a difficult task. The fact that some symptoms of biological injury become manifest only long after exposure is pointed out. Author (ESA)

N80-11769# National Technical Information Service, Springfield, Va.

TELECOMMUNICATIONS IN MEDICINE. A BIBLIOGRAPHY WITH ABSTRACTS Progress Report, 1964 - Jul. 1979

Elizabeth A. Harrison Aug 1979 150 p Supersedes NTIS/PS-77/0725; NTIS/PS-76/0641; NTIS/PS-75/580; NTIS/PS-78/0751

(NTIS/PS-79/0786/8; NTIS/PS-78/0751; NTIS/PS-77/0725; NTIS/PS-76/0641; NTIS/PS-75/580) Avail: NTIS HC $28.00/MF $28.00 CSCL 06E

Research reports cover teleconsultation, communications for emergency medical services, medical communication networks and television systems, and telecommunications for medical information systems and rural health services. This updated bibliography contains 143 abstracts, 15 of which are new entries to the previous edition. GRA

N80-11770# New Mexico Univ., Albuquerque. Technology Application Center.

ALTITUDE ACCLIMATIZATION. CITATIONS FROM THE INTERNATIONAL AEROSPACE ABSTRACTS DATA BASE Progress Report, 1974 - Jul. 1979

Samuel C. Mauk Aug. 1979 31 p Sponsored in part by NTIS

(NTIS/PS-79/0857/7) Avail: NTIS HC $28.00/MF $28.00 CSCL 06P

This bibliography the international literature and covers all aspects of altitude acclimatization. Topics include high altitude environments, hypoxia, heart function and hemodynamic responses, physical exercise, human tolerances and reactions, physiological responses, and oxygen consumption. GRA

N80-11771*# Honeywell, Inc., Minneapolis, Minn. Systems and Research Center.

PERFORMANCE, PHYSIOLOGICAL, AND OCULOMETER EVALUATION OF VTOL LANDING DISPLAYS Final Report

R. A. North, S. P. Stackhouse, and K. Graffunder NASA Sep. 1979 160 p refs

(Contract NAS1-15081)

(NASA-CR-3171; HONEYWELL-F0584-FR1-1) Avail: NTIS HC A08/MF A01 CSCL 05H

A methodological approach to measuring workload was investigated for evaluation of new concepts in VTOL aircraft displays. Physiological, visual response, and conventional flight performance measures were recorded for landing approaches performed in the NASA Visual Motion Simulator (VMS). Three

displays (two computer graphic and a conventional flight director), three crosswind amplitudes, and two motion base conditions (fixed vs moving base) were tested in a factorial design. Multivariate discriminant functions were formed from flight performance and/or visual response variables. The flight performance variable discriminant showed maximum differentation between crosswind conditions. The visual response measure discriminant maximized differences between fixed vs motion base conditions and experimental displays. Physiological variables were used to attempt to predict the discriminant function values for each subject/condition trial. The weights of the physiological variables in these equations showed agreement with previous studies. High muscle tension, light but irregular breathing patterns, and higher heart rate with low amplitude all produced higher scores on this scale and thus represent higher workload levels.
Author

N80-11772# Oklahoma Univ., Norman. Coll. of Education.
COGNITIVE STYLES: A REVIEW OF THE LITERATURE Interim Report, Jan. 1977 - Jan. 1978
Tillman J. Ragan, Kathryn T. Back, Vance Stansell, Lynna J. Ausburn, Floyd B. Ausburn, Patricia A. Butler, and Keith Huckabay Brooks Air Force Base, Tx. Air Force Human Resources Lab., Brooks Air Force Base, Tx. May 1979 62 p refs
(Contract F33615-77-C-0047; AF Proj. 2313)
(AD-A069435; AFHRL-TR-78-90(I)) Avail: NTIS HC A04/MF A01 CSCL 05/9

A review of the literature to identify the various cognitive style constructs and the instruments used to measure them was completed. Each was evaluated with specific attention to possible relationships to Air Force technical training. Ten cognitive styles were selected for an in-depth summary of the state of the art, with special attention given to those that gave most promise for use.
GRA

N80-11773# California Univ., Berkeley. Operations Research Center.
THE SCOPE, LIMITS, AND TRAINING IMPLICATIONS OF THREE MODELS OF AIRCRAFT PILOT EMERGENCY RESPONSE BEHAVIOR Research Report
Stuart E. Dreyfus and Hubert L. Dreyfus Feb. 1979 39 p refs
(Grant AF-AFOSR-3594-78; AF Proj. 2313)
(AD-A071320; ORC-79-2) Avail: NTIS HC A03/MF A01 CSCL 05/9

Three models of skill acquisition are proposed: (1) Nonsituational, (2) Intermediate, and (3) Situational. It is argued that only the third can account for highly skilled performance. The type of emergency training program each suggests and the level of pilot performance that each can be expected to produce is then investigated. We conclude that only training based on the situational model could possibly produce highly skilled emergency response behavior.
GRA

N80-11774# McDonnell-Douglas Astronautics Co., St. Louis, Mo.
ROTARY WING PROFICIENCY-BASED AVIATOR SELECTION SYSTEM (PASS) Final Report, 15 Feb. 1977 - 1 Mar. 1978
Ruth Ann Marco, Richard F. Bull, Ronald L. Vidmar, and Brian D. Shipley, Jr. Jan. 1979 244 p refs
(Contract DAHC19-77-C-0015; DA Proj. 2Q2-63743-A-722)
(AD-A069838; MDC-1839; ARI-TR-79-A2) Avail: NTIS HC A11/MF A01 CSCL 05/9

The Proficiency-Based Aviator Selection System (PASS) is the result of an operational feasibility program developed to determine whether a learning sample approach could be used to select candidates for rotary wing aviator training. PASS was based on the Automatic Pilot Aptitude Measurement System (APAMS), a five-hour learning sample of fixed wing piloting tasks, developed for the Air Force Pilot Selection Program. PASS utilizes a UH-1 Flight Simulator (UH-1 FS) with a five-degree-of-freedom motion base to present the syllabus and test materials. the APAMS syllabus was extensively modified to conform to rotary wing flight operations, and the UH-1 FS software was reconfigured and formatted to meet the PASS requirements for training and performance measurement. Four voice synthesizers (VOTRAX) were interfaced to the UH-1 FS to provide vocal feedback. The operational capability of the PASS was demonstrated in a test with 11 experienced rotary wing pilots and 11 candidates for rotary wing training. The primary audience for this report will be operational personnel in training selection and simulation, particularly for rotary wing aircraft.
GRA

N80-11775# Washington Univ., Seattle. Dept. of Psychology.
INTELLIGENCE AS AN INFORMATION PROCESSING CONCEPT Interim Report, 1 Apr. 1978 - 31 Mar. 1979
Earl Hunt May 1979 91 p refs Presented at the Brit. Psychological Soc. Conf. Nottingham, Engl. Apr. 1979
(Contract N00014-77-C-0225; NR Proj. 154-398; RR0420601)
(AD-A069953) Avail: NTIS HC A05/MF A01 CSCL 05/10

This paper examines the relationship between general cognitive competence and several aspects of information processing. Three sources of individual differences in information processing are proposed: structure, strategy, and general attentional resources. Structural factors set limits on the effectiveness of specific information processing steps. These factors appear to be important when we contrast the cognitive capacities of extreme groups, such as normal and mentally retarded persons but they account for only a small amount of the variability in homogeneous groups such as college students. The reason may be that within such groups, strategy of attacking problems is a more important source of variation, and moderates the relationship between simple information processing steps and complex reasoning. Finally, the fact that scores on almost all measures of cognitive competence are positively correlated may be related to the fact that all mental processes seem to compete for general attentional resources, and that individuals differ in the attentional resources they can bring to bear on any cognitive task.
Author (GRA)

N80-11776# Canyon Research Group, Inc., Westlake Village, Calif.
DEVELOPMENT OF UNIT TRAINING AND EVALUATION TECHNIQUES FOR COMBAT-READY HELICOPTER PILOTS. TASK 2: ASSESSMENT OF ARTEP AND ATM TRAINING OBJECTIVES AND REQUIREMENTS FOR MAINTAINING OPERATIONAL READINESS Research Note, 21 Sep. 1977 - 20 Sep. 1978
Colin D. Ciley, Jr. and George E. Long May 1979 25 p refs
(Contract DAHC19-77-C-0059)
(AD-A069224; FTR-01-78; ARI-RN-79-11) Avail: NTIS HC A02/MF A01 CSCL 05/9

The recently published Army Training and Evaluation Programs (ARTEP) and Aircrew Training Manuals (ATM) represent a new concept of Army aviation unit training. Commanders are now responsible for determining the training requirements of their individual units and for developing and implementing programs to meet those requirements. The ARTEP and ATMs were designed to assist the unit commanders in carrying out that responsibility. This report presents the results of a brief review of the utility of these documents in the field and the extent to which their content adequately represents the training objectives and requirements for maintaining combat readiness. The research concludes that the documents have been well received and are being utilized effectively by field commanders; that they contain a valid, though not entirely complete, reflection of combat-readiness training objectives and requirements; but, that the required recordkeeping is burdensome and there is a need for a more effective feedback system between its users and its developers.
Author (GRA)

N80-11777# Canyon Research Group, Inc., Westlake Village, Calif.
DEVELOPMENT OF UNIT TRAINING AND EVALUATION TECHNIQUES FOR COMBAT-READY HELICOPTER PILOTS. TASK 1: DEVELOPMENT OF AN INSTRUCTION PROGRAM FOR INDIVIDUAL AND UNIT TRAINING WITH COMBAT-READY PILOTS Research Note, 21 Sep. 1977 - 20 Sep. 1978
George E. Long, Colin D. Ciley, Jr., Roik L. Jockenberger, and

Ethlyn A. Garlich May 1979 86 p refs
(Contract DAHC19-77-C-0059; DA Proj. 2Q2-63743-A-772)
(AD-A069242; FTR-05-78-1; ARI-RN-79-10-1) Avail: NTIS
HC A05/MF A01 CSCL 05/9

The attainment and maintenance of combat readiness must be a, if not the, primary responsibility of every field unit commander. To carry out that responsibility, commanders of units with combat missions need training and evaluation techniques that will train pilots who already know how to fly to accomplish the requirements of a specific mission in a battlefield environment as part of the combined arms team. In order to provide the required techniques and procedures noted above, it is first necessary to derive an effective and efficient approach to their development. That approach should result in the availability of techniques and procedures that will facilitate the attainment of the highest level of combat readiness in the largest number of operational units in the shortest amount of time. This report describes the research effort directed at the derivation of an approach to the development of training and evaluation techniques and procedures for combat-readiness training that will meet the above noted requirements. It also describes the effort directed at the partial development of two training modules consistent with that approach. Author (GRA)

N80-11779# Toronto Univ. Downsview (Ontario). Inst. for Aerospace Studies.

LINEAR STATE FEEDBACK CONTROL OF RIGID-LINK MANIPULATORS

David F. Golla May 1979 66 p refs
(UTIAS-TN-214; ISSN-0082-5263) Avail: NTIS
HC A04/MF A01

Linear state variable feedback controllers were designed for rigid-link manipulator arms. Two types of feedback schemes were considered, general rigid control (GRC) which allows for both interjoint and intrajoint feedback, and independent joint control (IJC) which allows for only intrajoint feedback. The design scheme consisted of arbitrary closed loop pole placement. Pole assignment algorithms were developed for both GRC and IJC feedback control schemes. Two controllers, IJC and GRC, were designed for a preliminary two-link rigid model of the space shuttle manipulator arm carrying a full payload in planar motion. The two models are simulated and the controllers compared. R.E.S.

N80-11780# Virginia Polytechnic Inst. and State Univ., Blacksburg.

SPATIO-TEMPORAL INTERGRATION IN THE VISUAL SYSTEM Final Technical Report, Aug. 1976 - Dec. 1977

Maier Algamor, Willard W. Farley, and Harry L. Snyder Feb. 1979 104 p refs
(Contract F33615-76-C-5022; AF Proj. 7184)
(AD-A069558; VPI-HFL-78-6; AMRL-TR-78-126) Avail: NTIS
HC A06/MF A01 CSCL 05/10

A new model for temporal and spatial encoding in the visual system is developed and presented. Three series of experiments were conducted to validate the model. The experiments used (1) a TV display of random, dynamic noise, and (2) a specially designed stimulus generator which produces very large homogeneous visual fields which can be easily modulated to reproduce a large variety of temporal waveforms having a rise time longer than 1 ms. The obtained results support the proposed model. The principal findings are: (1) Time integration of the eye is locally controlled at the retina and has very fast dynamics. (2) The obtained CFF curves suggest a correlation between the frequency at which maximum sensitivity is obtained and the sensitivity itself. (3) As predicted by the model, temporal bands are developed in the visual system for stimuli showing temporal discontinuity points. The width of the temporal bands was measured and a strong correlation was found between the temporal band width and the integration time. The width of the temporal bands is a function of the luminance level of the bands; the width is not dependent on the stimulus slope. The apparent brightness of the temporal band is, however, dependent on the slope of the stimulus. GRA

N80-11781# Anthropology Research Project, Yellow Springs, Ohio.

HEIGHT/WEIGHT SIZING PROGRAMS FOR WOMEN'S PROTECTIVE GARMENTS

Ilse Tebbetts, John T. McConville, and Milton Alexander Jun. 1979 126 p refs
(Contract F33615-79-C-0511; AF Proj. 7184)
(AD-A072376; AMRL-TR-79-35) Avail: NTIS
HC A07/MF A01 CSCL 06/17

Presented in this report is a series of height/weight sizing programs for use by designers of protective clothing for USAF women. The sizing values are based on an analysis of data obtained in the 1968 survey of Air Force women and cover some 60 dimensions (excluding head, hand and foot measurements). Author (GRA)

N80-11782# Honeywell Systems and Research Center, Minneapolis, Minn. Government and Aeronautical Products Div.

INTEGRATED HELMET-MOUNTED SIGHT/DISPLAY PROGRAM: COATING TECHNOLOGY Technical Report, 15 May 1973 - 15 Jun. 1973

J. M. Seeman and L. E. Homstad Jul. 1979 169 p refs
(Contract F33615-72-C-0420; AF Proj. 5973)
(AD-A072060; HONEYWELL-2079-SR3; AMRL-TR-79-61)
Avail: NTIS HC A08/MF A01 CSCL 05/8

Contents: Introduction; Summary of task results--Optics on plastics, Variable density, Durability and Abrasions, High absorption; Conclusions; Recommendations; Discussion; and References. GRA

N80-11783# Honeywell Systems and Research Center, Minneapolis, Minn.

HELMET-MOUNTED DISPLAYS: AN EXPERIMENTAL INVESTIGATION OF DISPLAY LUMINANCE AND CONTRAST

B. J. Cohen, J. R. Bloomfield, and K. J. McAleese Jul. 1979 73 p refs
(Contract F33615-72-C-0420)
(AD-A072059; AMRL-TR-79-60) Avail: NTIS
HC A04/MF A01 CSCL 14/2

This study was carried out in order to validate experimentally the predictions of previous analytic work (Cohen, 1973). The objective was to determine the best combination of filter coatings and display luminances required for viewing the Helmet Mounted Display (HMD) against a wide, but operationally realistic variety of background luminances. The predictions relating beamsplitter transmittance, visor transmittance and display luminance to performance were largely supported by the data. GRA

N80-11784# Honeywell Systems and Research Center, Minneapolis, Minn.

HELMET-MOUNTED DISPLAYS: A COMPUTER-ASSISTED ANALYSIS OF DAY-NIGHT VISUAL REQUIREMENTS

B. J. Cohen Jul. 1979 296 p refs
(Contract F33615-72-C-0420; AF Proj. 5973)
(AD-A072061; HONEYWELL-2079-SR5; AMRL-TR-79-62)
Avail: NTIS HC A13/MF A01 CSCL 14/2

Honeywell has conducted a computer-assisted analysis in order to predict the range of ambient luminance conditions under which Helmet Mounted Display (HMD) imagery can be usefully resolved by an observer. This report examines those variables relating to ambient luminance, display luminance, and the attenuation of each in terms of optimizing display contrast minimizing differences in luminance to the two eyes. Visual performance predictions were made based upon comparing the analytically derived data with criteria values obtained from a limited number of technical reports. These criteria values were used even though it was recognized that the monocular see-through HMD is a unique system, thus limiting the applicability of data obtained from studies of related but still dissimilar systems such as head-up displays (HUDs) and occluded monocular HMDs. Among the factors affecting the quality of the displayed imagery, those variables most crucial to display luminance and contrast were systematically varied on a computer. GRA

N80-11785# Honeywell Systems and Research Center, Minneapolis, Minn. Systems and Research Center.

THE ROLE OF THE UPPER FIELD OF VIEW IN SELECTED HMS/D VISUAL TASKS
B. J. Cohen and R. A. Levit 12 Jul. 1979 38 p refs
(Contract F33615-72-C-0420; AF Proj. 5973)
(AD-A072064; F4001-HSR1; AMRL-TR-79-65) Avail: NTIS HC A03/MF A01 CSCL 05/8

A study was conducted to determine whether opaque obstructions located in an observer's upper field of view would affect the visual detection of briefly illuminated targets located above his horizontal line of sight. Five versions of an acrylic visor considered for use with a helmet-mounted sight and display (HMS/D) contained one or more opaque areas located above their horizontal axes. Target detection performance for 12 subjects using the experimental visors was compared with the subjects' performance using an unobstructed control visor. Target appearance was signalled by a central cue light for six subjects (directed search), while the other six subjects were forced to rely only on peripheral detection of the briefly illuminated targets (undirected search). It was found that target detection performance was unaffected by either visor obstructions or by method of search, or any combination of the two. It was concluded that any of the visors would be usable from a visual performance standpoint. GRA

N80-11786# Honeywell Systems and Research Center, Minneapolis, Minn.
HELMET-MOUNTED SIGHT/DISPLAY PROGRAM: CESSNA 310 FLIGHT TEST
L. J. Mueller and B. A. Olson 12 Jul. 1979 84 p refs
(Contract F33615-72-C-0420)
(AD-A072058; F5517-HSR2; AMRL-TR-79-59) Avail: NTIS HC A05/MF A01 CSCL 05/8

The first phase of an engineering flight evaluation of operator performance with a Helmet-Mounted Sight/Display system has been completed. A total of 22 flights were conducted during which subjects utilized a helmet-mounted sight to control the pointing direction of a gimballed television camera and a helmet-mounted display to view the picture from the TV camera. Particular attention was paid to any indication of disorientation or discomfort attributable to the helmet-mounted equipment. No significant effect was noted. Secondary investigations considered the effect of servo dynamics in the TV camera system, angular motion limits in the pointing system, display field for view, display brightness, and environmental factors including target complexity and contrast, ambient brightness, and atmospheric haze. Interaction between the ambient scene viewed directly and through the combining glass of the helmet display caused no difficulty during the experiment. A second phase of this study considered the potential for inducing vertigo through the use of helmet-mounted equipment. The test plan and preliminary results for this experiment are presented in an appendix to this report. A detailed report on Phase II will be issued later. GRA

N80-11787# Honeywell Systems and Research Center, Minneapolis, Minn.
OPERATIONAL PILOT FACTORS ANALYSIS REPORT
B. A. Olson 12 Jul. 1979 123 p refs
(Contract F33615-72-C-0420; AF Proj. 5973)
(AD-A072063; HONEYWELL-2079-SR7; AMRL-TR-79-64) Avail: NTIS HC A06/MF A01 CSCL 14/2

This report describes the studies and analysis work done to identify performance requirements with respect to the operator who will wear the helmet and use the helmet sight/display system in the operational situation. Its purpose is to identify and document performance requirements for the IHMS/D equipment with respect to: Pilot population anthropometric and visual characteristics. Environmental effects of ambient light, field of view, acceleration, vibration, noise and space available. Display information requirements of accuracy, format, brightness, contrast, and the control response of the system. Author (GRA)

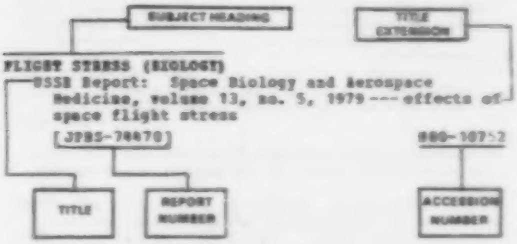
N80-11788# Army Aeromedical Research Lab., Fort Rucker, Ala.
HEAD AIMING/TRACKING ACCURACY IN A HELICOPTER ENVIRONMENT Final Report
Robert W. Verona, John C. Johnson, and Heber D. Jones May 1979 86 p
(AD-A071359; USAARL-79-9) Avail: NTIS HC A05/MF A01 CSCL 05/8

This experiment was conducted to measure man's head aiming/tracking capability using a helmet mounted sighting device. The influences of target speed, helmet suspension types, and helmet weighting parameters on head aiming/tracking were investigated. If the aiming/tracking accuracy was sensitive to manipulation of these man-machine interface parameters, then it would seem to indicate that improved aiming/tracking accuracy could be obtained by improving the interface. The factors analyzed were eye dominance, helmet weighting, target speed, and helmet suspension. The eye dominance, helmet weighting, and target speed factors were statistically significant; however, the only factor of practical significance was target speed. A subject aiming at a static target with his head had an RMS error of about 3 milliradians. When the target began to move 4 degrees/second, the error increased to about 10.5 milliradians. When the subject began to vibrate, too, the error increased to 13 milliradians. When the target speed doubled, the vibrating error increased to 16.8 milliradians. GRA

SUBJECT INDEX

AEROSPACE MEDICINE AND BIOLOGY */A Continuing Bibliography (Suppl. 203)* JANUARY 1980

Typical Subject Index Listing


SUBJECT HEADING
TITLE EXTENSION
FLIGHT STRESS (BIOLOGY)
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979 --- effects of space flight stress
[JPRS-74470]
N80-10752
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ACCELERATION STRESSES (PHYSIOLOGY)
Animal experiment on the effects of repeated exposure to sustained Gz of moderate magnitude. I - Histo-pathological studies in rabbits
A80-11520
Self-motion magnitude estimation during linear oscillation - Changes with head orientation and following fatigue
A80-11629
Regional cerebral blood flow in conscious miniature swine during high sustained +Gz acceleration stress
A80-11632
Lower body negative pressure box for +Gz simulation in the upright seated position
A80-11641
Course of altitude caisson disease in dogs exposed to accelerations
N80-10773

ACCELERATION TOLERANCE
Some influences of vision on susceptibility to motion sickness
A80-11630
Responses of domestic fowl to repeated +Gz acceleration
A80-11633
An examination of statistical impact acceleration injury prediction models based on torque and force variables
[AD-A071625] N80-10746

ACID BASE EQUILIBRIUM
Relationship between calcium and hydrogen ions in heart muscle
A80-10424

ACTIVITY CYCLES (BIOLOGY)
Temporal organization of energy metabolism and the cellular clocks
A80-10328

ADENOSINE TRIPHOSPHATE
Effect of hypoxia on ATPase activity of the brain
N80-10776

AEROBIOLOGY
Oxygen as a factor in eukaryote evolution - Some effects of low levels of oxygen on Saccharomyces cerevisiae
A80-12229

AEROSPACE MEDICINE
The normal values of spatial velocity in the second part of QRS /A cooperative study of 229 healthy individuals/
A80-10422
Gamma rays - Further evidence for lack of a threshold dose for lethality to human cells
A80-10525
Sickle cell trait and the aviator
A80-11639
Student pilots referred to the neuropsychiatry branch, USAFSAM 1968-78 Implications for selection
A80-11640
The effect of dynamic factors of space flight on animal organisms
[NASA-TM-75692] N80-10745
USSR Report: Biomedical and Behavioral Sciences, no. 122 --- emphasizing pharmacology in space flight, psychometric test equipment, and air filters
[JPRS-74365] N80-10748
Problems of pharmacology in space medicine
N80-10749
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979 --- effects of space flight stress
[JPRS-74470] N80-10752
Current conceptions on the genesis of vestibulovegetative disorders in weightlessness
N80-10753
Research on the psychophysiological basis of human vigilance
[AD-A068562] N80-10790
Revised height/weight sizing programs for men's protective flight garments
[AD-A070732] N80-10803
Summary of radiobiological findings: From spaceflight to ground-based studies
N80-11768

AGE FACTOR
Age-dependent dynamics of the succinate-dehydrogenase activity of lymphocytes in physically active and inactive persons
A80-10333

AGING (BIOLOGY)
Age-related distinctions of changes in psychophysiological functions of pilots in the civil aviation under the influence of vibration and noise
N80-10757

AIR FILTERS
USSR Report: Biomedical and Behavioral Sciences, no. 122 --- emphasizing pharmacology in space flight, psychometric test equipment, and air filters
[JPRS-74365] N80-10748

AIR TRAFFIC CONTROLLERS (PERSONNEL)
The development of the ATC selection battery: A new procedure to make maximum use of available information when correcting correlations for restriction in range due to selection
[AD-A066132] N80-10788

AIRBORNE INFECTION
Amount of microorganisms discharged from the upper respiratory tract and integument of people confined in a sealed chamber
N80-10767

AIRCRAFT NOISE
Noise dosimeter measurements in the Air Force
A80-11636

AIRCRAFT PILOTS
Sickle cell trait and the aviator
A80-11639

ALGAE
Archean photoautotrophy - Some alternatives and limits
A80-12228

ALGORITHMS
The extended Kalman filter as pulmonary blood flow estimator
N80-10779

ALTITUDE ACCLIMATIZATION
Altitude acclimatization. Citations from the International Aerospace Abstracts data base
[NTIS/PS-79/0857/7] N80-11770

ALTITUDE SICKNESS
Course of altitude caisson disease in dogs exposed to accelerations
N80-10773

ALVEOLAR AIR
Investigation of alveoloarterial difference for oxygen and carbon dioxide when breathing high-density gas mixtures
N80-10774

AMAZON REGION (SOUTH AMERICA)
South American river morphology and hydrology
N80-10574

AMINO ACIDS
The radioracemization of isovaline - Cosmochemical implications --- gamma ray effects on Murchison meteorite primordial composition
A80-13018

ANAEROBES
Antiquity and evolutionary status of bacterial sulfate reduction - Sulfur isotope evidence
A80-12227

ANEMIAS
Sickle cell trait and the aviator
A80-11639

ANESTHETICS
Strength-interval curves of isolated rat papillary muscle during hypoxia and reoxygenation - Effect of lidocaine
A80-10421

ANTHROPOMETRY
Revised height/weight sizing programs for men's protective flight garments
[AD-A070732] N80-10803
Height/weight sizing programs for womens protective garments
[AD-A072376] N80-11781

ANTIHISTAMINICS
Effects of pseudoephedrine and triprolidine on visual performance
A80-11637

ARMED FORCES (UNITED STATES)
Height/weight sizing programs for womens protective garments
[AD-A072376] N80-11781

ARTIFICIAL GRAVITY
Lower body negative pressure box for +Gz simulation in the upright seated position
A80-11641

ATMOSPHERIC COMPOSITION
Was the pre-biotic atmosphere of the earth heavily reducing
A80-12223

ATMOSPHERIC PRESSURE
Oxygen levels safe for continued reproduction of Drosophila in normal and hypobaric atmospheres
A80-11631

AUDITORY STIMULI
Interstimulus interval as it affects temporary threshold shift in serial presentations of loud tones
[AD-A072006] N80-11762

AUTOTROPHS
Archean photoautotrophy - Some alternatives and limits
A80-12228

B

BACTERIA
Antiquity and evolutionary status of bacterial sulfate reduction - Sulfur isotope evidence
A80-12227

BARORECEPTORS
Control of blood pressure by carotid sinus baroreceptors in human beings
A80-10522

BEHAVIOR
Effects of exposure to hypoxic environment upon operant behavior in rats
A80-11521

Effect of hypokinesia on higher nervous activity of albino rats
N80-10762

BIBLIOGRAPHIES
Telecommunications in medicine. A bibliography with abstracts
[NTIS/PS-79/0786/8] N80-11769
Altitude acclimatization. Citations from the International Aerospace Abstracts data base
[NTIS/PS-79/0857/7] N80-11770

BIOASTRONAUTICS
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979 --- effects of space flight stress
[JPRS-74470] N80-10752
Ultrastructure of chlorella pyrenoidosa cells (strain g-11-1) following growth under conditions of a prolonged space flight
N80-11001

BIOCHEMISTRY
Regulation of the energy metabolism and physiological state of the organism --- Russian book
A80-10326
Oxidation of pyruvate in mitochondrias: Mathematical model - Regulation of the Kreb's cycle by adenine and pyridine nucleotides
A80-10329
Factors affecting the regulation of biological oxidation processes in tissue specimens
A80-10330
Role of mitochondrias in glyconeogenesis
A80-10331
Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses
A80-10332
Biochemical chromophores and the interstellar extinction at ultraviolet wavelengths
A80-12270
Kidney cell electrophoresis
[NASA-CR-160353] N80-10782

BIOCONTROL SYSTEMS
Regulation of the energy metabolism and physiological state of the organism --- Russian book
A80-10326
Alternate use of carbohydrates and lipids as a form of regulating the physiological state
A80-10327
Temporal organization of energy metabolism and the cellular clocks
A80-10328
Identification of controls in neuro-musculoskeletal control system models
[CSIR-TWISK-52] N80-11761

BIODYNAMICS
Convective and radiative heat transfer coefficients for a clothed man
A80-11328
The third system of regulation of animal and human functions, the active point system
N80-10996
Identification of controls in neuro-musculoskeletal control system models
[CSIR-TWISK-52] N80-11761

BIOELECTRIC POTENTIAL
A model for auditory evoked potentials
N80-10780

BIOELECTRICITY
A model for auditory evoked potentials
N80-10780

BIOGEOCHEMISTRY
Antiquity and evolutionary status of bacterial sulfate reduction - Sulfur isotope evidence
A80-12227
Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota
A80-12230

BIOINSTRUMENTATION
Torso mounted electrocardiographic electrodes for routine clinical electrocardiography
A80-10423

BIOLOGICAL EFFECTS
Ultrastructure of chlorella pyrenoidosa cells (strain g-11-1) following growth under conditions of a prolonged space flight
N80-11001

Calculated linear energy transfer spectra of HZE particles for the free flyer Biostack experiment on the LDEF-mission
N80-11767

Summary of radiobiological findings: From spaceflight to ground-based studies
N80-11768

BIOLOGICAL EVOLUTION

Archean photoautotrophy - Some alternatives and limits
A80-12228

Oxygen as a factor in eukaryote evolution - Some effects of low levels of oxygen on Saccharomyces cerevisiae
A80-12229

BIOMEDICAL DATA

Plasma volume changes in fit men and women during a humid heat stress before and after an acclimation
N80-10781

STARPAHC space-oriented medical evaluation --- telemedicine system
[NASA-CR-160360] N80-11763

Cold air inhalation, esophageal temperature lung function in exercising humans
[AD-A069510] N80-11765

BIOMETRICS

Two important directions of development of Soviet biometry
N80-10997

BIONICS

Modeling and parameter identification of the human respiratory system
A80-11378

A model for auditory evoked potentials
N80-10780

Identification of controls in neuro-musculoskeletal control system models
[CSIR-TWISK-52] N80-11761

BIOTELEMETRY

STARPAHC space-oriented medical evaluation --- telemedicine system
[NASA-CR-160360] N80-11763

BLISTERS

Thermal conduction effects in human skin. Phase 2: Experimental validation and application of data in selection of materials
[AD-A068480] N80-10783

BLOOD FLOW

Regional cerebral blood flow in conscious miniature swine during high sustained +Gz acceleration stress
A80-11632

BLOOD PRESSURE

Control of blood pressure by carotid sinus baroreceptors in human beings
A80-10522

BLOOD VOLUME

Plasma volume changes in fit men and women during a humid heat stress before and after an acclimation
N80-10781

BLUE GREEN ALGAE

Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota
A80-12230

BODY TEMPERATURE

Evaluation of heat flow components from heater to skin in an electric thermal suit
N80-11000

The 5-thio-d-glucose thermoregulatory effects in mice at various temperatures
[AD-A069511] N80-11757

BODY WEIGHT

Animal experiment on the effects of repeated exposure to sustained Gz of moderate magnitude. I - Histo-pathological studies in rabbits
A80-11520

BRAIN

Microsecond sensitivity of the human visual system to irregular flicker
A80-11371

Effect of hypoxia on ATPase activity of the brain
N80-10776

Spatio-temporal intergration in the visual system
[AD-A069558] N80-11780

BRAIN CIRCULATION

Regional cerebral blood flow in conscious miniature swine during high sustained +Gz acceleration stress
A80-11632

BREATHING APPARATUS

Portable breathing system --- a breathing apparatus using a rebreathing system of heat exchangers for carbon dioxide removal
[NASA-CASE-MSC-16182-1] N80-10799

BURNS (INJURIES)

A porcine bioassay method for analysis of thermally protective fabrics: A clinical grading system
[AD-A069202] N80-11766

C

CABIN ATMOSPHERES

Toxic effects of chemicals in the altered gas environment of pressurized chambers
N80-10775

CALCIUM

Relationship between calcium and hydrogen ions in heart muscle
A80-10424

CARBOHYDRATE METABOLISM

Alternate use of carbohydrates and lipids as a form of regulating the physiological state
A80-10327

Role of mitochondrias in glyconeogenesis
A80-10331

CARBON DIOXIDE

Investigation of alveoloarterial difference for oxygen and carbon dioxide when breathing high-density gas mixtures
N80-10774

Carbon dioxide contributions in respiratory control
N80-11760

CARBON DIOXIDE REMOVAL

Portable breathing system --- a breathing apparatus using a rebreathing system of heat exchangers for carbon dioxide removal
[NASA-CASE-MSC-16182-1] N80-10799

Extended duration orbiter study: CO2 removal and water recovery
[NASA-CR-160317] N80-10800

CARBON MONOXIDE

The combined effect of carbon monoxide and hypokinesia
N80-10763

CARBONACEOUS CHONDRITES

The radioracemization of isovaline - Cosmochemical implications --- gamma ray effects on Murchison meteorite primordial composition
A80-13018

CARDIAC VENTRICLES

Relationship between calcium and hydrogen ions in heart muscle
A80-10424

CARDIOGRAMS

The normal values of spatial velocity in the second part of QRS /A cooperative study of 229 healthy individuals/
A80-10422

CARDIOLOGY

Cardiac reflexes in normotensive and spontaneously hypertensive rats
A80-10521

CARDIOVASCULAR SYSTEM

The 24-hour cycle and nocturnal depression of human cardiac output
A80-11634

Systolic time intervals and other cardiovascular changes following leg elevation
A80-11635

Some hemodynamic parameters during respiration of oxygen under excessive pressure
N80-10765

CAROTID SINUS REFLEX

Control of blood pressure by carotid sinus baroreceptors in human beings
A80-10522

CELLS (BIOLOGY)

Temporal organization of energy metabolism and the cellular clocks
A80-10328

Gamma rays - Further evidence for lack of a threshold dose for lethality to human cells
A80-10525

Oxygen as a factor in eukaryote evolution - Some effects of low levels of oxygen on Saccharomyces cerevisiae
A80-12229

Ultrastructural changes in canine hepatocytes during continuous chronic exposure to low doses of gamma radiation
N80-10768

Kidney cell electrophoresis
[NASA-CR-160353] N80-10782

Ultrastructure of chlorella pyrenoidosa cells (strain g-11-1) following growth under conditions of a prolonged space flight
N80-11001

CENTRAL NERVOUS SYSTEM

Effect of hypokinesia on higher nervous activity of albino rats
N80-10762

CENTRIFUGES

Use of short-arm centrifuge to prevent deconditioning when immersed in water (according to H-reflex)
N80-10772

CENTRIFUGING STRESS

Animal experiment on the effects of repeated exposure to sustained Gx of moderate magnitude. I - Histo-pathological studies in rabbits
A80-11520

CEREBELLUM

Levels and proportion of RNA and proteins in the system of the neuron: Vestibular nuclear neuroglia and cerebellum during hypokinesia
N80-10764

CEREBRAL CORTEX

Effects of exposure to hypoxic environment upon operant behavior in rats
A80-11521

Cortical mechanisms of integrative brain activity --- Russian book
A80-11876

CHEMICAL EVOLUTION

Antiquity and evolutionary status of bacterial sulfate reduction - Sulfur isotope evidence
A80-12227

Archean photoautotrophy - Some alternatives and limits
A80-12228

The radioracemization of isovaline - Cosmochemical implications --- gamma ray effects on Murchison meteorite primordial composition
A80-13018

CHEMOTHERAPY

Effect of transdermally administered scopolamine in preventing motion sickness
A80-11628

CHLORELLA

Ultrastructure of chlorella pyrenoidosa cells (strain g-11-1) following growth under conditions of a prolonged space flight
N80-11001

CHROMATES

Bichromate oxidability as a criterion of quantitative levels of organic impurities in reclaimed water
N80-10766

CIRCADIAN RHYTHMS

The 24-hour cycle and nocturnal depression of human cardiac output
A80-11634

CIVIL AVIATION

Age-related distinctions of changes in psychophysiological functions of pilots in the civil aviation under the influence of vibration and noise
N80-10757

CLINICAL MEDICINE

Torso mounted electrocardiographic electrodes for routine clinical electrocardiography
A80-10423

The extended Kalman filter as pulmonary blood flow estimator
N80-10779

The third system of regulation of animal and human functions, the active point system
N80-10996

STARPAHC space-oriented medical evaluation --- telemedicine system
[NASA-CR-160360] N80-11763

A porcine bioassay method for analysis of thermally protective fabrics: A clinical grading system
[AD-A069202] N80-11766

CLOSED ECOLOGICAL SYSTEMS

Oxygen levels safe for continued reproduction of Drosophila in normal and hypobaric atmospheres
A80-11631

Types of aquatic microcosms and their research applications
[CONF-781101-1] N80-10747

CLOTHING

Convective and radiative heat transfer coefficients for a clothed man
A80-11328

COCKPITS

Simulator fidelity in the learning of complex flight tasks
A80-10774

COGNITION

Evoked cortical potentials and information processing
[AD-A070789] N80-10794

Intelligence as an information processing concept
[AD-A069953] N80-11775

COGNITIVE PSYCHOLOGY

A study of complex learning theory and methodologies
[AD-A068323] N80-10792

Cognitive styles: A review of the literature
[AD-A069435] N80-11772

COLOR VISION

Use of the pupil to study the scotopic and chromatic mechanisms of vision in humans
N80-10777

COMBAT

Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 2: Assessment of ARTEP and ATM training objectives and requirements for maintaining operational readiness
[AD-A069224] N80-11776

Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 1: Development of an instruction program for individual and unit training with combat-ready pilots
[AD-A069242] N80-11777

COMPUTER ASSISTED INSTRUCTION

A memory retrieval aid for hypothesis generation
[AD-A072657] N80-10795

COMPUTER TECHNIQUES

A portable stand for assessing the dynamics of a working individual's functional state --- based on a microprocessor
N80-10750

CONCENTRATION (COMPOSITION)

Investigation of alveoloarterial difference for oxygen and carbon dioxide when breathing high-density gas mixtures
N80-10774

CONDUCTIVE HEAT TRANSFER

Evaluation of heat flow components from heater to skin in an electric thermal suit
N80-11000

CONFINEMENT

Amount of microorganisms discharged from the upper respiratory tract and integument of people confined in a sealed chamber
N80-10767

CONTROL

Carbon dioxide contributions in respiratory control
N80-11760

CONTROLLERS

Linear state feedback control of rigid-link manipulators
[UTIAS-TN-214] N80-11779

CONVECTIVE HEAT TRANSFER

Convective and radiative heat transfer coefficients for a clothed man
A80-11328

CORONARY ARTERY DISEASE

Resting heart rate in apparently healthy middle-aged men
A80-11374

CORPUSCULAR RADIATION
- Discrete multivariate analysis on radiobiological results from the biostack 3 Bacillus subtilis experiment N80-11759

COSMONAUTS
- Health prognosis in flight discussed N80-10995

COSMOS 782 SATELLITE
- The effect of dynamic factors of space flight on animal organisms [NASA-TM-75692] N80-10745

COST REDUCTION
- Flight hour reductions in fleet replacement pilot training through simulation A80-10764

CYTOLOGY
- Oxygen as a factor in eukaryote evolution - Some effects of low levels of oxygen on Saccharomyces cerevisiae A80-12229

D

DATA PROCESSING TERMINALS
- Design considerations for the man-machine relations user interface to TAS [AD-A071207] N80-10802

DATA SYSTEMS
- National library of medicine toxicology data base management system [ORNL/CSD/TM-80] N80-10785

DECISION MAKING
- Life stress, self-preoccupation, and social supports [AD-A068624] N80-10789

DECISION THEORY
- A memory retrieval aid for hypothesis generation [AD-A072657] N80-10795

DECOMPRESSION SICKNESS
- Course of altitude caisson disease in dogs exposed to accelerations N80-10773
- Early diagnosis of decompression sickness. Changes in the blood found shortly after decompression. Experiments on rats [MBL-1978-7] N80-11758

DEOXYRIBONUCLEIC ACID
- Effect of space flight conditions on deoxyribonucleoprotein and nucleic acid content of rat tissues N80-10760

DESERTS
- Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota A80-12230

DISPLAY DEVICES
- Performance, physiological, and oculometer evaluation of VTOL landing displays [NASA-CR-3171] N80-11771
- Integrated helmet-mounted sight/display program: Coating technology [AD-A072060] N80-11782
- Helmet-mounted displays: An experimental investigation of display luminance and contrast [AD-A072059] N80-11783
- Helmet-mounted displays: A computer-assisted analysis of day-night visual requirements [AD-A072061] N80-11784
- The role of the upper field of view in selected HMS/D visual tasks [AD-A072064] N80-11785
- Helmet-mounted sight/display program: Cessna 310 flight test [AD-A072058] N80-11786
- Operational pilot factors analysis report [AD-A072063] N80-11787
- Head aiming/tracking accuracy in a helicopter environment [AD-A071359] N80-11788

DISTILLATION
- Preprototype vapor compression distillation subsystem --- recovering potable water from wastewater [NASA-CR-160332] N80-10801

DOGS
- Ultrastructural changes in canine hepatocytes during continuous chronic exposure to low doses of gamma radiation N80-10768

DOSIMETERS
- Noise dosimeter measurements in the Air Force A80-11636

DROPS (LIQUIDS)
- Survey on eye comfort in aircraft. II - Use of ophthalmic solutions A80-11638

DROSOPHILA
- Oxygen levels safe for continued reproduction of Drosophila in normal and hypobaric atmospheres A80-11631

E

EARTH CRUST
- Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota A80-12230

EDUCATION
- The scope, limits, and training implications of three models of aircraft pilot emergency response behavior [AD-A071320] N80-11773
- Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 2: Assessment of ARTEP and ATM training objectives and requirements for maintaining operational readiness [AD-A069224] N80-11776
- Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 1: Development of an instruction program for individual and unit training with combat-ready pilots [AD-A069242] N80-11777

EFFECTIVE PERCEIVED NOISE LEVELS
- Interstimulus interval as it affects temporary threshold shift in serial presentations of loud tones [AD-A072006] N80-11762

ELECTROCARDIOGRAPHY
- Torso mounted electrocardiographic electrodes for routine clinical electrocardiography A80-10423

ELECTROCHEMISTRY
- Indirect microbial detection [NASA-CASE-LAR-12520-1] N80-11756

ELECTRODES
- Torso mounted electrocardiographic electrodes for routine clinical electrocardiography A80-10423

ELECTROLYTE METABOLISM
- Effect of hypoxia on fluid-electrolyte metabolism and renal function in man as related to different degrees of motor activity N80-10754

ELECTROMAGNETIC ABSORPTION
- Numerical calculation of electromagnetic energy deposition for a realistic model of man A80-10925

ELECTROPHORESIS
- Kidney cell electrophoresis [NASA-CR-160353] N80-10782

ELECTROPHYSIOLOGY
- Physiological measures of aircrew mental workload A80-10345
- Strength-interval curves of isolated rat papillary muscle during hypoxia and reoxygenation - Effect of lidocaine A80-10421

EMERGENCIES
- The scope, limits, and training implications of three models of aircraft pilot emergency response behavior [AD-A071320] N80-11773

ENERGY DISSIPATION
- Numerical calculation of electromagnetic energy deposition for a realistic model of man A80-10925

ENERGY DISTRIBUTION
- Numerical calculation of electromagnetic energy deposition for a realistic model of man A80-10925

ENERGY SPECTRA
- Calculated linear energy transfer spectra of HZE particles for the free flyer Biostack experiment on the LDEF-mission N80-11767

ENERGY TRANSFER
Regulation of the energy metabolism and physiological state of the organism --- Russian book
A80-10326
Calculated linear energy transfer spectra of HZE particles for the free flyer Biostack experiment on the LDEF-mission
N80-11767

ENVIRONMENT EFFECTS
Effects of exposure to hypoxic environment upon operant behavior in rats
A80-11521
Types of aquatic microcosms and their research applications
[CONF-781101-1] N80-10747

ENVIRONMENTAL MONITORING
Types of aquatic microcosms and their research applications
[CONF-781101-1] N80-10747

ENZYME ACTIVITY
Age-dependent dynamics of the succinate-dehydrogenase activity of lymphocytes in physically active and inactive persons
A80-10333
Variation of the enzymatic activity of blood lymphocytes at various stages of adaptation to physical loads
A80-10334
Effect of hypoxia on ATPase activity of the brain
N80-10776

ESTIMATING
Modeling and parameter identification of the human respiratory system
A80-11378

EXOBIOLOGY
The Viking mission and the search for life on Mars
A80-10738
Biochemical chromophores and the interstellar extinction at ultraviolet wavelengths
A80-12270

EXTRATERRESTRIAL LIFE
The Viking mission and the search for life on Mars
A80-10738

EYE (ANATOMY)
Survey on eye comfort in aircraft. II - Use of ophthalmic solutions
A80-11638

EYE MOVEMENTS
A modeling approach to the assessment of smooth pursuit eye movement
A80-11627

F

FATIGUE (BIOLOGY)
Self-motion magnitude estimation during linear oscillation - Changes with head orientation and following fatigue
A80-11629

FEEDBACK CONTROL
Linear state feedback control of rigid-link manipulators
[UTIAS-TN-214] N80-11779

FEMALES
Height/weight sizing programs for womens protective garments
[AD-A072376] N80-11781

FLICKER
Microsecond sensitivity of the human visual system to irregular flicker
A80-11371

FLIGHT CREWS
Behavioral measures of aircrew mental workload
A80-10344
Physiological measures of aircrew mental workload
A80-10345
Survey on eye comfort in aircraft. II - Use of ophthalmic solutions
A80-11638

FLIGHT FATIGUE
Psychoprophylaxis of fatigue and functional cardiovascular diseases in pilots by means of self-conditioning
N80-10771

FLIGHT FITNESS
Student pilots referred to the neuropsychiatry branch, USAFSAM 1968-78 Implications for selection
A80-11640

FLIGHT SIMULATION
Flight hour reductions in fleet replacement pilot training through simulation
A80-10764
Visual search performance in simulated remotely piloted vehicle utilization as a function of auxiliary task loading on the observer
[AD-A072402] N80-10804

FLIGHT SIMULATORS
Flight hour reductions in fleet replacement pilot training through simulation
A80-10764
Simulator fidelity in the learning of complex flight tasks
A80-10774
Behavioral scientific study on T-2 flight simulator. II - Comparison of pilot workload between aircraft and simulator
A80-11522
Lower body negative pressure box for +Gz simulation in the upright seated position
A80-11641

FLIGHT STRESS (BIOLOGY)
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979 --- effects of space flight stress
[JPRS-74470] N80-10752
Effect of space flight conditions on deoxyribonucleoprotein and nucleic acid content of rat tissues
N80-10760

FLIGHT TESTS
Helmet-mounted sight/display program: Cessna 310 flight test
[AD-A072058] N80-11786

FLIGHT TIME
Flight hour reductions in fleet replacement pilot training through simulation
A80-10764

FLIGHT TRAINING
Rotary wing proficiency-based Aviator Selection System (PASS)
[AD-A069838] N80-11774
Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 2: Assessment of ARTEP and ATM training objectives and requirements for maintaining operational readiness
[AD-A069224] N80-11776
Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 1: Development of an instruction program for individual and unit training with combat-ready pilots
[AD-A069242] N80-11777

FREE FALL
Parabolic flight - Loss of sense of orientation
A80-13075

G

GAMMA RAYS
Gamma rays - Further evidence for lack of a threshold dose for lethality to human cells
A80-10525
The radioracemization of isovaline - Cosmochemical implications --- gamma ray effects on Murchison meteorite primordial composition
A80-13018
Ultrastructural changes in canine hepatocytes during continuous chronic exposure to low doses of gamma radiation
N80-10768

GAS COMPOSITION
Toxic effects of chemicals in the altered gas environment of pressurized chambers
N80-10775

GAS DENSITY
Investigation of alveoloarterial difference for oxygen and carbon dioxide when breathing high-density gas mixtures
N80-10774

GLUCOSE
Role of mitochondrias in glyconeogenesis
A80-10331
The 5-thio-d-glucose thermoregulatory effects in mice at various temperatures
[AD-A069511] N80-11757

GLUTAMATES
Variation of substrate contents and activity of enzymes of the energy metabolism in the heart under the action of glutamate during hypoxia and sodium nitride poisoning of animals
A80-10335

GRAVITATIONAL EFFECTS
Use of short-arm centrifuge to prevent deconditioning when immersed in water (according to H-reflex)
N80-10772

H

HEAD (ANATOMY)
Self-motion magnitude estimation during linear oscillation - Changes with head orientation and following fatigue
A80-11629

HEALTH
Health prognosis in flight discussed
N80-10995

HEALTH PHYSICS
Numerical calculation of electromagnetic energy deposition for a realistic model of man
A80-10925

HEART
Variation of substrate contents and activity of enzymes of the energy metabolism in the heart under the action of glutamate during hypoxia and sodium nitride poisoning of animals
A80-10335

Strength-interval curves of isolated rat papillary muscle during hypoxia and reoxygenation - Effect of lidocaine
A80-10421

HEART DISEASES
Psychoprophylaxis of fatigue and functional cardiovascular diseases in pilots by means of self-conditioning
N80-10771

HEART FUNCTION
Relationship between calcium and hydrogen ions in heart muscle
A80-10424

Cardiac reflexes in normotensive and spontaneously hypertensive rats
A80-10521

The 24-hour cycle and nocturnal depression of human cardiac output
A80-11634

Roentgenological examination of the human heart after 100-day hypokinesia
N80-10759

HEART RATE
Resting heart rate in apparently healthy middle-aged men
A80-11374

Animal experiment on the effects of repeated exposure to sustained Gz of moderate magnitude. I - Histo-pathological studies in rabbits
A80-11520

HEAT EXCHANGERS
Portable breathing system --- a breathing apparatus using a rebreathing system of heat exchangers for carbon dioxide removal
[NASA-CASE-MSC-16182-1] N80-10799

HEAT TRANSFER COEFFICIEN
coefficients for a clothed man
A80-11328

HEATING EQUIPMENT
Evaluation of heat flow components from heater to skin in an electric thermal suit
N80-11000

HELICOPTERS
Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 2: Assessment of ARTEP and ATM training objectives and requirements for maintaining operational readiness
[AD-A069224] N80-11776

Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 1: Development of an instruction program for individual and unit training with combat-ready pilots
[AD-A069242] N80-11777

HELMETS
Integrated helmet-mounted sight/display program: Coating technology
[AD-A072060] N80-11782

Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059] N80-11783

Helmet-mounted displays: A computer-assisted analysis of day-night visual requirements
[AD-A072061] N80-11784

The role of the upper field of view in selected HMS/D visual tasks
[AD-A072064] N80-11785

Helmet-mounted sight/display program: Cessna 310 flight test
[AD-A072058] N80-11786

Head aiming/tracking accuracy in a helicopter environment
[AD-A071359] N80-11788

HEMODYNAMICS
Regional cerebral blood flow in conscious miniature swine during high sustained +Gz acceleration stress
A80-11632

HIGH ACCELERATION
Regional cerebral blood flow in conscious miniature swine during high sustained +Gz acceleration stress
A80-11632

HIGH ALTITUDE BREATHING
Pulmonary adaptation to high altitude
[AD-A068317] N80-10784

HIGH ALTITUDE ENVIRONMENTS
Altitude acclimatization. Citations from the International Aerospace Abstracts data base
[NTIS/PS-79/0857/7] N80-11770

HIGH PRESSURE
Some hemodynamic parameters during respiration of oxygen under excessive pressure
N80-10765

HUMAN BEHAVIOR
Behavioral measures of aircrew mental workload
A80-10344

Life stress, self-preoccupation, and social supports
[AD-A068624] N80-10789

Research on the psychophysiological basis of human vigilance
[AD-A068562] N80-10790

Summary of project to develop handbook of human reliability analysis for nuclear power plant operations
[SAND-78-1812C] N80-10797

The scope, limits, and training implications of three models of aircraft pilot emergency response behavior
[AD-A071320] N80-11773

HUMAN BEINGS
Gamma rays - Further evidence for lack of a threshold dose for lethality to human cells
A80-10525

Some hemodynamic parameters during respiration of oxygen under excessive pressure
N80-10765

Amount of microorganisms discharged from the upper respiratory tract and integument of people confined in a sealed chamber
N80-10767

baroreceptors in human beings
A80-10522

Numerical calculation of electromagnetic energy deposition for a realistic model of man
A80-10925

Convective and radiative heat transfer coefficients for a clothed man
A80-11328

HUMAN CENTRIFUGES
Parabolic flight - Loss of sense of orientation
A80-13075

HUMAN FACTORS ENGINEERING
Work-science research on maximum work capacity and recovery time for informational-mental work based on the channel- and man-machine model along with superposed stress, using work in a hot environment as an example
A80-10650

Simulator fidelity in the learning of complex flight tasks
A80-10774
Use of the pupil to study the scotopic and chromatic mechanisms of vision in humans
N80-10777
Plasma volume changes in fit men and women during a humid heat stress before and after an acclimation
N80-10781
Thermal conduction effects in human skin. Phase 2: Experimental validation and application of data in selection of materials
[AD-A068480] N80-10783
Research on the psychophysiological basis of human vigilance
[AD-A068562] N80-10790
Remote operator performance comparing mono and stereo TV displays: The effects of visibility, learning and task factors
[AD-A068201] N80-10793
Summary of project to develop handbook of human reliability analysis for nuclear power plant operations
[SAND-78-1812C] N80-10797
Design considerations for the man-machine relations user interface to TAS
[AD-A071207] N80-10802
Revised height/weight sizing programs for men's protective flight garments
[AD-A070732] N80-10803
Helmet-mounted sight/display program: Cessna 310 flight test
[AD-A072058] N80-11786
Operational pilot factors analysis report
[AD-A072063] N80-11787

HUMAN PERFORMANCE
Effects of pseudoephedrine and triprolidine on visual performance
A80-11637
Summary of project to develop handbook of human reliability analysis for nuclear power plant operations
[SAND-78-1812C] N80-10797
Human vigilance investigation analysis of the pattern array test (further data analysis)
[UCRL-13891-3] N80-10798
Hypothermia induced by chlorpromazine or L-tryptophan effects on treadmill performance in the heat
[AD-A069849] N80-11764
Operational pilot factors analysis report
[AD-A072063] N80-11787

HUMAN REACTIONS
Modeling and parameter identification of the human respiratory system
A80-11378

HUMAN TOLERANCES
Altitude acclimatization. Citations from the International Aerospace Abstracts data base
[NTIS/PS-79/0857/7] N80-11770

HYDROGEN IONS
Relationship between calcium and hydrogen ions in heart muscle
A80-10424

HYDROLOGY
South American river morphology and hydrology
N80-10574

HYOSCINE
Effect of transdermally administered scopolamine in preventing motion sickness
A80-11628

HYPERTENSION
Cardiac reflexes in normotensive and spontaneously hypertensive rats
A80-10521

HYPOBARIC ATMOSPHERES
Oxygen levels safe for continued reproduction of Drosophila in normal and hypobaric atmospheres
A80-11631

HYPOKINESIA
Roentgenological examination of the human heart after 100-day hypokinesia
N80-10759
Reactions of rats to overheating following prolonged hypokinesia
N80-10761
Effect of hypokinesia on higher nervous activity of albino rats
N80-10762
The combined effect of carbon monoxide and hypokinesia
N80-10763
Levels and proportion of RNA and proteins in the system of the neuron: Vestibular nuclear neuroglia and cerebellum during hypokinesia
N80-10764

HYPOTHERMIA
Hypothermia induced by chlorpromazine or L-tryptophan effects on treadmill performance in the heat
[AD-A069849] N80-11764

HYPOTHESES
A memory retrieval aid for hypothesis generation
[AD-A072657] N80-10795

HYPOXIA
Variation of substrate contents and activity of enzymes of the energy metabolism in the heart under the action of glutamate during hypoxia and sodium nitride poisoning of animals
A80-10335
Strength-interval curves of isolated rat papillary muscle during hypoxia and reoxygenation - Effect of lidocaine
A80-10421
Effects of exposure to hypoxic environment upon operant behavior in rats
A80-11521
Effect of hypoxia on fluid-electrolyte metabolism and renal function in man as related to different degrees of motor activity
N80-10754
Effect of hypoxia on ATPase activity of the brain
N80-10776
Pulmonary adaptation to high altitude
[AD-A068317] N80-10784
Effect of a rapid 4 percent carboxyhemoglobin saturation increase on maximal treadmill exercise
[PB-296627/3] N80-10786

I

IMPACT ACCELERATION
An examination of statistical impact acceleration injury prediction models based on torque and force variables
[AD-A071625] N80-10746

IN-FLIGHT MONITORING
STARPAHC space-oriented medical evaluation --- telemedicine system
[NASA-CR-160360] N80-11763

INDUSTRIAL SAFETY
Analysis of airborne particulates and human urine by inductively coupled plasma-atomic emission spectrometry
[PB-297775/9] N80-10787

INFORMATION RETRIEVAL
A memory retrieval aid for hypothesis generation
[AD-A072657] N80-10795

INFORMATION SYSTEMS
Telecommunications in medicine. A bibliography with abstracts
[NTIS/PS-79/0786/8] N80-11769

INJURIES
An examination of statistical impact acceleration injury prediction models based on torque and force variables
[AD-A071625] N80-10746

INTELLIGENCE
Intelligence as an information processing concept
[AD-A069953] N80-11775

INTERSTELLAR EXTINCTION
Biochemical chromophores and the interstellar extinction at ultraviolet wavelengths
A80-12270

IONIZING RADIATION
A method of defining the optimum level of ionizing radiation from determinate sources during space flights
N80-10770

K

KNOWLEDGE
A study of complex learning theory and methodologies
[AD-A068323] N80-10792

KREBS CYCLE
Oxidation of pyruvate in mitochondrias: Mathematical model - Regulation of the Kreb's cycle by adenine and pyridine nucleotides
A80-10329

L

LEARNING
An aptitude-strategy interaction in linear syllogistic reasoning
[AD-A068498] N80-10791
A study of complex learning theory and methodologies
[AD-A068323] N80-10792
Remote operator performance comparing mono and stereo TV displays: The effects of visibility, learning and task factors
[AD-A068201] N80-10793
Modality effects in scanning nonverbal information: Evidence for multiple memory codes
[AD-A072297] N80-10796
Cognitive styles: A review of the literature
[AD-A069435] N80-11772

LEG (ANATOMY)
Systolic time intervals and other cardiovascular changes following leg elevation
A80-11635

LIFE SUPPORT SYSTEMS
Extended duration orbiter study: CO2 removal and water recovery
[NASA-CR-160317] N80-10800

LIGHT (VISIBLE RADIATION)
Microsecond sensitivity of the human visual system to irregular flicker
A80-11371

LINEAR ENERGY TRANSFER (LET)
Discrete multivariate analysis on radiobiological results from the biostack 3 Bacillus subtilis experiment
N80-11759

LIPID METABOLISM
Alternate use of carbohydrates and lipids as a form of regulating the physiological state
A80-10327

LIPIDS
Rush nuts (Cyperus esculentus) as a source of vegetable oil in a closed life support system
N80-10769

LIVER
Role of mitochondrias in glyconeogenesis
A80-10331
Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses
A80-10332
Ultrastructural changes in canine hepatocytes during continuous chronic exposure to low doses of gamma radiation
N80-10768

LOUDNESS
Interstimulus interval as it affects temporary threshold shift in serial presentations of loud tones
[AD-A072006] N80-11762

LUMINANCE
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059] N80-11783

LUNGS
The extended Kalman filter as pulmonary blood flow estimator
N80-10779

LYMPHOCYTES
Age-dependent dynamics of the succinate-dehydrogenase activity of lymphocytes in physically active and inactive persons
A80-10333
Variation of the enzymatic activity of blood lymphocytes at various stages of adaptation to physical loads
A80-10334

M

MALES
Revised height/weight sizing programs for men's protective flight garments
[AD-A070732] N80-10803

MAN MACHINE SYSTEMS
Work-science research on maximum work capacity and recovery time for informational-mental work based on the channel- and man-machine model along with superposed stress, using work in a hot environment as an example
A80-10650
Design considerations for the man-machine relations user interface to TAS
[AD-A071207] N80-10802
Linear state feedback control of rigid-link manipulators
[UTIAS-TN-214] N80-11779
Integrated helmet-mounted sight/display program: Coating technology
[AD-A072060] N80-11782
Helmet-mounted displays: A computer-assisted analysis of day-night visual requirements
[AD-A072061] N80-11784
The role of the upper field of view in selected HMS/D visual tasks
[AD-A072064] N80-11785
Operational pilot factors analysis report
[AD-A072063] N80-11787
Head aiming/tracking accuracy in a helicopter environment
[AD-A071359] N80-11788

MANNED SPACE FLIGHT
Problems of pharmacology in space medicine
N80-10749
Health prognosis in flight discussed
N80-10995
Summary of radiobiological findings: From spaceflight to ground-based studies
N80-11768

MARS SURFACE
The Viking mission and the search for life on Mars
A80-10738

MATHEMATICAL MODELS
A model for auditory evoked potentials
N80-10780

MEDICAL SCIENCE
National library of medicine toxicology data base management system
[ORNL/CSD/TM-80] N80-10785

MEDICAL SERVICES
Telecommunications in medicine. A bibliography with abstracts
[NTIS/PS-79/0786/8] N80-11769

MEMORY
Modality effects in scanning nonverbal information: Evidence for multiple memory codes
[AD-A072297] N80-10796

MENTAL PERFORMANCE
Behavioral measures of aircrew mental workload
A80-10344
Work-science research on maximum work capacity and recovery time for informational-mental work based on the channel- and man-machine model along with superposed stress, using work in a hot environment as an example
A80-10650
An aptitude-strategy interaction in linear syllogistic reasoning
[AD-A068498] N80-10791
Modality effects in scanning nonverbal information: Evidence for multiple memory codes
[AD-A072297] N80-10796
Human vigilance investigation analysis of the pattern array test (further data analysis)
[UCRL-13891-3] N80-10798
Intelligence as an information processing concept
[AD-A069953] N80-11775

METABOLISM
Regulation of the energy metabolism and physiological state of the organism --- Russian book
A80-10326
Temporal organization of energy metabolism and the cellular clocks
A80-10328

METEORITIC COMPOSITION
The radioracemization of isovaline - Cosmochemical implications --- gamma ray effects on Murchison meteorite primordial composition
A80-13018

MICE
The 5-thio-d-glucose thermoregulatory effects in mice at various temperatures
[AD-A069511] N80-11757
MICROBIOLOGY
Indirect microbial detection
[NASA-CASE-LAR-12520-1] N80-11756
MICROORGANISMS
Oxygen as a factor in eukaryote evolution - Some effects of low levels of oxygen on Saccharomyces cerevisiae
A80-12229
Amount of microorganisms discharged from the upper respiratory tract and integument of people confined in a sealed chamber
N80-10767
Indirect microbial detection
[NASA-CASE-LAR-12520-1] N80-11756
MICROPROCESSORS
A portable stand for assessing the dynamics of a working individual's functional state --- based on a microprocessor
N80-10750
MICROSTRUCTURE
Ultrastructure of chlorella pyrenoidosa cells (strain g-11-1) following growth under conditions of a prolonged space flight
N80-11001
MICROWAVE RESONANCE
Numerical calculation of electromagnetic energy deposition for a realistic model of man
A80-10925
MITOCHONDRIA
Oxidation of pyruvate in mitochondrias: Mathematical model - Regulation of the Kreb's cycle by adenine and pyridine nucleotides
A80-10329
Role of mitochondrias in glyconeogenesis
A80-10331
Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses
A80-10332
MORPHOLOGY
South American river morphology and hydrology
N80-10574
Ultrastructural changes in canine hepatocytes during continuous chronic exposure to low doses of gamma radiation
N80-10768
MOTION PERCEPTION
Self-motion magnitude estimation during linear oscillation - Changes with head orientation and following fatigue
A80-11629
Evoked cortical potentials and information processing
[AD-A070789] N80-10794
MOTION SICKNESS
Some influences of vision on susceptibility to motion sickness
A80-11630
Current conceptions on the genesis of vestibulovegetative disorders in weightlessness
N80-10753
MOTION SICKNESS DRUGS
Effect of transdermally administered scopolamine in preventing motion sickness
A80-11628
MULTIVARIATE STATISTICAL ANALYSIS
Discrete multivariate analysis on radiobiological results from the biostack 3 Bacillus subtilis experiment
N80-11759
MUSCULAR FUNCTION
Relationship between calcium and hydrogen ions in heart muscle
A80-10424
MUSCULAR STRENGTH
Strength-interval curves of isolated rat papillary muscle during hypoxia and reoxygenation - Effect of lidocaine
A80-10421
MUSCULOSKELETAL SYSTEM
Identification of controls in neuro-musculoskeletal control system models
[CSIR-TWISK-52] N80-11761
MYOCARDIUM
Relationship between calcium and hydrogen ions in heart muscle
A80-10424

N

NEUROGLIA
Levels and proportion of RNA and proteins in the system of the neuron: Vestibular nuclear neuroglia and cerebellum during hypokinesia
N80-10764
NEURONS
Levels and proportion of RNA and proteins in the system of the neuron: Vestibular nuclear neuroglia and cerebellum during hypokinesia
N80-10764
NEUROPHYSIOLOGY
Cortical mechanisms of integrative brain activity --- Russian book
A80-11876
NEUROPSYCHIATRY
Student pilots referred to the neuropsychiatry branch, USAFSAM 1968-78 Implications for selection
A80-11640
NIGHT VISION
Use of the pupil to study the scotopic and chromatic mechanisms of vision in humans
N80-10777
NOISE MEASUREMENT
Noise dosimeter measurements in the Air Force
A80-11636
NONFLAMMABLE MATERIALS
A porcine bioassay method for analysis of thermally protective fabrics: A clinical grading system
[AD-A069202] N80-11766
NUCLEOTIDES
Oxidation of pyruvate in mitochondrias: Mathematical model - Regulation of the Kreb's cycle by adenine and pyridine nucleotides
A80-10329
Effect of space flight conditions on deoxyribonucleoprotein and nucleic acid content of rat tissues
N80-10760
NUTRITION
Dietary supplements used to prevent some changes in the human body in the presence of nervous and emotional stress
N80-10758
NUTRITIONAL REQUIREMENTS
Rush nuts (Cyperus esculentus) as a source of vegetable oil in a closed life support system
N80-10769
NUTS (FRUITS)
Rush nuts (Cyperus esculentus) as a source of vegetable oil in a closed life support system
N80-10769

O

OCULOMETERS
Performance, physiological, and oculometer evaluation of VTOL landing displays
[NASA-CR-3171] N80-11771
OPERATOR PERFORMANCE
Work-science research on maximum work capacity and recovery time for informational-mental work based on the channel- and man-machine model along with superposed stress, using work in a hot environment as an example
A80-10650
Remote operator performance comparing mono and stereo TV displays: The effects of visibility, learning and task factors
[AD-A068201] N80-10793
OPHTHALMODYNAMOMETRY
Microsecond sensitivity of the human visual system to irregular flicker
A80-11371
OPHTHALMOLOGY
Survey on eye comfort in aircraft. II - Use of ophthalmic solutions
A80-11638
OPTICAL TRACKING
A modeling approach to the assessment of smooth pursuit eye movement
A80-11627

ORGANIC COMPOUNDS
Bichromate oxidability as a criterion of quantitative levels of organic impurities in reclaimed water N80-10766

OSCILLATIONS
Self-motion magnitude estimation during linear oscillation - Changes with head orientation and following fatigue A80-11629

OXIDATION
Oxidation of pyruvate in mitochondrias: Mathematical model - Regulation of the Kreb's cycle by adenine and pyridine nucleotides A80-10329
Factors affecting the regulation of biological oxidation processes in tissue specimens A80-10330
Bichromate oxidability as a criterion of quantitative levels of organic impurities in reclaimed water N80-10766

OXYGEN
Oxygen levels safe for continued reproduction of Drosophila in normal and hypobaric atmospheres A80-11631
Oxygen as a factor in eukaryote evolution - Some effects of low levels of oxygen on Saccharomyces cerevisiae A80-12229
Investigation of alveoloarterial difference for oxygen and carbon dioxide when breathing high-density gas mixtures N80-10774

OXYGEN BREATHING
Some hemodynamic parameters during respiration of oxygen under excessive pressure N80-10765

OXYGEN CONSUMPTION
Strength-interval curves of isolated rat papillary muscle during hypoxia and reoxygenation - Effect of lidocaine A80-10421

OXYGEN PRODUCTION
Was the pre-biotic atmosphere of the earth heavily reducing A80-12223

P

PALEONTOLOGY
Archean photoautotrophy - Some alternatives and limits A80-12228

PARABOLIC FLIGHT
Parabolic flight - Loss of sense of orientation A80-13075

PATHOLOGICAL EFFECTS
Animal experiment on the effects of repeated exposure to sustained Gz of moderate magnitude. I - Histo-pathological studies in rabbits A80-11520

PERCEPTION
Cognitive styles: A review of the literature [AD-A069435] N80-11772

PERIPHERAL CIRCULATION
Some hemodynamic parameters during respiration of oxygen under excessive pressure N80-10765

PERMANGANATES
Bichromate oxidability as a criterion of quantitative levels of organic impurities in reclaimed water N80-10766

PERSONNEL SELECTION
The development of the ATC selection battery: A new procedure to make maximum use of available information when correcting correlations for restriction in range due to selection [AD-A066132] N80-10788

PHARMACOLOGY
Effects of pseudoephedrine and triprolidine on visual performance A80-11637
USSR Report: Biomedical and Behavioral Sciences, no. 122 --- emphasizing pharmacology in space flight, psychometric test equipment, and air filters [JPRS-74365] N80-10748
Problems of pharmacology in space medicine N80-10749

PHOSPHORUS METABOLISM
Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses A80-10332

PHOTOSENSITIVITY
Microsecond sensitivity of the human visual system to irregular flicker A80-11371

PHOTOSYNTHESIS
Was the pre-biotic atmosphere of the earth heavily reducing A80-12223
Archean photoautotrophy - Some alternatives and limits A80-12228

PHYSICAL EXERCISE
Effect of a rapid 4 percent carboxyhemoglobin saturation increase on maximal treadmill exercise [PB-296627/3] N80-10786
Hypothermia induced by chlorpromazine or L-tryptophan effects on treadmill performance in the heat [AD-A069849] N80-11764
Cold air inhalation, esophageal temperature lung function in exercising humans [AD-A069510] N80-11765

PHYSICAL FITNESS
Age-dependent dynamics of the succinate-dehydrogenase activity of lymphocytes in physically active and inactive persons A80-10333

PHYSIOCHEMISTRY
Pulmonary adaptation to high altitude [AD-A068317] N80-10784

PHYSIOLOGICAL EFFECTS
Parabolic flight - Loss of sense of orientation A80-13075
Effect of space flight conditions on deoxyribonucleoprotein and nucleic acid content of rat tissues N80-10760
The combined effect of carbon monoxide and hypokinesia N80-10763
Pulmonary adaptation to high altitude [AD-A068317] N80-10784

PHYSIOLOGICAL RESPONSES
Regulation of the energy metabolism and physiological state of the organism --- Russian book A80-10326
Alternate use of carbohydrates and lipids as a form of regulating the physiological state A80-10327
Variation of the enzymatic activity of blood lymphocytes at various stages of adaptation to physical loads A80-10334
Physiological measures of aircrew mental workload A80-10345
Modeling and parameter identification of the human respiratory system A80-11378
Animal experiment on the effects of repeated exposure to sustained Gz of moderate magnitude. I - Histo-pathological studies in rabbits A80-11520
Effects of exposure to hypoxic environment upon operant behavior in rats A80-11521

PHYSIOLOGICAL TESTS
Variation of substrate contents and activity of enzymes of the energy metabolism in the heart under the action of glutamate during hypoxia and sodium nitride poisoning of animals A80-10335
Resting heart rate in apparently healthy middle-aged men A80-11374
Effect of transdermally administered scopolamine in preventing motion sickness A80-11628
Some influences of vision on susceptibility to motion sickness A80-11630

best copy available

Responses of domestic fowl to repeated +Gz acceleration A80-11633

PILOT PERFORMANCE

Age-related distinctions of changes in psychophysiological functions of pilots in the civil aviation under the influence of vibration and noise N80-10757

The scope, limits, and training implications of three models of aircraft pilot emergency response behavior [AD-A071320] N80-11773

PILOT SELECTION

Student pilots referred to the neuropsychiatry branch, USAFSAM 1968-78 Implications for selection A80-11640

Rotary wing proficiency-based Aviator Selection System (PASS) [AD-A069838] N80-11774

PILOT TRAINING

Flight hour reductions in fleet replacement pilot training through simulation A80-10764

Simulator fidelity in the learning of complex flight tasks A80-10774

Behavioral scientific study on T-2 flight simulator. II - Comparison of pilot workload between aircraft and simulator A80-11522

Psychoprophylaxis of fatigue and functional cardiovascular diseases in pilots by means of self-conditioning N80-10771

Rotary wing proficiency-based Aviator Selection System (PASS) [AD-A069838] N80-11774

PLANETOLOGY

The Viking mission and the search for life on Mars A80-10738

PLETHYSMOGRAPHY

The 24-hour cycle and nocturnal depression of human cardiac output A80-11634

POLLUTION MONITORING

Noise dosimeter measurements in the Air Force A80-11636

Types of aquatic microcosms and their research applications [CONF-781101-1] N80-10747

PORTABLE LIFE SUPPORT SYSTEMS

Portable breathing system --- a breathing apparatus using a rebreathing system of heat exchangers for carbon dioxide removal [NASA-CASE-MSC-16182-1] N80-10799

POSTURE

Systolic time intervals and other cardiovascular changes following leg elevation A80-11635

POTABLE WATER

Preprototype vapor compression distillation subsystem --- recovering potable water from wastewater [NASA-CR-160332] N80-10801

POTENTIOMETERS (INSTRUMENTS)

Indirect microbial detection [NASA-CASE-LAR-12520-1] N80-11756

PRECAMBRIAN PERIOD

Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota A80-12230

PRESSURE CHAMBERS

Toxic effects of chemicals in the altered gas environment of pressurized chambers N80-10775

PRIMITIVE EARTH ATMOSPHERE

Was the pre-biotic atmosphere of the earth heavily reducing A80-12223

PROBLEM SOLVING

An aptitude-strategy interaction in linear syllogistic reasoning [AD-A068498] N80-10791

Intelligence as an information processing concept [AD-A069953] N80-11775

PROGNOSIS

Early diagnosis of decompression sickness. Changes in the blood found shortly after decompression. Experiments on rats [MBL-1978-7] N80-11758

PROTECTIVE CLOTHING

Revised height/weight sizing programs for men's protective flight garments [AD-A070732] N80-10803

Height/weight sizing programs for womens protective garments [AD-A072376] N80-11781

PROTEINS

Levels and proportion of RNA and proteins in the system of the neuron: Vestibular nuclear neuroglia and cerebellum during hypokinesia N80-10764

PSYCHOLOGICAL FACTORS

Student pilots referred to the neuropsychiatry branch, USAFSAM 1968-78 Implications for selection A80-11640

PSYCHOMETRICS

USSR Report: Biomedical and Behavioral Sciences, no. 122 --- emphasizing pharmacology in space flight, psychometric test equipment, and air filters [JPRS-74365] N80-10748

A portable stand for assessing the dynamics of a working individual's functional state --- based on a microprocessor N80-10750

An aptitude-strategy interaction in linear syllogistic reasoning [AD-A068498] N80-10791

PSYCHOPHYSIOLOGY

Age-related distinctions of changes in psychophysiological functions of pilots in the civil aviation under the influence of vibration and noise N80-10757

Research on the psychophysiological basis of human vigilance [AD-A068562] N80-10790

Evoked cortical potentials and information processing [AD-A070789] N80-10794

PULMONARY CIRCULATION

The extended Kalman filter as pulmonary blood flow estimator N80-10779

PULMONARY FUNCTIONS

Cold air inhalation, esophageal temperature lung function in exercising humans [AD-A069510] N80-11765

PURSUIT TRACKING

A modeling approach to the assessment of smooth pursuit eye movement A80-11627

PYRUVATES

Oxidation of pyruvate in mitochondrias: Mathematical model - Regulation of the Kreb's cycle by adenine and pyridine nucleotides A80-10329

Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses A80-10332

Q

QUANTITATIVE ANALYSIS

Bichromate oxidability as a criterion of quantitative levels of organic impurities in reclaimed water N80-10766

R

RADIATION EFFECTS

The radioracemization of isovaline - Cosmochemical implications --- gamma ray effects on Murchison meteorite primordial composition A80-13018

Summary of radiobiological findings: From spaceflight to ground-based studies N80-11768

RADIATION HAZARDS
Calculated linear energy transfer spectra of HZE particles for the free flyer Biostack experiment on the LDEF-mission
N80-11767

RADIATION MEDICINE
Summary of radiobiological findings: From spaceflight to ground-based studies
N80-11768

RADIATION PROTECTION
A method of defining the optimum level of ionizing radiation from determinate sources during space flights
N80-10770

RADIATION TOLERANCE
Gamma rays - Further evidence for lack of a threshold dose for lethality to human cells
A80-10525

RADIATIVE HEAT TRANSFER
Convective and radiative heat transfer coefficients for a clothed man
A80-11328

RADIO ASTRONOMY
Summary of radiobiological findings: From spaceflight to ground-based studies
N80-11768

RADIOBIOLOGY
Discrete multivariate analysis on radiobiological results from the biostack 3 Bacillus subtilis experiment
N80-11759

RADIOPATHOLOGY
Gamma rays - Further evidence for lack of a threshold dose for lethality to human cells
A80-10525

RANKING
A porcine bioassay method for analysis of thermally protective fabrics: A clinical grading system
[AD-A069202] N80-11766

RATS
Effect of space flight conditions on deoxyribonucleoprotein and nucleic acid content of rat tissues
N80-10760

Reactions of rats to overheating following prolonged hypokinesia
N80-10761

Effect of hypokinesia on higher nervous activity of albino rats
N80-10762

The combined effect of carbon monoxide and hypokinesia
N80-10763

Levels and proportion of RNA and proteins in the system of the neuron: Vestibular nuclear neuroglia and cerebellum during hypokinesia
N80-10764

Early diagnosis of decompression sickness. Changes in the blood found shortly after decompression. Experiments on rats
[MBL-1978-7] N80-11758

REBREATHING
Portable breathing system --- a breathing apparatus using a rebreathing system of heat exchangers for carbon dioxide removal
[NASA-CASE-MSC-16182-1] N80-10799

RECOVERABILITY
Interstimulus interval as it affects temporary threshold shift in serial presentations of loud tones
[AD-A072006] N80-11762

REFLEXES
Cardiac reflexes in normotensive and spontaneously hypertensive rats
A80-10521

REMOTE MANIPULATOR SYSTEM
Linear state feedback control of rigid-link manipulators
[UTIAS-TN-214] N80-11779

REMOTELY PILOTED VEHICLES
Visual search performance in simulated remotely piloted vehicle utilization as a function of auxiliary task loading on the observer
[AD-A072402] N80-10804

RENAL FUNCTION
Effect of hypoxia on fluid-electrolyte metabolism and renal function in man as related to different degrees of motor activity
N80-10754

REPRODUCTION (BIOLOGY)
Oxygen levels safe for continued reproduction of Drosophila in normal and hypobaric atmospheres
A80-11631

RESPIRATION
Investigation of alveoloarterial difference for oxygen and carbon dioxide when breathing high-density gas mixtures
N80-10774

Cold air inhalation, esophageal temperature lung function in exercising humans
[AD-A069510] N80-11765

RESPIRATORY PHYSIOLOGY
Factors affecting the regulation of biological oxidation processes in tissue specimens
A80-10330

Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses
A80-10332

Carbon dioxide contributions in respiratory control
N80-11760

RESPIRATORY SYSTEM
Modeling and parameter identification of the human respiratory system
A80-11378

Carbon dioxide contributions in respiratory control
N80-11760

RETINA
Spatio-temporal intergration in the visual system
[AD-A069558] N80-11780

RHYTHM (BIOLOGY)
Alternate use of carbohydrates and lipids as a form of regulating the physiological state
A80-10327

RIBONUCLEIC ACIDS
Levels and proportion of RNA and proteins in the system of the neuron: Vestibular nuclear neuroglia and cerebellum during hypokinesia
N80-10764

RIVERS
South American river morphology and hydrology
N80-10574

RUNNING
Variation of the enzymatic activity of blood lymphocytes at various stages of adaptation to physical loads
A80-10334

S

SENSORIMOTOR PERFORMANCE
Cortical mechanisms of integrative brain activity --- Russian book
A80-11876

Parabolic flight - Loss of sense of orientation
A80-13075

Cognitive styles: A review of the literature
[AD-A069435] N80-11772

SIGNAL PROCESSING
Modeling and parameter identification of the human respiratory system
A80-11378

SITTING POSITION
Lower body negative pressure box for +Gz simulation in the upright seated position
A80-11641

SKIN (ANATOMY)
Thermal conduction effects in human skin. Phase 2: Experimental validation and application of data in selection of materials
[AD-A068480] N80-10783

SOILS
Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota
A80-12230

SOUTH AMERICA
South American river morphology and hydrology
N80-10574

SPACE FLIGHT
A method of defining the optimum level of ionizing radiation from determinate sources during space flights
N80-10770

SPACE FLIGHT FEEDING
Rush nuts (Cyperus esculentus) as a source of vegetable oil in a closed life support system
N80-10769

SPACE FLIGHT STRESS
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979 --- effects of space flight stress
[JPRS-74470] N80-10752
Dietary supplements used to prevent some changes in the human body in the presence of nervous and emotional stress
N80-10758
Course of altitude caisson disease in dogs exposed to accelerations
N80-10773

SPACE SHUTTLE ORBITERS
Extended duration orbiter study: CO2 removal and water recovery
[NASA-CR-160317] N80-10800

SPACE SHUTTLES
Calculated linear energy transfer spectra of HZE particles for the free flyer Biostack experiment on the LDEF-mission
N80-11767

SPACECRAFT ENVIRONMENTS
The effect of dynamic factors of space flight on animal organisms
[NASA-TM-75692] N80-10745

SPACECREWS
STARPAHC space-oriented medical evaluation --- telemedicine system
[NASA-CR-160360] N80-11763

SPORES
Discrete multivariate analysis on radiobiological results from the biostack 3 Bacillus subtilis experiment
N80-11759

STATISTICAL CORRELATION
The development of the ATC selection battery: A new procedure to make maximum use of available information when correcting correlations for restriction in range due to selection
[AD-A066132] N80-10788

STRESS (PHYSIOLOGY)
Responses of domestic fowl to repeated +Gz acceleration
A80-11633
Plasma volume changes in fit men and women during a humid heat stress before and after an acclimation
N80-10781
Effect of a rapid 4 percent carboxyhemoglobin saturation increase on maximal treadmill exercise
[PB-296627/3] N80-10786
Hypothermia induced by chlorpromazine or L-tryptophan effects on treadmill performance in the heat
[AD-A069849] N80-11764
Altitude acclimatization. Citations from the International Aerospace Abstracts data base
[NTIS/PS-79/0857/7] N80-11770

STRESS (PSYCHOLOGY)
Dietary supplements used to prevent some changes in the human body in the presence of nervous and emotional stress
N80-10758
Life stress, self-preoccupation, and social supports
[AD-A068624] N80-10789

SUBMERGING
Use of short-arm centrifuge to prevent deconditioning when immersed in water (according to H-reflex)
N80-10772

SUITS
Evaluation of heat flow components from heater to skin in an electric thermal suit
N80-11000

SULFATES
Antiquity and evolutionary status of bacterial sulfate reduction - Sulfur isotope evidence
A80-12227

SULFUR ISOTOPES
Antiquity and evolutionary status of bacterial sulfate reduction - Sulfur isotope evidence
A80-12227

SYSTOLE
Systolic time intervals and other cardiovascular changes following leg elevation
A80-11635

T

T-2 AIRCRAFT
Behavioral scientific study on T-2 flight simulator. II - Comparison of pilot workload between aircraft and simulator
A80-11522

TARGET ACQUISITION
Visual search performance in simulated remotely piloted vehicle utilization as a function of auxiliary task loading on the observer
[AD-A072402] N80-10804

TASK COMPLEXITY
Simulator fidelity in the learning of complex flight tasks
A80-10774

TAXONOMY
Two important directions of development of Soviet biometry
N80-10997

TELECOMMUNICATION
Telecommunications in medicine. A bibliography with abstracts
[NTIS/PS-79/0786/8] N80-11769

TEMPERATURE EFFECTS
Reactions of rats to overheating following prolonged hypokinesia
N80-10761
The 5-thio-d-glucose thermoregulatory effects in mice at various temperatures
[AD-A069511] N80-11757

TEST STANDS
A portable stand for assessing the dynamics of a working individual's functional state --- based on a microprocessor
N80-10750

THERMAL CONDUCTIVITY
Thermal conduction effects in human skin. Phase 2: Experimental validation and application of data in selection of materials
[AD-A068480] N80-10783

THERMOREGULATION
Reactions of rats to overheating following prolonged hypokinesia
N80-10761
The 5-thio-d-glucose thermoregulatory effects in mice at various temperatures
[AD-A069511] N80-11757

THRESHOLDS
Interstimulus interval as it affects temporary threshold shift in serial presentations of loud tones
[AD-A072006] N80-11762

TISSUES (BIOLOGY)
Factors affecting the regulation of biological oxidation processes in tissue specimens
A80-10330
Effect of space flight conditions on deoxyribonucleoprotein and nucleic acid content of rat tissues
N80-10760

TOXIC HAZARDS
Toxic effects of chemicals in the altered gas environment of pressurized chambers
N80-10775

TOXICITY
National library of medicine toxicology data base management system
[ORNL/CSD/TM-80] N80-10785

TOXICOLOGY
National library of medicine toxicology data base management system
[ORNL/CSD/TM-80] N80-10785
Analysis of airborne particulates and human urine by inductively coupled plasma-atomic emission spectrometry
[PB-297775/9] N80-10787

TRACE ELEMENTS
Analysis of airborne particulates and human urine by inductively coupled plasma-atomic emission spectrometry
[PB-297775/9] N80-10787

TRACKING (POSITION)
Head aiming/tracking accuracy in a helicopter environment
[AD-A071359] N80-11788

U

U.S.S.R.
Two important directions of development of Soviet biometry
N80-10997

UH-1 HELICOPTER
Rotary wing proficiency-based Aviator Selection System (PASS)
[AD-A069838] N80-11774

ULTRAVIOLET ABSORPTION
Biochemical chromophores and the interstellar extinction at ultraviolet wavelengths
A80-12270

URINE
Analysis of airborne particulates and human urine by inductively coupled plasma-atomic emission spectrometry
[PB-297775/9] N80-10787

V

VECTORCARDIOGRAPHY
The normal values of spatial velocity in the second part of QRS /A cooperative study of 229 healthy individuals/
A80-10422

VERTICAL TAKEOFF AIRCRAFT
Performance, physiological, and oculometer evaluation of VTOL landing displays
[NASA-CR-3171] N80-11771

VIKING LANDER SPACECRAFT
The Viking mission and the search for life on Mars
A80-10738

VISION
Spatio-temporal intergration in the visual system
[AD-A069558] N80-11780

VISORS
Integrated helmet-mounted sight/display program: Coating technology
[AD-A072060] N80-11782

VISUAL DISCRIMINATION
Human vigilance investigation analysis of the pattern array test (further data analysis)
[UCRL-13891-3] N80-10798
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059] N80-11783
Helmet-mounted sight/display program: Cessna 310 flight test
[AD-A072058] N80-11786

VISUAL OBSERVATION
Visual search performance in simulated remotely piloted vehicle utilization as a function of auxiliary task loading on the observer
[AD-A072402] N80-10804

VISUAL PERCEPTION
Microsecond sensitivity of the human visual system to irregular flicker
A80-11371
Some influences of vision on susceptibility to motion sickness
A80-11630
Use of the pupil to study the scotopic and chromatic mechanisms of vision in humans
N80-10777
Remote operator performance comparing mono and stereo TV displays: The effects of visibility, learning and task factors
[AD-A068201] N80-10793
Evoked cortical potentials and information processing
[AD-A070789] N80-10794
Spatio-temporal intergration in the visual system
[AD-A069558] N80-11780
Helmet-mounted displays: A computer-assisted analysis of day-night visual requirements
[AD-A072061] N80-11784
The role of the upper field of view in selected HMS/D visual tasks
[AD-A072064] N80-11785

VISUAL TASKS
Effects of pseudoephedrine and triprolidine on visual performance
A80-11637

VOMITING
Effect of transdermally administered scopolamine in preventing motion sickness
A80-11628

W

WASTE WATER
Preprototype vapor compression distillation subsystem --- recovering potable water from wastewater
[NASA-CR-160332] N80-10801

WATER POLLUTION
Bichromate oxidability as a criterion of quantitative levels of organic impurities in reclaimed water
N80-10766

WATER RECLAMATION
Extended duration orbiter study: CO2 removal and water recovery
[NASA-CR-160317] N80-10800
Preprototype vapor compression distillation subsystem --- recovering potable water from wastewater
[NASA-CR-160332] N80-10801

WATER TREATMENT
Preprototype vapor compression distillation subsystem --- recovering potable water from wastewater
[NASA-CR-160332] N80-10801

WEIGHTLESSNESS
The effect of dynamic factors of space flight on animal organisms
[NASA-TM-75692] N80-10745
Current conceptions on the genesis of vestibulovegetative disorders in weightlessness
N80-10753
Use of short-arm centrifuge to prevent deconditioning when immersed in water (according to H-reflex)
N80-10772

WORKLOADS (PSYCHOPHYSIOLOGY)
Behavioral measures of aircrew mental workload
A80-10344
Physiological measures of aircrew mental workload
A80-10345
Work-science research on maximum work capacity and recovery time for informational-mental work based on the channel- and man-machine model along with superposed stress, using work in a hot environment as an example
A80-10650
Behavioral scientific study on T-2 flight simulator. II - Comparison of pilot workload between aircraft and simulator
A80-11522
Performance, physiological, and oculometer evaluation of VTOL landing displays
[NASA-CR-3171] N80-11771

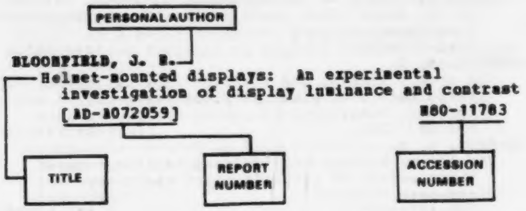
X

X RAY ANALYSIS
Roentgenological examination of the human heart after 100-day hypokinesia
N80-10759

blank page

PERSONAL AUTHOR INDEX

Typical Personal Author Index Listing


PERSONAL AUTHOR
BLOOMFIELD, J. R.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059]
N80-11783
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABIDIN, B. I.
The combined effect of carbon monoxide and hypokinesia
N80-10763

ADAMS, E. M.
Carbon dioxide contributions in respiratory control
N80-11760

ALEXANDER, M.
Revised height/weight sizing programs for men's protective flight garments
[AD-A070732] N80-10803
Height/weight sizing programs for womens protective garments
[AD-A072376] N80-11781

ALGANOR, M.
Spatio-temporal intergration in the visual system
[AD-A069558] N80-11780

ANDREASSI, J. L.
Evoked cortical potentials and information processing
[AD-A070789] N80-10794

ARAMAKI, S.
Behavioral scientific study on T-2 flight simulator. II - Comparison of pilot workload between aircraft and simulator
A80-11522

AUSBURN, F. B.
Cognitive styles: A review of the literature
[AD-A069435] N80-11772

AUSBURN, L. J.
Cognitive styles: A review of the literature
[AD-A069435] N80-11772

AVITALL, B.
Strength-interval curves of isolated rat papillary muscle during hypoxia and reoxygenation - Effect of lidocaine
A80-10421

B

BACA, S.
A memory retrieval aid for hypothesis generation
[AD-A072657] N80-10795

BACK, K. T.
Cognitive styles: A review of the literature
[AD-A069435] N80-11772

BAKER, V. R.
South American river morphology and hydrology
N80-10574

BARSUKOVA, L. P.
Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses
A80-10332

BATUEV, A. S.
Cortical mechanisms of integrative brain activity
A80-11876

BAYEVSKIY, R.
Health prognosis in flight discussed
N80-10995

BELKIN, V. I.
The combined effect of carbon monoxide and hypokinesia
N80-10763

BELLVILLE, J. W.
Modeling and parameter identification of the human respiratory system
A80-11378

BESPALOVA, L. A.
Ultrastructural changes in canine hepatocytes during continuous chronic exposure to low doses of gamma radiation
N80-10768

BLAIR, N. E.
The radioracemization of isovaline - Cosmochemical implications
A80-13018

BLOOMFIELD, J. R.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059] N80-11783

BONNER, W. A.
The radioracemization of isovaline - Cosmochemical implications
A80-13018

BOONE, J. O.
The development of the ATC selection battery: A new procedure to make maximum use of available information when correcting correlations for restriction in range due to selection
[AD-A066132] N80-10788

BOTT, R. A.
A study of complex learning theory and methodologies
[AD-A068323] N80-10792

BROVKO, O.
Modeling and parameter identification of the human respiratory system
A80-11378
The extended Kalman filter as pulmonary blood flow estimator
N80-10779

BRYANTSEV, I. A.
Investigation of alveoloarterial difference for oxygen and carbon dioxide when breathing high-density gas mixtures
N80-10774

BUECKER, H.
Discrete multivariate analysis on radiobiological results from the biostack 3 Bacillus subtilis experiment
N80-11759
Summary of radiobiological findings: From spaceflight to ground-based studies
N80-11768

BULL, R. F.
Rotary wing proficiency-based Aviator Selection System (PASS)
[AD-A069838] N80-11774

BURAVKOVA, I. B.
Effect of hypoxia on ATPase activity of the brain
N80-10776

BURTON, R. R.
Responses of domestic fowl to repeated +Gz acceleration
A80-11633

BUTLER, F. A.
Cognitive styles: A review of the literature
[AD-A069435] N80-11772

BYCHKOV, V. P.
Dietary supplements used to prevent some changes in the human body in the presence of nervous and emotional stress
N80-10758

C

CAMPBELL, S. E.
Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota
A80-12230

CARLETON, R. A.
Torso mounted electrocardiographic electrodes for routine clinical electrocardiography
A80-10423

CARLSON, E. R.
Student pilots referred to the neuropsychiatry branch, USAFSAM 1968-78 Implications for selection
A80-11640

CHERNYAKOV, I. N.
Course of altitude caisson disease in dogs exposed to accelerations
N80-10773

CHIANTA, M. A.
Thermal conduction effects in human skin. Phase 2: Experimental validation and application of data in selection of materials
[AD-A068480] N80-10783

CHORAO DE AGUIAR, A. J.
The normal values of spatial velocity in the second part of QRS /A cooperative study of 229 healthy individuals/
A80-10422

CILEY, C. D., JR.
Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 2: Assessment of ARTEP and ATM training objectives and requirements for maintaining operational readiness
[AD-A069224] N80-11776
Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 1: Development of an instruction program for individual and unit training with combat-ready pilots
[AD-A069242] N80-11777

CINGOLANI, H. E.
Relationship between calcium and hydrogen ions in heart muscle
A80-10424

COHEN, B. J.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059] N80-11783
Helmet-mounted displays: A computer-assisted analysis of day-night visual requirements
[AD-A072061] N80-11784
The role of the upper field of view in selected HMS/D visual tasks
[AD-A072064] N80-11785

COLE, R. E.
Remote operator performance comparing mono and stereo TV displays: The effects of visibility, learning and task factors
[AD-A068201] N80-10793

D

DEAL, E. C., JR.
Cold air inhalation, esophageal temperature lung function in exercising humans
[AD-A069510] N80-11765

DEMPSEY, J. A.
Pulmonary adaptation to high altitude
[AD-A068317] N80-10784

DIAMOND, A. L.
Microsecond sensitivity of the human visual system to irregular flicker
A80-11371

DIAMOND, D.
Torso mounted electrocardiographic electrodes for routine clinical electrocardiography
A80-10423

DIANOV, A. G.
Investigation of alveoloarterial difference for oxygen and carbon dioxide when breathing high-density gas mixtures
N80-10774

DOTSENKO, M. A.
Effect of hypoxia on fluid-electrolyte metabolism and renal function in man as related to different degrees of motor activity
N80-10754

DRANCK, P. E.
Early diagnosis of decompression sickness. Changes in the blood found shortly after decompression. Experiments on rats
[MBL-1978-7] N80-11758

DREYFUS, H. L.
The scope, limits, and training implications of three models of aircraft pilot emergency response behavior
[AD-A071320] N80-11773

DREYFUS, S. E.
The scope, limits, and training implications of three models of aircraft pilot emergency response behavior
[AD-A071320] N80-11773

DURNEY, C. H.
Numerical calculation of electromagnetic energy deposition for a realistic model of man
A80-10925

DYNNIK, V. V.
Oxidation of pyruvate in mitochondrias: Mathematical model - Regulation of the Kreb's cycle by adenine and pyridine nucleotides
A80-10329

E

ELLIS, G. S.
Extended duration orbiter study: CO2 removal and water recovery
[NASA-CR-160317] N80-10800
Preprototype vapor compression distillation subsystem
[NASA-CR-160332] N80-10801

ENG, W. G.
Survey on eye comfort in aircraft. II - Use of ophthalmic solutions
A80-11638

ENGELKEN, E. J.
A modeling approach to the assessment of smooth pursuit eye movement
A80-11627

ERIKSSEN, J.
Resting heart rate in apparently healthy middle-aged men
A80-11374

F

FACIUS, R.
Discrete multivariate analysis on radiobiological results from the biostack 3 Bacillus subtilis experiment
N80-11759
Summary of radiobiological findings: From spaceflight to ground-based studies
N80-11768

FAIRMAN, T. M.
Noise dosimeter measurements in the Air Force
A80-11636

FARLEY, W. W.
Spatio-temporal intergration in the visual system
[AD-A069558] N80-11780

FASSEL, V. A.
Analysis of airborne particulates and human urine by inductively coupled plasma-atomic emission spectrometry
[PB-297775/9] N80-10787

FERRARI, A.
Control of blood pressure by carotid sinus baroreceptors in human beings
A80-10522

FERRARI, R. C.
Control of blood pressure by carotid sinus baroreceptors in human beings
A80-10522

FINOGENOVA, N. I.
Investigation of alveoloarterial difference for oxygen and carbon dioxide when breathing high-density gas mixtures
N80-10774

FISHER, S.
A memory retrieval aid for hypothesis generation
[AD-A072657] N80-10795

FLORES, J. J.
The radioracemization of isovaline - Cosmochemical implications
A80-13018

FORSTER, H. V.
Effect of a rapid 4 percent carboxyhemoglobin saturation increase on maximal treadmill exercise
[PB-296627/3] N80-10786

FRANCESCONI, R. P.
The 5-thio-d-glucose thermoregulatory effects in mice at various temperatures
[AD-A069511] N80-11757
Hypothermia induced by chlorpromazine or L-tryptophan effects on treadmill performance in the heat
[AD-A069849] N80-11764

FREY, M. A. B.
Systolic time intervals and other cardiovascular changes following leg elevation
A80-11635

FURCINITTI, P. S.
Gamma rays - Further evidence for lack of a threshold dose for lethality to human cells
A80-10525

G

GALLICHIO, J. A.
Evoked cortical potentials and information processing
[AD-A070789] N80-10794

GANDHI, O. P.
Numerical calculation of electromagnetic energy deposition for a realistic model of man
A80-10925

GARLICH, E. A.
Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 1: Development of an instruction program for individual and unit training with combat-ready pilots
[AD-A069242] N80-11777

GAZENKO, O. G.
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979
[JPRS-74470] N80-10752

GENIN, A. M.
The effect of dynamic factors of space flight on animal organisms
[NASA-TM-75692] N80-10745

GETTYS, C.
A memory retrieval aid for hypothesis generation
[AD-A072657] N80-10795

GIDDINGS, J. M.
Types of aquatic microcosms and their research applications
[CONF-781101-1] N80-10747

GLOD, G. D.
Reactions of rats to overheating following prolonged hypokinesia
N80-10761

GOLLA, D. F.
Linear state feedback control of rigid-link manipulators
[UTIAS-TN-214] N80-11779

GOODRICH, R. L.
Self-motion magnitude estimation during linear oscillation - Changes with head orientation and following fatigue
A80-11629

GORSHKOV, V. P.
Amount of microorganisms discharged from the upper respiratory tract and integument of people confined in a sealed chamber
N80-10767

GRAFFUNDER, K.
Performance, physiological, and oculometer evaluation of VTOL landing displays
[NASA-CR-3171] N80-11771

GRAYBIEL, A.
Some influences of vision on susceptibility to motion sickness
A80-11630
Parabolic flight - Loss of sense of orientation
A80-13075

GREENBERG, M. L.
Torso mounted electrocardiographic electrodes for routine clinical electrocardiography
A80-10423

GREGORINI, L.
Control of blood pressure by carotid sinus baroreceptors in human beings
A80-10522

GRIFFITH, D. H.
Torso mounted electrocardiographic electrodes for routine clinical electrocardiography
A80-10423

GRIGORYEV, A. I.
Effect of hypoxia on fluid-electrolyte metabolism and renal function in man as related to different degrees of motor activity
N80-10754

GUDKOVA, IU. V.
Age-dependent dynamics of the succinate-dehydrogenase activity of lymphocytes in physically active and inactive persons
A80-10333

GUIMARAES, M.
The normal values of spatial velocity in the second part of QRS /A cooperative study of 229 healthy individuals/
A80-10422

GULLEDGE, W. L.
Self-motion magnitude estimation during linear oscillation - Changes with head orientation and following fatigue
A80-11629

GUROV, A. N.
Psychoprophylaxis of fatigue and functional cardiovascular diseases in pilots by means of self-conditioning
N80-10771

H

HAAS, W. J., JR.
Analysis of airborne particulates and human urine by inductively coupled plasma-atomic emission spectrometry
[PB-297775/9] N80-10787

HAGIWARA, H.
Behavioral scientific study on T-2 flight simulator. II - Comparison of pilot workload between aircraft and simulator
A80-11522

HAGMANN, M. J.
Numerical calculation of electromagnetic energy deposition for a realistic model of man
A80-10925

HAKE, C. L.
Effect of a rapid 4 percent carboxyhemoglobin saturation increase on maximal treadmill exercise
[PB-296627/3] N80-10786

HANN, R. L.
Modality effects in scanning nonverbal information: Evidence for multiple memory codes
[AD-A072297] N80-10796

HARRISON, E. A.
Telecommunications in medicine. A bibliography with abstracts
[NTIS/PS-79/0786/8] N80-11769

HART, M. H.
Was the pre-biotic atmosphere of the earth heavily reducing
A80-12223

HATZE, H.
Identification of controls in neuro-musculoskeletal control system models
[CSIR-TWISK-52] N80-11761

HAVE, A. C.
Human vigilance investigation analysis of the pattern array test (further data analysis)
[UCRL-13891-3] N80-10798

HEINRICH, W.
Calculated linear energy transfer spectra of HZE particles for the free flyer Biostack experiment on the LDEF-mission N80-11767

HELANDER, M.
The 24-hour cycle and nocturnal depression of human cardiac output A80-11634

HOLZ, R. K.
South American river morphology and hydrology N80-10574

HOMSTAD, L. E.
Integrated helmet-mounted sight/display program: Coating technology [AD-A072060] N80-11782

HOYLE, F.
Biochemical chromophores and the interstellar extinction at ultraviolet wavelengths A80-12270

HRECHKO, H. M.
Ultrastructure of chlorella pyrenoidosa cells (strain g-11-1) following growth under conditions of a prolonged space flight N80-11001

HUCKABAY, K.
Cognitive styles: A review of the literature [AD-A069435] N80-11772

HUNT, E.
Intelligence as an information processing concept [AD-A069953] N80-11775

HUNTOON, R. B.
Visual search performance in simulated remotely piloted vehicle utilization as a function of auxiliary task loading on the observer [AD-A072402] N80-10804

I

IANOVSKAIA, A. S.
Variation of the enzymatic activity of blood lymphocytes at various stages of adaptation to physical loads A80-10334

ISAYENKO, V. V.
Investigation of alveoloarterial difference for oxygen and carbon dioxide when breathing high-density gas mixtures N80-10774

J

JAEGER, J. J.
Cold air inhalation, esophageal temperature lung function in exercising humans [AD-A069510] N80-11765

JAHNKE, L.
Oxygen as a factor in eukaryote evolution - Some effects of low levels of oxygen on Saccharomyces cerevisiae A80-12229

JOCKENBERGER, B. L.
Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 1: Development of an instruction program for individual and unit training with combat-ready pilots [AD-A069242] N80-11777

JOHNSON, D. L.
Noise dosimeter measurements in the Air Force A80-11636

JOHNSON, J. C.
Head aiming/tracking accuracy in a helicopter environment [AD-A071359] N80-11788

JONES, H. D.
Head aiming/tracking accuracy in a helicopter environment [AD-A071359] N80-11788

K

KALACHEVA, G. S.
Rush nuts (Cyperus esculentus) as a source of vegetable oil in a closed life support system N80-10769

KAMENSKII, Y. N.,
Age-related distinctions of changes in psychophysiological functions of pilots in the civil aviation under the influence of vibration and noise N80-10757

KAMINSKII, IU. G.
Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses A80-10332

KAUFMAN, J.
Effect of a rapid 4 percent carboxyhemoglobin saturation increase on maximal treadmill exercise [PB-296627/3] N80-10786

KEELEN, M. H., JR.
Effect of a rapid 4 percent carboxyhemoglobin saturation increase on maximal treadmill exercise [PB-296627/3] N80-10786

KLEIN, H. P.
The Viking mission and the search for life on Mars A80-10738

Oxygen as a factor in eukaryote evolution - Some effects of low levels of oxygen on Saccharomyces cerevisiae A80-12229

KLEIN, J. P.
Effect of a rapid 4 percent carboxyhemoglobin saturation increase on maximal treadmill exercise [PB-296627/3] N80-10786

KLOEK, G. P.
Oxygen levels safe for continued reproduction of Drosophila in normal and hypobaric atmospheres A80-11631

KNOLL, A. H.
Archean photoautotrophy - Some alternatives and limits A80-12228

KNOX, F. S., III
A porcine bioassay method for analysis of thermally protective fabrics: A clinical grading system [AD-A069202] N80-11766

KOLOMENSKII, A. V.
A method of defining the optimum level of ionizing radiation from determinate sources during space flights N80-10770

KOMISSAROVA, I. A.
Age-dependent dynamics of the succinate-dehydrogenase activity of lymphocytes in physically active and inactive persons A80-10333

KONDRASHOVA, M. N.
Regulation of the energy metabolism and physiological state of the organism A80-10326

Alternate use of carbohydrates and lipids as a form of regulating the physiological state A80-10327

Role of mitochondrias in glyconeogenesis A80-10331

Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses A80-10332

KONDRATYEV, A. N.
The combined effect of carbon monoxide and hypokinesia N80-10763

KORDYUM, Y. L.
Ultrastructure of chlorella pyrenoidosa cells (strain g-11-1) following growth under conditions of a prolonged space flight N80-11001

KOROLKOV, V. I.
Effect of hypoxia on fluid-electrolyte metabolism and renal function in man as related to different degrees of motor activity N80-10754

KOSENKO, E. A.
Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses A80-10332

KOSTIAEVA, G. N.
Factors affecting the regulation of biological oxidation processes in tissue specimens A80-10330

KOTLIAREVSKAIA, E. S.
Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses
A80-10332

KOVALENKO, Y. A.
Effect of hypoxia on ATPase activity of the brain
N80-10776

KOZYREVSKAYA, G. I.
Effect of hypoxia on fluid-electrolyte metabolism and renal function in man as related to different degrees of motor activity
N80-10754

KRASNYCH, I. G.
Roentgenological examination of the human heart after 100-day hypokinesia
N80-10759

KRIZSA, G. D.
Systolic time intervals and other cardiovascular changes following leg elevation
A80-11635

KROPACHEVA, K.
Effect of space flight conditions on deoxyribonucleoprotein and nucleic acid content of rat tissues
N80-10760

KRYUCHKOV, V. A.
Bichromate oxidability as a criterion of quantitative levels of organic impurities in reclaimed water
N80-10766

KUSTOV, V. V.
The combined effect of carbon monoxide and hypokinesia
N80-10763

KUZMIN, V. I.
The third system of regulation of animal and human functions, the active point system
N80-10996

KUZNETSOVA, E. A.
Effect of hypokinesia on higher nervous activity of albino rats
N80-10762

L

LACKNER, J. R.
Some influences of vision on susceptibility to motion sickness
A80-11630
Parabolic flight - Loss of sense of orientation
A80-13075

LATEGOLA, M. T.
Lower body negative pressure box for +Gz simulation in the upright seated position
A80-11641

LAUGHLIN, M. H.
Regional cerebral blood flow in conscious miniature swine during high sustained +Gz acceleration stress
A80-11632

LAVRUKHINA, G. M.
Age-dependent dynamics of the succinate-dehydrogenase activity of lymphocytes in physically active and inactive persons
A80-10333

LEMMON, R. M.
The radioracemization of isovaline - Cosmochemical implications
A80-13018

LEONOVA, A. B.
A portable stand for assessing the dynamics of a working individual's functional state
N80-10750

LETKOVA, L. I.
Some hemodynamic parameters during respiration of oxygen under excessive pressure
N80-10765

LEVIT, P. A.
The role of the upper field of view in selected NMS/D visual tasks
[AD-A072064] N80-11785

LEVY, R. A.
Student pilots referred to the neuropsychiatry branch, USAFSAM 1968-78 Implications for selection
A80-11640

LEWIS, E. A.
The development of the ATC selection battery: A new procedure to make maximum use of available information when correcting correlations for restriction in range due to selection
[AD-A066132] N80-10788

LISOVSKIY, G. M.
Rush nuts (Cyperus esculentus) as a source of vegetable oil in a closed life support system
N80-10769

LONG, G. E.
Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 2: Assessment of ARTEP and ATM training objectives and requirements for maintaining operational readiness
[AD-A069224] N80-11776
Development of unit training and evaluation techniques for combat-ready helicopter pilots. Task 1: Development of an instruction program for individual and unit training with combat-ready pilots
[AD-A069242] N80-11777

LOVELL, J. S.
Portable breathing system
[NASA-CASE-MSC-16182-1] N80-10799

LUCZAK, H.
Work-science research on maximum work capacity and recovery time for informational-mental work based on the channel- and man-machine model along with superposed stress, using work in a hot environment as an example
A80-10650

LUKIANOVA, L. D.
Factors affecting the regulation of biological oxidation processes in tissue specimens
A80-10330

LURIA, S. M.
Effects of pseudoephedrine and triprolidine on visual performance
A80-11637

M

MAEVSKII, E. I.
Alternate use of carbohydrates and lipids as a form of regulating the physiological state
A80-10327
Role of mitochondrias in glyconeogenesis
A80-10331
Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses
A80-10332

MAGER, M.
The 5-thio-d-glucose thermoregulatory effects in mice at various temperatures
[AD-A069511] N80-11757
Hypothermia induced by chlorpromazine or L-tryptophan effects on treadmill performance in the heat
[AD-A069849] N80-11764

MAILYAN, E. S.
Effect of hypoxia on ATPase activity of the brain
N80-10776

MAINE, R.
Modeling and parameter identification of the human respiratory system
A80-11378

MAMALYGA, L. M.
Levels and proportion of RNA and proteins in the system of the neuron: Vestibular nuclear neuroglia and cerebellum during hypokinesia
N80-10764

MANCIA, G.
Control of blood pressure by carotid sinus baroreceptors in human beings
A80-10522

MANNING, C.
A memory retrieval aid for hypothesis generation
[AD-A072657] N80-10795

MARCO, R. A.
Rotary wing proficiency-based Aviator Selection System (PASS)
[AD-A069838] N80-11774

MAREYEVA, N. S.
Bichromate oxidability as a criterion of quantitative levels of organic impurities in reclaimed water
N80-10766

MARKARYAN, M. V.
Dietary supplements used to prevent some changes in the human body in the presence of nervous and emotional stress
N80-10758

MARSHALL, R. D.
Extended duration orbiter study: CO2 removal and water recovery
[NASA-CR-160317] N80-10800

MASHYNSKYY, O. L.
Ultrastructure of chlorella pyrenoidosa cells (strain g-11-1) following growth under conditions of a prolonged space flight
N80-11001

MATTIAZZI, A. R.
Relationship between calcium and hydrogen ions in heart muscle
A80-10424

MAUK, S. C.
Altitude acclimatization. Citations from the International Aerospace Abstracts data base
[NTIS/PS-79/0857/7] N80-11770

MCALEESE, K. J.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059] N80-11783

MCCAHAN, G. R., JR.
A porcine bioassay method for analysis of thermally protective fabrics: A clinical grading system
[AD-A069202] N80-11766

MCCAULEY, M. E.
Effect of transdermally administered scopolamine in preventing motion sickness
A80-11628

MCCONVILLE, J. T.
Revised height/weight sizing programs for men's protective flight garments
[AD-A070732] N80-10803
Height/weight sizing programs for womens protective garments
[AD-A072376] N80-11781

MCFADDEN, E. R., JR.
Cold air inhalation, esophageal temperature lung function in exercising humans
[AD-A069510] N80-11765

MCNEANY, J. L.
National library of medicine toxicology data base management system
[ORNL/CSD/TM-80] N80-10785

MEHLE, T.
A memory retrieval aid for hypothesis generation
[AD-A072657] N80-10795

MELNIKOVA, T. P.
Reactions of rats to overheating following prolonged hypokinesia
N80-10761

MERRITT, J. O.
Remote operator performance comparing mono and stereo TV displays: The effects of visibility, learning and task factors
[AD-A068201] N80-10793

MEYZEROV, Y. S.
Effect of hypokinesia on higher nervous activity of albino rats
N80-10762

MILLER, J. C.
The 24-hour cycle and nocturnal depression of human cardiac output
A80-11634

MISUROVA, E.
Effect of space flight conditions on deoxyribonucleoprotein and nucleic acid content of rat tissues
N80-10760

MIZUMOTO, C.
Animal experiment on the effects of repeated exposure to sustained Gz of moderate magnitude. I - Histo-pathological studies in rabbits
A80-11520

MOCHIDA, T.
Convective and radiative heat transfer coefficients for a clothed man
A80-11328

MUELLER, L. J.
Helmet-mounted sight/display program: Cessna 310 flight test
[AD-A072058] N80-11786

MURAKHOVSKIY, K. I.
Some hemodynamic parameters during respiration of oxygen under excessive pressure
N80-10765

N

NAGASAWA, Y.
Behavioral scientific study on T-2 flight simulator. II - Comparison of pilot workload between aircraft and simulator
A80-11522

NAUMENKO, I. M.
Evaluation of heat flow components from heater to skin in an electric thermal suit
N80-11000

NEFCY, P. E.
A model for auditory evoked potentials
N80-10780

NEWTON, P. E.
Effect of a rapid 4 percent carboxyhemoglobin saturation increase on maximal treadmill exercise
[PB-296627/3] N80-10786

NIKOLSKIY, L. N.
Reactions of rats to overheating following prolonged hypokinesia
N80-10761

NITANI, M.
Animal experiment on the effects of repeated exposure to sustained Gz of moderate magnitude. I - Histo-pathological studies in rabbits
A80-11520

NORESSON, E.
Cardiac reflexes in normotensive and spontaneously hypertensive rats
A80-10521

NORTH, R. A.
Performance, physiological, and oculometer evaluation of VTOL landing displays
[NASA-CR-3171] N80-11771

O

OHANLON, J. F., JR.
Research on the psychophysiological basis of human vigilance
[AD-A068562] N80-10790

OHARA, K.
Animal experiment on the effects of repeated exposure to sustained Gz of moderate magnitude. I - Histo-pathological studies in rabbits
A80-11520
Effects of exposure to hypoxic environment upon operant behavior in rats
A80-11521

OKON, E. E.
Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses
A80-10332

OLSON, D. A.
Helmet-mounted sight/display program: Cessna 310 flight test
[AD-A072058] N80-11786
Operational pilot factors analysis report
[AD-A072063] N80-11787

OLSON, K. W.
Analysis of airborne particulates and human urine by inductively coupled plasma-atomic emission spectrometry
[PB-297775/9] N80-10787

OSADA, H.
Effects of exposure to hypoxic environment upon operant behavior in rats
A80-11521

OVCHINNIKOVA, A. G.
Factors affecting the regulation of biological oxidation processes in tissue specimens
A80-10330

P

PARATI, G.
Control of blood pressure by carotid sinus baroreceptors in human beings
A80-10522

PARKER, D. E.
Self-motion magnitude estimation during linear oscillation - Changes with head orientation and following fatigue
A80-11629

PAULSON, H. M.
Effects of pseudoephedrine and triprolidine on visual performance
A80-11637

PENTEADO-ORELLANA, M. M.
South American river morphology and hydrology
N80-10574

PEPPER, R. L.
Remote operator performance comparing mono and stereo TV displays: The effects of visibility, learning and task factors
[AD-A068201] N80-10793

PETERSON, J. J.
An examination of statistical impact acceleration injury prediction models based on torque and force variables
[AD-A071625] N80-10746

PETROSIAN, B. B.
Age-dependent dynamics of the succinate-dehydrogenase activity of lymphocytes in physically active and inactive persons
A80-10333

PETRUKHIN, S. V.
Reactions of rats to overheating following prolonged hypokinesia
N80-10761

PIERGALLINI, J. R.
Thermal conduction effects in human skin. Phase 2: Experimental validation and application of data in selection of materials
[AD-A068480] N80-10783

POLLOCK, G. E.
The radioracemization of isovaline - Cosmochemical implications
A80-13018

POLYAKOV, B. I.
Current conceptions on the genesis of vestibulovegetative disorders in weightlessness
N80-10753

POMIDOSSI, G.
Control of blood pressure by carotid sinus baroreceptors in human beings
A80-10522

POPOVA, A. F.
Ultrastructure of chlorella pyrenoidosa cells (strain g-11-1) following growth under conditions of a prolonged space flight
N80-11001

POPOVA, O. A.
Factors affecting the regulation of biological oxidation processes in tissue specimens
A80-10330

PRASLICKA, M.
Effect of space flight conditions on deoxyribonucleoprotein and nucleic acid content of rat tissues
N80-10760

PRODIN, V. I.
Course of altitude caisson disease in dogs exposed to accelerations
N80-10773

R

RAGAN, T. J.
Cognitive styles: A review of the literature
[AD-A069435] N80-11772

RAPOSO, A.
The normal values of spatial velocity in the second part of QRS /A cooperative study of 229 healthy individuals/
A80-10422

RAYMAN, R. B.
Sickle cell trait and the aviator
A80-11639

RHODE, E. A.
Responses of domestic fowl to repeated +Gz acceleration
A80-11633

RICKSTEN, S.-E.
Cardiac reflexes in normotensive and spontaneously hypertensive rats
A80-10521

ROBERTS, D. E.
Cold air inhalation, esophageal temperature lung function in exercising humans
[AD-A069510] N80-11765

RODAHL, K.
Resting heart rate in apparently healthy middle-aged men
A80-11374

ROMANOV, V. S.
Ultrastructural changes in canine hepatocytes during continuous chronic exposure to low doses of gamma radiation
N80-10768

ROMANOVA, V. E.
Factors affecting the regulation of biological oxidation processes in tissue specimens
A80-10330

ROMANYUTA, V. G.
A portable stand for assessing the dynamics of a working individual's functional state
N80-10750

ROYAL, J. W.
Effect of transdermally administered scopolamine in preventing motion sickness
A80-11628

RYAN, A. P.
Effects of pseudoephedrine and triprolidine on visual performance
A80-11637

S

SAINI, V. D.
Use of the pupil to study the scotopic and chromatic mechanisms of vision in humans
N80-10777

SAKAGUCHI, H.
Effects of exposure to hypoxic environment upon operant behavior in rats
A80-11521

SAKAGUCHI, T.
Effects of exposure to hypoxic environment upon operant behavior in rats
A80-11521

SAKOVICH, V. A.
A method of defining the optimum level of ionizing radiation from determinate sources during space flights
N80-10770

SAKURAI, I.
Effects of exposure to hypoxic environment upon operant behavior in rats
A80-11521

SARASON, I. G.
Life stress, self-preoccupation, and social supports
[AD-A068624] N80-10789

SCHAEFER, M.
Discrete multivariate analysis on radiobiological results from the biostack 3 Bacillus subtilis experiment
N80-11759

SCHIDLOWSKI, M.
Antiquity and evolutionary status of bacterial sulfate reduction - Sulfur isotope evidence
A80-12227

SCHLICHTING, C. L.
Effects of pseudoephedrine and triprolidine on visual performance
A80-11637

SCHMITT, L. G.
Effect of transdermally administered scopolamine in preventing motion sickness
A80-11628

SCHOHAN, B.
Visual search performance in simulated remotely piloted vehicle utilization as a function of auxiliary task loading on the observer
[AD-A072802] N80-10804

SCHUBERT, P. H.
Extended duration orbiter study: CO2 removal and water recovery
[NASA-CR-160317] N80-10800
Preprototype vapor compression distillation subsystem
[NASA-CR-160332] N80-10801

SEEMAN, J. M.
Integrated helmet-mounted sight/display program: Coating technology
[AD-A072060] N80-11782

SELKOV, E. E.
Temporal organization of energy metabolism and the cellular clocks
A80-10328

SHASKOV, V. S.
Problems of pharmacology in space medicine
N80-10749

SHAW, J. E.
Effect of transdermally administered scopolamine in preventing motion sickness
A80-11628

SHIKHODYROV, V. V.
Ultrastructural changes in canine hepatocytes during continuous chronic exposure to low doses of gamma radiation
N80-10768

SHILENKO, M. P.
Rush nuts (Cyperus esculentus) as a source of vegetable oil in a closed life support system
N80-10769

SHIPLEY, B. D., JR.
Rotary wing proficiency-based Aviator Selection System (PASS)
[AD-A069838] N80-11774

SHMELEVA, L. G.
Variation of substrate contents and activity of enzymes of the energy metabolism in the heart under the action of glutamate during hypoxia and sodium nitride poisoning of animals
A80-10335

SHMIDT, V. M.
Two important directions of development of Soviet biometry
N80-10997

SHVERN, U.
Visual search performance in simulated remotely piloted vehicle utilization as a function of auxiliary task loading on the observer
[AD-A072402] N80-10804

SMITH, A. H.
Responses of domestic fowl to repeated +Gz acceleration
A80-11633

SMITH, D. C.
Remote operator performance comparing mono and stereo TV displays: The effects of visibility, learning and task factors
[AD-A068201] N80-10793

SMITH, D. B.
An examination of statistical impact acceleration injury prediction models based on torque and force variables
[AD-A071625] N80-10746

SMODE, A. F.
Flight hour reductions in fleet replacement pilot training through simulation
A80-10764

SNYDER, H. L.
Spatio-temporal intergration in the visual system
[AD-A069558] N80-11780

SOKOLOVA, Y. A.
Age-related distinctions of changes in psychophysiological functions of pilots in the civil aviation under the influence of vibration and noise
N80-10757

SOLONIN, G. I.
Toxic effects of chemicals in the altered gas environment of pressurized chambers
N80-10775

SPACAPAN DE CASTUNA, E.
Relationship between calcium and hydrogen ions in heart muscle
A80-10424

SPANGLER, W. L.
Responses of domestic fowl to repeated +Gz acceleration
A80-11633

STACKHOUSE, S. P.
Performance, physiological, and oculometer evaluation of VTOL landing displays
[NASA-CR-3171] N80-11771

STANSELL, V.
Cognitive styles: A review of the literature
[AD-A069435] N80-11772

STANTON, J. S.
National library of medicine toxicology data base management system
[ORNL/CSD/TM-80] N80-10785

STARK, E. A.
Simulator fidelity in the learning of complex flight tasks
A80-10774

STERNBERG, R. J.
An aptitude-strategy interaction in linear syllogistic reasoning
[AD-A068498] N80-10791

STEWART, D. J.
Effect of a rapid 4 percent carboxyhemoglobin saturation increase on maximal treadmill exercise
[PB-296627/3] N80-10786

STEWART, R. D.
Effect of a rapid 4 percent carboxyhemoglobin saturation increase on maximal treadmill exercise
[PB-296627/3] N80-10786

STOLL, A. M.
Thermal conduction effects in human skin. Phase 2: Experimental validation and application of data in selection of materials
[AD-A068480] N80-10783

SUTTON, S. E., JR.
South American river morphology and hydrology
N80-10574

SUVOROV, A. V.
Investigation of alveoloarterial difference for oxygen and carbon dioxide when breathing high-density gas mixtures
N80-10774

SWAIN, A. D.
Summary of project to develop handbook of human reliability analysis for nuclear power plant operations
[SAND-78-1812C] N80-10797

SYTNIK, S. I.
Reactions of rats to overheating following prolonged hypokinesia
N80-10761

SYTNKY, K. M.
Ultrastructure of chlorella pyrenoidosa cells (strain g-11-1) following growth under conditions of a prolonged space flight
N80-11001

T

TAI, T. C.
Modeling and parameter identification of the human respiratory system
A80-11378

TARASIANTS, F. E.
Phosphoenolpyruvate synthesis and reactions of the respiratory chain of mitochondrias in the liver of animals during physiological adaptive responses
A80-10332

TEBBETTS, I.
Revised height/weight sizing programs for men's protective flight garments
[AD-A070732] N80-10803
Height/weight sizing programs for womens protective garments
[AD-A072376] N80-11781

TEMNOV, A. V.
Oxidation of pyruvate in mitochondrias: Mathematical model - Regulation of the Kreb's cycle by adenine and pyridine nucleotides
A80-10329

THOREN, P.
Cardiac reflexes in normotensive and spontaneously hypertensive rats
A80-10521

TIGRANYAN, R. A.
Effect of space flight conditions on deoxyribonucleoprotein and nucleic acid content of rat tissues
N80-10760

TOBIAS, J. V.
Interstimulus interval as it affects temporary threshold shift in serial presentations of loud tones
[AD-A072006] N80-11762

TODD, P.
Gamma rays - Further evidence for lack of a threshold dose for lethality to human cells A80-10525

Kidney cell electrophoresis
[NASA-CR-160353] N80-10782

TOLSON, D. D.
Student pilots referred to the neuropsychiatry branch, USAFSAM 1968-78 Implications for selection A80-11640

TORNA-KRAJEWSKI, J.
Plasma volume changes in fit men and women during a humid heat stress before and after an acclimation N80-10781

TRENT, C. C.
Lower body negative pressure box for +Gz simulation in the upright seated position A80-11641

TRUBACHEV, I. N.
Rush nuts (Cyperus esculentus) as a source of vegetable oil in a closed life support system N80-10769

U

UGLOVA, M. N.
Reactions of rats to overheating following prolonged hypokinesia N80-10761

UGOLEV, A. T.
Factors affecting the regulation of biological oxidation processes in tissue specimens A80-10330

V

VANECK, P.
Early diagnosis of decompression sickness. Changes in the blood found shortly after decompression. Experiments on rats
[MBL-1978-7] N80-11758

VASILYEV, P. V.
Reactions of rats to overheating following prolonged hypokinesia N80-10761

VERONA, R. W.
Head aiming/tracking accuracy in a helicopter environment
[AD-A071359] N80-11788

VIDMAR, R. L.
Rotary wing proficiency-based Aviator Selection System (PASS)
[AD-A069838] N80-11774

VIKTOROV, A. N.
Amount of microorganisms discharged from the upper respiratory tract and integument of people confined in a sealed chamber N80-10767

W

WACHTEL, T. L.
A porcine bioassay method for analysis of thermally protective fabrics: A clinical grading system
[AD-A069202] N80-11766

WEIL, E. M.
An aptitude-strategy interaction in linear syllogistic reasoning
[AD-A068498] N80-10791

WHITTAKER, R. H.
Regional cerebral blood flow in conscious miniature swine during high sustained +Gz acceleration stress A80-11632

WIBERG, D. M.
Modeling and parameter identification of the human respiratory system A80-11378

WICKRAMASINGHE, C.
Biochemical chromophores and the interstellar extinction at ultraviolet wavelengths A80-12270

WIERWILLE, W. W.
Behavioral measures of aircrew mental workload A80-10344

Physiological measures of aircrew mental workload A80-10345

WIJNANS, M.
Early diagnosis of decompression sickness. Changes in the blood found shortly after decompression. Experiments on rats
[MBL-1978-7] N80-11758

WILKINS, J. R.
Indirect microbial detection
[NASA-CASE-LAR-12520-1] N80-11756

WILLIGES, R. C.
Behavioral measures of aircrew mental workload A80-10344

WITT, W. M.
Regional cerebral blood flow in conscious miniature swine during high sustained +Gz acceleration stress A80-11632

WOLFE, J. W.
A modeling approach to the assessment of smooth pursuit eye movement A80-11627

WOOD, D. L.
Self-motion magnitude estimation during linear oscillation - Changes with head orientation and following fatigue A80-11629

WU, A.
Effect of a rapid 4 percent carboxyhemoglobin saturation increase on maximal treadmill exercise
[PB-296627/3] N80-10786

WYNVEEN, R. A.
Extended duration orbiter study: CO2 removal and water recovery
[NASA-CR-160317] N80-10800
Preprototype vapor compression distillation subsystem
[NASA-CR-160332] N80-10801

Y

YEGOROV, B. B.
Problems of pharmacology in space medicine N80-10749

YOUNG, M. E.
Evoked cortical potentials and information processing
[AD-A070789] N80-10794

YURUGI, R.
Animal experiment on the effects of repeated exposure to sustained Gz of moderate magnitude. I - Histo-pathological studies in rabbits A80-11520

Effects of exposure to hypoxic environment upon operant behavior in rats A80-11521

Z

ZALOGUYEV, S. N.
Amount of microorganisms discharged from the upper respiratory tract and integument of people confined in a sealed chamber N80-10767

ZANCHETTI, A.
Control of blood pressure by carotid sinus baroreceptors in human beings A80-10522

ZARUBINA, K. V.
Amount of microorganisms discharged from the upper respiratory tract and integument of people confined in a sealed chamber N80-10767

ZBOROVSKAYA, B. I.
Use of short-arm centrifuge to prevent deconditioning when immersed in water (according to H-reflex) N80-10772

ZHIRMUNSKIY, A. V.
The third system of regulation of animal and human functions, the active point system N80-10996

ZIVENKO, A. I.
Age-dependent dynamics of the succinate-dehydrogenase activity of lymphocytes in physically active and inactive persons
A80-10333

1. Report No. NASA SP-7011 (203)	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle AEROSPACE MEDICINE AND BIOLOGY A Continuing Bibliography (Supplement 203)		5. Report Date February 1980
		6. Performing Organization Code
7. Author(s)		8. Performing Organization Report No.
		10. Work Unit No.
9. Performing Organization Name and Address National Aeronautics and Space Administration Washington, D. C. 20546		11. Contract or Grant No.
		13. Type of Report and Period Covered
12. Sponsoring Agency Name and Address		14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This bibliography lists 150 reports, articles, and other documents introduced into the NASA scientific and technical information system in January 1980.

17. Key Words (Suggested by Author(s)) Aerospace Medicine Bibliographies Biological Effects	18. Distribution Statement Unclassified - Unlimited

19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 58	22. Price* $7.00 HC

*For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1980

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to eleven special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley
COLORADO
University of Colorado, Boulder
DISTRICT OF COLUMBIA
Library of Congress
GEORGIA
Georgia Institute of Technology, Atlanta
ILLINOIS
The John Crerar Library, Chicago

MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge
MISSOURI
Linda Hall Library, Kansas City
NEW YORK
Columbia University, New York
OKLAHOMA
University of Oklahoma, Bizzell Library
PENNSYLVANIA
Carnegie Library of Pittsburgh
WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library
COLORADO
Denver Public Library
CONNECTICUT
Hartford Public Library
MARYLAND
Enoch Pratt Free Library, Baltimore
MASSACHUSETTS
Boston Public Library
MICHIGAN
Detroit Public Library
MINNESOTA
Minneapolis Public Library
MISSOURI
Kansas City Public Library
St. Louis Public Library
NEW JERSEY
Trenton Public Library

NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library
OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library
TENNESSEE
Memphis Public Library
TEXAS
Dallas Public Library
Fort Worth Public Library
WASHINGTON
Seattle Public Library
WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019.

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy of microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESA - Information Retrieval Service, European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

U.S.MAIL

NASA

POSTMASTER: If Undeliverable (Section 158
Postal Manual) Do Not Return

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP-7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP-7037	AERONAUTICAL ENGINEERING Engineering, design, and operation of aircraft and aircraft components	Monthly
NASA SP-7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP-7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP-7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP-7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C. 20546

7011 (204)

NASA

Aerospace Medicine and Biology

A Continuing
Bibliography
with Indexes

NASA SP-7011 (204)
March 1980

National Aeronautics and
Space Administration

NEWARK PUBLIC LIBRARY
APR 18 1980
U. S. GOVT. PUBS.
DEPOSITORY 376

Aerospace Medicine & Biolog
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi
ine & Biology Aerospace Medi
ce Medicine & Biology Aerospa
Aerospace Medicine & Biology
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi

NASA SP-7011 (204)
Aerospace Medicine and Biology
A Continuing Bibliography with Indexes
Pages 23 – 42
March 1980

NAS 1.21:

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series)	N80-11999 – N80-14016
IAA (A-10000 Series)	A80-13129 – A80-17360

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by Informatics Information Systems Company.

NASA SP-7011(204)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 204)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in February 1980 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*

NASA Scientific and Technical Information Branch 1980
National Aeronautics and Space Administration
Washington, DC

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This Supplement is available from the National Technical Information Service (NTIS), Springfield, Virginia 22161, at the price $7.00 domestic; $14.00 foreign.

INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 140 reports, articles and other documents announced during February 1980 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1980 Supplements.

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A80-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies of accessions are available at $7.00 per document up to a maximum of 40 pages. The charge for each additional page is $0.25. Microfiche (1) of documents announced in *IAA* are available at the rate of $3.00 per microfiche on demand, and at the rate of $1.25 per microfiche for standing orders for all *IAA* microfiche. The price for the *IAA* microfiche by category is available at the rate of $1.50 per microfiche plus a $1.00 service charge per category per issue. Microfiche of all the current AIAA Meeting Papers are available on a standing order basis at the rate of $1.50 per microfiche.

Minimum air-mail postage to foreign countries is $1.00 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

STAR ENTRIES (N80-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page vii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the * symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard $3.50 price, for those documents identified by a # symbol.)

---

(1) A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts*. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: Fachinformationszentrum, Karlsruhe. Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM).

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: U.S. Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free.

Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is $65.00 domestic; $130.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics
and Astronautics
Technical Information Service
555 West 57th Street, 12th Floor
New York, New York 10019

British Library Lending Division,
Boston Spa, Wetherby, Yorkshire,
England

Commissioner of Patents and
Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service
ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Scientific and Technical Information
Facility
P.O. Box 8757
B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Branch (NST-41)
Washington, D.C. 20546

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, California 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey
1033 General Services Administration
Building
Washington, D.C. 20242

U.S. Geological Survey
601 E. Cedar Avenue
Flagstaff, Arizona 86002

U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

U.S. Geological Survey
Bldg. 25, Denver Federal Center
Denver, Colorado 80225

Fachinformationszentrum Energie, Physik,
Mathematik GMBH
7514 Eggenstein Leopoldshafen
Federal Republic of Germany

NTIS PRICE SCHEDULES

Schedule A

STANDARD PAPER COPY PRICE SCHEDULE

(Effective January 1, 1980)

Price Code	Page Range	North American Price	Foreign Price
A01	Microfiche	$ 3.50	$ 5.25
A02	001-025	5.00	10.00
A03	026-050	6.00	12.00
A04	051-075	7.00	14.00
A05	076-100	8.00	16.00
A06	101-125	9.00	18.00
A07	126-150	10.00	20.00
A08	151-175	11.00	22.00
A09	176-200	12.00	24.00
A10	201-225	13.00	26.00
A11	226-250	14.00	28.00
A12	251-275	15.00	30.00
A13	276-300	16.00	32.00
A14	301-325	17.00	34.00
A15	326-350	18.00	36.00
A16	351-375	19.00	38.00
A17	376-400	20.00	40.00
A18	401-425	21.00	42.00
A19	426-450	22.00	44.00
A20	451-475	23.00	46.00
A21	476-500	24.00	48.00
A22	501-525	25.00	50.00
A23	526-550	26.00	52.00
A24	551-575	27.00	54.00
A25	576-600	28.00	56.00
A99	601-up	-- 1/	-- 2/

1/ Add $1.00 for each additional 25 page increment or portion thereof for 601 pages up

2/ Add $2.00 for each additional 25 page increment or portion thereof for 601 pages and more

Schedule E

EXCEPTION PRICE SCHEDULE

Paper Copy & Microfiche

Price Code	North American Price	Foreign Price
E01	$ 5.50	$ 11.50
E02	6.50	13.50
E03	8.50	17.50
E04	10.50	21.50
E05	12.50	25.50
E06	14.50	29.50
E07	16.50	33.50
E08	18.50	37.50
E09	20.50	41.50
E10	22.50	45.50
E11	24.50	49.50
E12	27.50	55.50
E13	30.50	61.50
E14	33.50	67.50
E15	36.50	73.50
E16	39.50	79.50
E17	42.50	85.50
E18	45.50	91.50
E19	50.50	100.50
E20	60.50	121.50
E99 - Write for quote		
N01	28.00	40.00

TABLE OF CONTENTS

Page

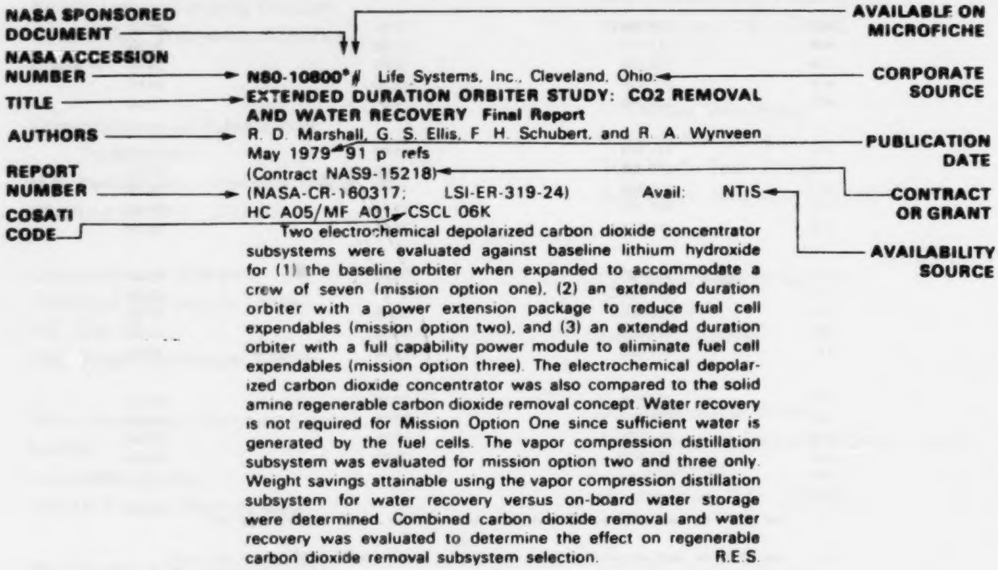
IAA ENTRIES (A80-10000) 23

STAR ENTRIES (N80-10000) 37

Subject Index I-1

Personal Author Index I-17

TYPICAL CITATION AND ABSTRACT FROM *STAR*

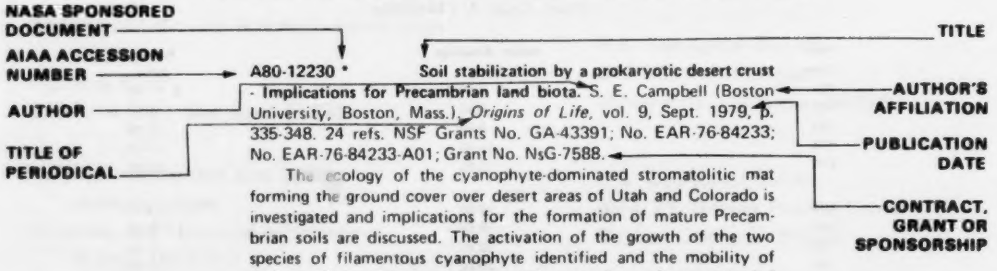


NASA SPONSORED DOCUMENT
NASA ACCESSION NUMBER
TITLE
AUTHORS
REPORT NUMBER
COSATI CODE
AVAILABLE ON MICROFICHE
CORPORATE SOURCE
PUBLICATION DATE
CONTRACT OR GRANT
AVAILABILITY SOURCE

N80-10800*# Life Systems, Inc., Cleveland, Ohio.
EXTENDED DURATION ORBITER STUDY: CO2 REMOVAL AND WATER RECOVERY Final Report
R. D. Marshall, G. S. Ellis, F. H. Schubert, and R. A. Wynveen
May 1979 91 p refs
(Contract NAS9-15218)
(NASA-CR-160317; LSI-ER-319-24) Avail: NTIS
HC A05/MF A01 CSCL 06K

Two electrochemical depolarized carbon dioxide concentrator subsystems were evaluated against baseline lithium hydroxide for (1) the baseline orbiter when expanded to accommodate a crew of seven (mission option one), (2) an extended duration orbiter with a power extension package to reduce fuel cell expendables (mission option two), and (3) an extended duration orbiter with a full capability power module to eliminate fuel cell expendables (mission option three). The electrochemical depolarized carbon dioxide concentrator was also compared to the solid amine regenerable carbon dioxide removal concept. Water recovery is not required for Mission Option One since sufficient water is generated by the fuel cells. The vapor compression distillation subsystem was evaluated for mission option two and three only. Weight savings attainable using the vapor compression distillation subsystem for water recovery versus on-board water storage were determined. Combined carbon dioxide removal and water recovery was evaluated to determine the effect on regenerable carbon dioxide removal subsystem selection. R.E.S.

TYPICAL CITATION AND ABSTRACT FROM *IAA*



NASA SPONSORED DOCUMENT
AIAA ACCESSION NUMBER
AUTHOR
TITLE OF PERIODICAL
TITLE
AUTHOR'S AFFILIATION
PUBLICATION DATE
CONTRACT, GRANT OR SPONSORSHIP

A80-12230 * **Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota.** S. E. Campbell (Boston University, Boston, Mass.), *Origins of Life*, vol. 9, Sept. 1979, p. 335-348. 24 refs. NSF Grants No. GA-43391; No. EAR-76-84233; No. EAR-76-84233-A01; Grant No. NsG-7588.

The ecology of the cyanophyte-dominated stromatolitic mat forming the ground cover over desert areas of Utah and Colorado is investigated and implications for the formation of mature Precambrian soils are discussed. The activation of the growth of the two species of filamentous cyanophyte identified and the mobility of their multiple trichromes upon wetting are observed, accompanied by the production and deposition of a sheath capable of accreting and stabilizing sand and clay particles. The formation of calcium carbonate precipitates upon the repeated wetting and drying of desert crust is noted, and it is suggested that the desert crust community may appear in fossil calcrete deposits as lithified microscopic tubes and cellular remains of algal trichromes. The invasion of dry land by both marine and freshwater algae on the model of the desert crust is proposed to be responsible for the accumulation, stabilization and biogenic modification of mature Precambrian soils. A.L.W.

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 204)

MARCH 1980

IAA ENTRIES

A80-13186 **Innovations in transportation engineering and human factors (Verkehrstechnische Innovationen und menschliches Verhalten).** K. Steininger (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Institut für Flugmedizin, Bonn, West Germany). *DFVLR-Nachrichten,* Nov. 1979, p. 35-39. In German.

The paper investigates the question of whether technical innovations always result in social benefits. Attention is given to the conflict between technical innovation and human failure. Innovations considered include semiconductor technology which influences communications, automatic control technology and microprocessor technology. Discussion covers the demands of modern transportation technology on man, human factors in traffic, and concepts for solving of the conflict. M.E.P.

A80-13216 **Electromagnetic absorption in multilayered cylindrical models of man.** H. Massoudi, C. H. Durney, P. W. Barber, and M. F. Iskander (Utah, University, Salt Lake City, Utah). *IEEE Transactions on Microwave Theory and Techniques,* vol. MTT-27, Oct. 1979, p. 825-830. 11 refs. Contract No. F41609-76-C-0025.

The absorption characteristics of multilayered cylindrical models of man irradiated by a normally incident electromagnetic plane wave are investigated. Numerical calculations for a specific skin-fat-muscle cylindrical model of man predict a layering resonance at 1.2 GHz with an average specific absorption rate (SAR) about double that calculated for the corresponding homogeneous model. The layering resonance frequency is found to be the same for incident waves polarized parallel and perpendicular to the cylindrical axis. The effects of layers on the whole-body absorption by man are determined by averaging the effects obtained for many combinations of skin and fat thicknesses. Absorption effects due to clothing are also investigated. (Author)

A80-13243 **General characteristics of the rheological properties of the soft tissues of the human body using local cycling loading measurements and a simple phenomenological model of these properties (Obshchaia kharakteristika reologicheskikh svoistv miagkikh tkanei cheloveka po dannym izmerenii metodom lokal'nogo tsiklicheskogo nagruzheniia i prosteishaia fenomenologicheskaia model etikh svoistv).** E. V. Belaia (Akademiia Meditsinskikh Nauk SSSR, Moscow, USSR). *(Vsesoiuznaia Konferentsiia po Problemam Biomekhaniki, 2nd, Riga, Latvian SSR, Apr. 1979.) Mekhanika Kompozitnykh Materialov,* July-Aug. 1979, p. 737-741. In Russian.

A80-13263 **T-waves in the exercise ECG - Their location and occurrence.** R. A. Wolthuis (Medtronic, Inc., Minneapolis, Minn.), N. Keiser, J. R. Fischer, Jr. (USAF, School of Aerospace Medicine, Brooks AFB, Tex.), and A. Hopkirk. *IEEE Transactions on Biomedical Engineering,* vol. BME-26, Nov. 1979, p. 639-643. 12 refs.

The automated location of T-wave fiducial points in single lead exercise ECGs is facilitated by using R-wave peak to T-wave maximum and R-wave peak to T-wave ending intervals predicted from heart rate. Predictive equations for these intervals were developed; algorithms were subsequently designed and tested on 8380 averaged ECG beats from 146 patients. Of 6775 ECG beats with monophasic T-waves, 98 percent of the T-wave maximum and 96 percent of the T-wave ending fiducial points were correctly identified by these algorithms. The predictive equations and associated algorithms are discussed. (Author)

A80-13272 **Ergonomical studies about the superposition of control activity and mechanical vibration (Ergonomische Untersuchungen zur Superposition von Regeltätigkeiten und mechanischen Schwingungen).** R. Helbig and H. Luczak (Darmstadt, Technische Hochschule, Darmstadt, West Germany). *European Journal of Applied Physiology,* vol. 42, no. 2, 1979, p. 81-104. 59 refs. In German.

The effects of combined stresses due to control activity and vertical mechanical vibration on man are analyzed. The processes in the human being at those superposed stresses are shown in a deterministic way, starting from morphological and physiological facts that lead to a division of the organismic data processing in the fields of information reception, central information processing and output. Factorial laboratory experiments with combined stresses consisting of an ideal-typical compensatory-tracking task and mechanical vibration are discussed. It is determined that influences of vibration in regions of information reception and information output were found as well as thresholds for the performance reducing effects of mechanical vibrations. C.F.W.

A80-13273 **Effects and post-effects of two-hour exhausting exercise on composition and gas transport functions of blood.** D. Böning, W. Skipka, P. Heedt, W. Jenker, and U. Tibes (Köln, Deutsche Sporthochschule, Cologne, West Germany). *European Journal of Applied Physiology,* vol. 42, no. 2, 1979, p. 117-123. 22 refs.

A80-13274 **Seasonal variation in work performance and heart rate response to exercise - A study of 1,835 middle-aged men.** J. Erikssen (Rikshospitalet, Oslo, Norway) and K. Rodahl (Norwegian College of Physical Education, Oslo, Norway). *European Journal of Applied Physiology,* vol. 42, no. 2, 1979, p. 133-140. 8 refs.

A80-13322 **A procedure for electronically monitoring animal response parameters using the rotating wheel.** J. C. Spurgeon, R. A. Filipczak, R. E. Feher, and S. J. Sternik (FAA, National Aviation Facilities Experimental Center, Atlantic City, N.J.). *Journal of Combustion Toxicology,* vol. 6, Aug. 1979, p. 198-207. 10 refs.

A convenient method of quantitatively comparing aircraft interior materials according to their relative potential toxicities is to place a small animal (rat) in a rotating wheel and measure the time from the onset of toxic gas to the animal's incapacitation. Because of the loss of visibility due to smoke, electronic monitoring of the rotating wheel is necessary. Tests were performed at the FAA's National Aviation Facilities Experimental Center using the thermal decomposition products first of a wool seat fabric, and then of a coated fabric (polyvinylchloride on cloth). The exact specifications of the rotating wheel assembly developed at the FAA's Civil Aeromedical Institute, as well as explicit descriptions of the behavior of the animals during the tests, supplemented by graphs, are presented. J.B.

A80-13372 # **Relationship between recovery and hypothermia induced by centrifugation in rats.** H. Fujiwara, E. Kamei, and I. Saito (Japan Air Self Defense Force, Aeromedical Laboratory, Tachikawa, Tokyo, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports*, vol. 20, June 1979, p. 1-20. 26 refs. In Japanese, with abstract in English.

The paper presents the relationship between recovery and hypothermia induced in rates by centrifugation. A total of 80 SLC-Sprague Dawley (SD) strain young male rats were exposed to centrifugation of 2G in the backward prone position G(-GX) for 15 to 60 min/day, and their core temperatures were measured before, after, and 30 to 90 min after the centrifuge exposure. It was found that (1) the core temperatures was about 38.0 C in the prerun control measurement, and it fell to temperatures in the 35.4 to 37.0 C range after daily 15 min exposure to centrifugation for periods from 3 to 10 weeks, (2) the core temperatures decreased more than higher initial core temperatures, and (3) the core temperatures recovered to almost normal levels within 30 min after centrifugation. A.T.

A80-13373 # **Effects of long-term repetitive exposure to centrifugation of 2G on developing rat.** E. Kamei, H. Fujiwara, and I. Saito (Japan Air Self Defense Force, Aeromedical Laboratory, Tachikawa, Tokyo, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports*, vol. 20, June 1979, p. 21-47. 15 refs. In Japanese, with abstract in English.

Investigation of the effect of centrifugation on body weight and length, tail length, bone development by biometry, food and water intake, and daily amount of feces of rats is presented. 80 male rats were exposed to centrifugal forces of 2G for daily periods of 15 min expanded weekly by 5 min for 7 to 70 days. It was found that (1) the body weight was consistently lower than that of the controls, and that the centrifuged rats showed on average a smaller body and tail length compared to each control group, (2) compared to the control group, the length of the femur and tibia were decreased and the midshaft diameter of both bones were decreased by centrifugation, (3) daily consumption of food and water in the rats exposed for 56 and 70 days decreased compared to their respective control groups, but in the 42 day exposure group the food consumption was equal or slightly less than that of the control group, and (4) the mean amount of feces in the rats exposed for 56, 70, and 42 days were almost similar to respective control groups. A.T.

A80-13374 # **Effects of cold exposure on circadian rhythm of body temperature in rats and rabbits.** H. Osada, E. Sakaguchi, H. Maru, R. Yurugi (Japan Air Self Defense Force, Aeromedical Laboratory, Tachikawa, Tokyo, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports*, vol. 20, June 1979, p. 49-58. 7 refs. In Japanese, with abstract in English.

A study of the effects of cold exposure on the circadian rhythm of the body temperature in rats and rabbits is presented. 5 rabbits were exposed outdoors during winter for 48 hr, and 5 rats were placed in a cold room (5 plus or minus 1 C) for 2 months. Body temperatures of the animals were measured every one or two hours, and the circadian rhythm of the body temperature was analyzed by the cosinor method in which the mean value, amplitude, and the phase shift of the body temperature alteration during 24 hr were mathematically expressed. Both the cold and warm acclimatized rats showed approximately the same pattern in the circadian diagram; acutely cold exposed rabbits exhibited reduced amplitude in cosinor diagram in rectal, subcutaneous and skin temperature as compared with the warm acclimatized rabbits and a reversed phase with the environmental air temperature and human circadian pattern. A.T.

A80-13451 **Biological investigations carried out in balloons.** H. Planel, J. P. Soleilhavoup, and G. Gasset (Toulouse III, Université, Toulouse, France). In: Scientific ballooning; Proceedings of the Symposium on the Scientific Use of Balloons and Related Technical Problems, Innsbruck, Austria, May 29-June 10, 1978. Oxford, Pergamon Press, Ltd., 1979, p. 187-194. 12 refs.

The French program of balloon-borne experiments on the effects of cosmic rays on living organisms is reviewed. Past experiments on paramecium and plant growth rates following specimen recovery and the effects of heavy ions, which would be encountered in long-term space flights, on yeast mutations and the nervous system of rats, which were conducted using a thermally-regulated container in a balloon flying at 120,000 feet for six to nine hours, are indicated. Recent experiments using a remote-controlled apparatus to study the immediate response of paramecium growth kinetics to cosmic radiation are presented, noting the observed increased cell growth rates upon cosmic ray exposure, and studies of cosmic ray effects on drosophila mutations and genetic recombination are reported. Future experiments planned for a 20-h transmediterranean balloon flight are presented which are intended to study cosmic ray effects on Artemia salina and tobacco seed development, and drosophila genetic recombination rates. A.L.W.

A80-13476 # **Investigation of thermoregulatory mechanisms (Issledovanie mekhanizmov termoreguliatsii).** Iu. N. Chusov (Vladimirskii Gosudarstvennyi Pedagogicheskii Institut, Vladimir, USSR). *Fiziologiia Cheloveka*, vol. 5, Sept.-Oct. 1979, p. 827-833. 37 refs. In Russian.

The paper investigates the effect of cooling in ice water on the behavior of certain psychophysiological processes in man. The study establishes the dependence of the trend and value of the arising changes on total heat loss, as well as on the body resistivity and the regime of voluntary muscular activity during the cooling period. A critical value of cooling load is determined which significantly reduces the level of the processes considered. S.D.

A80-13477 # **Water-electrolyte metabolism and the function of human kidneys at mountain altitudes (Vodno-solevoi obmen i funktsiia pochek cheloveka v usloviiakh vysokogor'ia).** V. I. Korol'kov, M. A. Dotsenko, A. I. Grigor'ev, and G. I. Kozyrevskaia. *Fiziologiia Cheloveka*, vol. 5, Sept.-Oct. 1979, p. 849-854. 26 refs. In Russian.

A80-13505 **Difference between end-tidal and arterial P/CO2/ in exercise.** N. L. Jones, D. G. Robertson, and J. W. Kane (McMaster University, Hamilton, Ontario, Canada). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 47, Nov. 1979, p. 954-960. 14 refs.

A80-13506 * **Plasma volume during stress in man - Osmolality and red cell volume.** J. E. Greenleaf, V. A. Convertino, and G. R. Mangseth (NASA, Ames Research Center, Biomedical Research Div., Moffett Field, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 47, Nov. 1979, p. 1031-1038. 30 refs.

The purpose was (1) to test the hypothesis that in man there is a range of plasma osmolality within which the red cell volume (RCV) and mean corpuscular volume (MCV) remain essentially constant and (2) to determine the upper limit of this range. During a variety of stresses - submaximal and maximal exercise, heat and altitude exposure, +Gz acceleration, and tilting - changes in plasma osmolality between -1 and +13 mosmol/kg resulted in essentially no change in the regression of percent change in plasma volume (PV) calculated from a change in hematocrit (Hct) on that calculated from a change in Hct + hemoglobin (Hb), i.e., the RCV and MCV were constant.

Factors that do not influence RCV are the level of metabolism, heat exposure at rest, and short-term orthostasis (heat-to-foot acceleration). Factors that may influence RCV are exposure to high altitude and long-term orthostasis (head-up tilting). Factors that definitely influence RCV are prior dehydration and extended periods of stress. Thus, either the Hct or the Hct + Hb equations can be used to calculate percent changes in PV under short-term periods of stress when the change in plasma osmolality is less than 13 mosmol/kg. (Author)

A80-13507 **Thermogenic control during exercise in a cold environment.** S.-I. Hong (John B. Pierce Foundation Laboratory, New Haven, Conn.) and E. R. Nadel (Yale University, New Haven, Conn.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 47, Nov. 1979, p. 1084-1089. 15 refs. Grant No. NIH-ES-00354.

A80-13526 # **Foundation of hyperbaric physiology (Osnovy giperbaricheskoi fiziologii).** G. L. Zal'tsman, G. A. Kuchuk, and A. G. Gurgenidze. Leningrad, Izdatel'stvo Meditsina, 1979. 320 p. 344 refs. In Russian.

The book outlines achievements in human and animal physiology under conditions of elevated pressures of gaseous and aqueous environments. Two problem areas are discussed in detail: the physiological characteristics of hyperbaric habitat, and the functional state of the organism in different hyperbaric environments. Attention is given to the effect, on man and animals, of hyperbaric oxygen, air, helium-oxygen and argon-oxygen environments during short- and long-term exposures under low, medium, high and superhigh pressures. The observed shifts are examined on the organism, organ, and cellular levels. Practical application of respiratory gas mixtures under pressure is also discussed. S.D.

A80-13548 * **Amino acids in the Yamato carbonaceous chrondrite from Antarctica.** A. Shimoyama, C. Ponnamperuma (Maryland, University, College Park, Md.), and K. Yanai (National Institute of Polar Research, Tokyo, Japan). *Nature*, vol. 282, Nov. 22, 1979, p. 394-396. 16 refs. Grant No. NGR-21-002-317.

Evidence for the presence of amino acids of extraterrestrial origin in the Antarctic Yamato carbonaceous chrondrite is presented. Hydrolyzed and nonhydrolyzed water-extracted amino acid samples from exterior, middle and interior portions of the meteorite were analyzed by an amino acid analyzer and by gas chromatography of N-TFA-isopropyl amino acid derivatives. Nine protein and six nonprotein amino acids were detected in the meteorite at abundances between 34 and less than one nmole/g, with equal amounts in interior and exterior portions. Nearly equal abundances of the D and L enantiomers of alanine, aspartic acid and glutamic acid were found, indicating the abiotic, therefore extraterrestrial, origin of the amino acids. The Antarctic environment and the uniformity of protein amino acid abundances are discussed as evidence against the racemization of terrestrially acquired amino acids, and similarities between Yamato amino acid compositions and the amino acid compositions of the Murchison and Murray type II carbonaceous chrondrites are indicated. A.L.W.

A80-13549 * **Quantification of monocarboxylic acids in the Murchison carbonaceous meteorite.** J. G. Lawless (NASA, Ames Research Center, Extraterrestrial Research Div., Moffett Field, Calif.) and G. U. Yuen (Arizona State University, Tempe, Ariz.). *Nature*, vol. 282, Nov. 22, 1979, p. 396-398. 30 refs.

The abundances of some of the straight- and branched-chain isomers of the monocarboxylic acids found in the Murchison carbonaceous chondrite are determined. Monocarboxylic acids extracted from a crushed sample of Murchison interior were quantified by means of gas chromatography and mass spectroscopy after a spiking solution of deuterated analogues of 11 carboxylic acids had been added. Monocarboxylic acid abundances are found to range between 1.83 and 0.01 micromole/g, which is significantly higher than Murchison amino acid concentrations, and to decrease with increasing carbon number for both branched and unbranched molecules. The results are interpreted to support the abiotic extraterrestrial synthesis of monocarboxylic acids. Possible mechanisms leading to the equal synthesis of branched and each unbranched carboxylic acid with the same carbon number are considered, noting that the Fischer-Tropsch Type mechanism by itself is incapable of accounting for the observed distributions. A.L.W.

A80-13590 **Microwaves - Effect on thermoregulatory behavior in rats.** S. Stern, L. Margolin, B. Weiss, S.-T. Lu, and S. M. Michaelson (Rochester, University, Rochester, N.Y.). *Science*, vol. 206, Dec. 7, 1979, p. 1198-1201. 23 refs. Research supported by the U.S. Department of Energy.

Rats, with their fur clipped, pressed a lever to turn on an infrared lamp while in a cold chamber. When they were exposed to continuous-wave microwaves at 2450 MHz for 15-minute periods, the rate at which they turned on the infrared lamp decreased as a function of the microwave power density, which range between 5 and 20 mW/sq cm. This result indicates that behaviorally significant levels of heating may occur at an exposure duration and intensities that do not produce measurable changes in many other behavioral measures or in colonic temperature. Further study of how microwaves affect thermoregulatory behavior may help us understand such phenomena as the reported 'nonthermal' behavioral effects of microwaves. (Author)

A80-13591 **Eye movements in paralyzed cats induced by drugs and sympathetic stimulation.** R. A. Linsenmeier and B. G. Hertz (Northwestern University, Evanston, Ill.). *Vision Research*, vol. 19, no. 11, 1979, p. 1249-1252. 9 refs. Grants No. NIH-5-R01-EY-00206; No. NIH-5-F32B-EY-05015; No. NIH-5-F32-EY-05193.

Cat eye movements were measured in animals anesthetized with urethane and paralyzed with high doses of gallamine. The eyes were relatively stable under these conditions, but when bicuculline, strychnine or methoxamine (Vasoxyl) was then given intraveneously, or when the animals were made hypoxic by respiring them with 5% O2, displacements in eye position of 0.5-2.75 deg were observed. A cervical sympathectomy reduced the eye movements caused by bicuculline and strychnine, but did not prevent the movements caused by any of the agents tested. Electrical stimulation of the cervical sympathetic nerve caused eye movements whose maximum amplitude was similar to those caused by drugs. (Author)

A80-13859 **Calculation of the surface on which the corneal flash is located with application to the development of a system for recording eye movement.** V. I. Kushpil' and V. P. Smirnov. *(Optiko-Mekhanicheskaia Promyshlennost', vol. 46, Mar. 1979, p. 39-41.) Soviet Journal of Optical Technology*, vol. 46, Mar. 1979, p. 160-162. 6 refs. Translation.

An expression is given for calculating the surface on which the corneal flash is located for arbitrary placement of the light source. A scheme for restricting the light beams when reproducing the corneal flash through an optical system and an expression for calculating the location and size of the entrance pupil of this system are discussed. (Author)

A80-13864 **Humans deprived of normal binocular vision have binocular interactions tuned to size and orientation.** D. M. Levi, R. S. Harwerth, and E. L. Smith, III (Houston, University, Houston, Tex.). *Science*, vol. 206, Nov. 16, 1979, p. 852-854. 20 refs. Grants No. NIH-R01-EY-01728; No. NIH-R01-EY-01139; No. NIH-K07-EY-000052.

The nature and extent of binocular interactions in humans deprived of normal visual experience by strabismus, amblyopia or both is investigated. Subjects viewed two matched cathode-ray-tube displays in a mirror stereoscope, and were asked to discriminate a test grating presented to one eye from a blank field or grating background presented to the other eye. It is found that a background grating at a spatial frequency greater than the threshold decreased the contrast sensitivity of the other eye to test gratings similar in frequency for observers with normal binocular vision and with abnormal binocular vision, although the viewers with abnormal binocular vision failed to exhibit binocular summation at frequencies at or below the threshold. It is suggested that the normal excitatory connections between the two eyes are disrupted by the lack of binocular visual experience, while inhibitory interactions are not affected. A.L.W.

A80-13999 **The importance of pattern information for the resolution of depth-ambiguous apparent motion.** D. G. White, P. Wenderoth, and I. S. Curthoys (Sydney University, Sydney, Australia). *Perception and Psychophysics*, vol. 26, no. 5, Nov. 1979, p. 355-362. 15 refs. Australian Research Grants Committee Grant No. A74/15177.

A single apparent motion display can result in the perception of a rigid three-dimensional motion or a plastic, two-dimensional motion. Previous studies have found that the principal determinant of the perceptual outcome is the temporal properties of the apparent motion stimulus. Here it is shown that the form properties of the stimulus are another determinant and that, in some situations, they may become a more powerful determinant than the temporal properties. (Author)

A80-14000 * **Choice reaction time to movement of eccentric visual targets during concurrent rotary acceleration.** J. A. Hamerman (San Jose State University, San Jose, Calif.). *Perception and Psychophysics*, vol. 26, no. 5, Nov. 1979, p. 369-373. 18 refs. Grant No. NGL-05-046-002.

This study investigates the influence of concurrent rotary acceleration on choice reaction time (RT) to a small, accelerating visual cursor on a cathode-ray tube. Subjects sat in an enclosed rotating device at the center of rotation and observed a 3-mm dot accelerating at different rates across a cathode-ray tube. The dot was viewed at various eccentricities under conditions of visual stimulation alone and with concurrent rotary acceleration. Subjects responded to both vertical and horizontal dot movements. There was a significant inverse relationship between choice RT and level of dot acceleration (p less than .001), and a significant direct relationship between choice RT and eccentricity (p less than .001). There was no significant difference between choice RT to vertical or horizontal dot motion (p greater than .25), and choice RT was not significantly affected by concurrent rotary acceleration (p greater than .10). The results are discussed in terms of the effects of vestibular stimulation on choice RT to visual motion. (Author)

A80-14097 # **Radiation and DNA (Radiatsiia i DNK).** N. I. Riabchenko. Moscow, Atomizdat, 1979. 192 p. 615 refs. In Russian.

Consideration is given to the effects of ionizing radiation on the structure of DNA. Physical and chemical methods of determining radiation damage to the primary (polynucleotide chain and nitrogenous base) and secondary (helical) structure of DNA are discussed, and the effects of ionizing radiation on deoxyribonucleoprotein complexes are considered. The radiolysis of DNA in vitro and in bacterial and mammalian cells is examined and cellular mechanisms for the repair of radiation-damaged DNA are considered, taking into account single-strand and double-strand breaks, gamma-radiation damage and deoxyribonucleoprotein-membrane complex damage. Postradiation DNA degradation in bacteria and lymphatic cells is also discussed. A.L.W.

A80-14098 # **Memory and adaptation (Pamiat' i adaptatsiia).** R. Iu. Il'iuchenok. Novosibirsk, Izdatel'stvo Nauka, 1979. 192 p. 357 refs. In Russian.

The monograph analyzes physiological mechanisms on adaptation as functions of the efficiency of the activity of central regulatory systems and memory. Analysis of data on human adaptation to various climatic-geographic conditions revealed three adaptive stages based on different physiological mechanisms. Particular attention is given to memory processes and the functional asymmetry of the brain during the various adaptive stages. S.D.

A80-14099 # **Visual information and vision of robots (Vizual'naia informatsiia i zrenie robotov).** G. P. Katys. Moscow, Izdatel'stvo Energiia, 1979. 176 p. 111 refs. In Russian.

The book discusses information systems of robots, visual information processing in the visual organs of animals and robots, as well as systems of spatial filtration, functional transformation and pattern recognition. The discussion demonstrates the capabilities of visual information processing systems in enhancing the independence of robots and extending their potential and field of applications. S.D.

A80-14165 # **Prediction of the physical work capacity of persons at mountain altitudes (Prognozirovanie fizicheskoi rabotosposobnosti liudei v vysokogor'e).** A. L. Maksimov. *Voenno-Meditsinskii Zhurnal*, Sept. 1979, p. 47, 48. In Russian.

A80-14166 # **Characteristics of oculomotor responses and their sensory components during simulation of low-altitude flights (Kharakteristika glasodvigatel'nykh reaktsii i ikh sensornykh komponentov pri modelirovanii poletov na malykh vysotakh).** V. I. Babiiak. *Voenno-Meditsinskii Zhurnal*, Sept. 1979, p. 49-52. In Russian.

Simulated laboratory experiments were conducted on 25 healthy (normal vision) male subjects (18-22 yr) in order to study oculomotor responses and their sensory components as related to low-altitude flights. The objectives were (1) to study the dynamics of the angular velocity of the optokinetic nystagmus (OKN) slow component as a function of changes in the angular velocity of the optokinetic stimuli (OKSs); (2) to identify the OKN characteristics; and (3) to determine the quality of OKSs perception as a function of their angular displacement and OKN characteristics. It is found that the quality of perceiving OKSs is determined by the indices of the OKN slow component, which may be utilized for special professional selection of potential candidates. S.D.

A80-14257 # **Interhemispheric relationships of monoamine oxidase activity and norepinephrine content in the cortical centers of the skin and motor analyzers in the human brain (O mezhpolusharnykh sootnosheniiakh monoaminoksidaznoi aktivnosti i soderzhaniia noradrenalina v korkovykh tsentrakh kozhnogo i dvigatel'nogo analizatorov mozga cheloveka).** V. S. Kononenko (L'vovskii Meditsinskii Institut, Lvov, Ukrainian SSR). *Fiziologicheskii Zhurnal* (Kiev), vol. 25, Sept.-Oct. 1979, p. 529-535. 21 refs. In Russian.

A80-14258 # **Effect of human exposure to a nitrogen-oxygen environment at 5-12 kgf/sq cm on certain indices of the higher nervous activity (Vliianie prebyvaniia cheloveka v azotnokislorodnoi srede pod davleniem 5-12 kgs/sq cm na nakotorye pokazateli vysshei nervnoi deiatel'nosti).** S. A. Guliar, E. V. Moiseenko, S. S. Sirota, V. A. Grinevich, and V. K. Skudin (Akademiia Nauk Ukrainskoi SSR, Institut Fiziologii, Kiev, Ukrainian SSR). *Fiziologicheskii Zhurnal* (Kiev), vol. 25, Sept.-Oct. 1979, p. 576-584. 28 refs. In Russian.

A80-14259 # **Current problems of hypothermy (Sovremennye problemy gipotermii).** K. V. Ostashkov (Odesskii Gosudarstvennyi Universitet, Odessa, Ukrainian SSR). *Fiziologicheskii Zhurnal* (Kiev), vol. 25, Sept.-Oct. 1979, p. 585-592. 78 refs. In Russian.

A historical review is presented of the various effects of hypothermy on warm-blooded animals and man. In the course of body cooling, each organ traverses an intrinsic state of 'biological null' where functional activity comes to an end. Attention is given to hypothermic (hibernation-induced) surgeries involving the anabiotic stage. Application of cold in biology and medicine aims at reducing metabolism and oxygen demand in all tissues, including the cerebral tissue. The use of hypothermic pharmacodynamic drugs in anesthesiology is also discussed. The problem of the most favorable reduced body temperature still remains unsolved. S.D.

A80-14260 # **Catecholamines and chemical thermoregulation during cold acclimation (Katekholaminy i khimicheskaia termoreguliatsiia pri akklimatsii k kholodu).** V. I. Sobolev (Donetskii Gosudarstvennyi Universitet, Donetsk, Ukrainian SSR). *Fiziologicheskii Zhurnal* (Kiev), vol. 25, Sept.-Oct. 1979, p. 593-603. 125 refs. In Russian.

Evidence is presented, indicating that catecholamines take part in the reactions of the body to the impact of cold of varying intensity and duration. It is shown that the thermogenic effect of norepinephrine after cold acclimation is mainly associated with the contracile activity of muscles. According to a specified mechanism for the action of catecholamines on chemical thermoregulation, cold stimulates the yield of endogenic catecholamines and thyroid hormones. Reduction of oxidation efficiency is due both to the dissociative action of fatty acids and to the effect of thyroid hormones on this system. As a result of all these processes, additional heat is released, which indeed gives rise to the calorigenic effect of catecholamines. S.D.

A8C-14382 # **Separation of motions in the problem of stabilizing biped walking (O razdelenii dvizhenii v zadache stabilizatsii dvunogoi khod'by).** Iu. V. Bolotin. *Akademiia Nauk SSSR, Izvestiia, Mekhanika Tverdogo Tela,* July-Aug. 1979, p. 48-53. In Russian.

A80-14793 **Medical applications of aerospace technology.** D. C. Harrison, E. V. Schmidt, and L. F. Brennan (Stanford University, Stanford, Calif.). In: Space - The best is yet to come; Proceedings of the Sixteenth Space Congress, Cocoa Beach, Fla., April 25-27, 1979. Cocoa Beach, Fla., Canaveral Council of Technical Societies, 1979, p. 6-15 to 6-24. 11 refs.

The paper reviews methods by which biomedical application teams diffuse new technology from aerospace related research to medical applications. These teams are sponsored by NASA for applying aerospace technology to the solution of significant problems in biomedical research and clinical medicine and include laboratory and clinical applications. The technology transfer process is illustrated with specific examples which include biomedical electrodes, biotelemetry for pediatric gait analysis, and intracranial pressure monitoring, noting the need for a multidisciplinary approach. Innovative technology currently developed such as portable speech prosthesis, liquid circulating garments, and noninvasive determination of bone properties are described, and impediments to biomedical technology transfer are noted. A.T.

A80-14797 **Interdependence between the saccadic and the continuous eye movement control systems.** D. Bouis (Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung, Karlsruhe, West Germany) and G. Vossius (Karlsruhe, Universität, Karlsruhe, West Germany). In: A link between science and applications of automatic control; Proceedings of the Seventh Triennial World Congress, Helsinki, Finland, June 12-16, 1978. Volume 1. Oxford and New York, Pergamon Press, 1979, p. 489-493. 8 refs.

The eye movements are considered to be under double control: one is continuous and regulates the speed of the tracking movement of the eye, the other is discontinuous and regulates the position of the eye by eye jumps named saccades. This paper covers the control problems of the total system which stems from the collaboration of the two branches. The controller takes the size of the error in position and in speed into account. It executes the error correction in a nearly optimal way through saccades or by varying the tracking speed. The experimental evidence and a mathematical model of the functional structure of the system including the optimization strategy are presented. (Author)

A80-14798 **Parameter estimation of radiocardiogram using a minicomputer.** K. Minato, M. Kuwahara (Kyoto University, Uji, Japan), Y. Yonekura, and A. Hirakawa (Kyoto University Hospital, Kyoto, Japan). In: A link between science and applications of automatic control; Proceedings of the Seventh Triennial World Congress, Helsinki, Finland, June 12-16, 1978. Volume 1. Oxford and New York, Pergamon Press, 1979, p. 533-540. 8 refs.

Radiocardiography has been widely used as a method for the quantification of cardiac output by applying the principle of the dye dilution method. In this paper, an efficient least square parameter estimation procedure in a frequency domain for a linear system with time delays, which is the model of transport process appearing in the radiocardiogram, is shown. The procedure is based on properties of Fourier transformation and a concept of a feature space, and parameter sensitivity analysis is applied to study behavior of parameters on the model. Some analyzed results of radiocardiograms are shown and it is verified that the procedure is sufficiently useful and efficient for routine clinical use. (Author)

A80-14801 **Integrated walking robot simulation and modelling.** D. E. Okhotsimskii, A. K. Platonov (Akademiia Nauk SSSR, Institut Prikladnoi Matematiki, Moscow, USSR), G. V. Gerkhen-Gubanov, V. G. Kuznetsov (Leningradskii Mekhanicheskii Institut, Leningrad, USSR), E. A. Devianin, A. V. Lenskii (Moskovskii Gosudarstvennyi Universitet, Moscow, USSR), V. S. Gurfinkel, and A. Iu. Shneider (Akademiia Nauk SSSR, Institut Problem Peredachi Informatsii, Moscow, USSR). In: A link between science and applications of automatic control; Proceedings of the Seventh Triennial World Congress, Helsinki, Finland, June 12-16, 1978. Volume 2. Oxford and New York, Pergamon Press, 1979, p. 917-924. 20 refs.

The paper discusses some problems of development software and hardware for controlling the motion of an integrated walking robot. A six-legged vehicle supplied with a scanning distance-measuring system was taken as a reasonable configuration. Some results of computer simulation as well as results of the investigations carried out with computer-controlled laboratory models, are presented. (Author)

A80-15225 * **Problems and potentialities of cultured plant cells in retrospect and prospect.** F. C. Steward and A. D. Krikorian (New York, State University, Stony Brook, N.Y.). In: Plant cell and tissue culture: Principles and applications. Columbus, Ohio State University Press, 1979, p. 221-262. 125 refs. Grants No. NIH-GM-09609; No. NsG-7270; Contract No. NAS2-7846.

The past, present and expected future accomplishments and limitations of plant cell and tissue culture are reviewed. Consideration is given to the pioneering insights of Haberlandt in 1902, the development of culture techniques, and past work on cell division, cell and tissue growth and development, somatic embryogenesis, and metabolism and respiration. Current activity in culture media and technique development for plant regions, organs, tissues, cells, protoplasts, organelles and embryos, totipotency, somatic embryogenesis and clonal propagation under normal and space conditions, biochemical potentialities, and genetic engineering is surveyed. Prospects for the investigation of the induced control of somatic cell division, the division of isolated protoplasts, the improvement of haploid cell cultures, liquid cultures for somatic embryogenesis, and the genetic control of development are outlined. A.L.W.

A80-15231 # **The use of a positive displacement air cycle machine in a closed-loop environmental control system.** L. L. Midolo (USAF, Flight Dynamics Laboratory, Wright-Patterson AFB, Ohio). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-6.* 9 p. Members, $1.50; nonmembers, $3.00.

The paper describes a closed-loop environmental control system (ECS) concept which uses a positive displacement air cycle machine (PD-ACM) as a component in the system. Aircraft closed-loop ECS take-off-gross-weight penalty savings and life cycle cost benefits are developed and compared with conventional open-loop ECS. The PD-ACM performance is described and shown to be a competitive air cycle machine for use with the potentially low life cycle cost closed-loop ECS concept. (Author)

A80-15238 # **A study of the reduction of carbon dioxide in a silent electric discharge.** R. S. Luce (Lockheed Missiles and Space Co., Inc., Sunnyvale, Calif.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-13.* 8 p. Members, $1.50; nonmembers, $3.00.

An investigation of the reduction of CO2 to O2 and CO in a silent electric discharge was undertaken with the intent of correctly understanding the process and operating it at optimum efficiency. The study led to an accurate description of the role of current in CO2 reduction in the induced ionized plasma. Voltage and frequency were important only as inducers of current in the plasma. Pressure and temperature are minimally influential in the process. Flow rate is important only in that gas residence time in the plasma is proportionally related to CO2 reduction. The large power consumption in the process was recognized as resulting from the low power factor of the reactor vessel which behaves as a dynamic electrical capacitor. The power factor was subsequently improved by an inductive element to make the reactor vessel capacitance part of a resonant circuit. It was found that the CO2 reduction process was most efficient in terms of power versus reduction rate when a voltage was employed that was only slightly higher than that needed to induce the plasma. The study concluded with a demonstration that with this apparatus one liter of CO2 could be reduced with an expenditure of less than 360 kilojoules (100 watt-hours) of energy. Had absolute efficiency been possible, 11.95 kilojoules (3.29 watt-hours) would have been required for the same result. (Author)

A80-15240 * # **High-pressure protective systems technology.** H. C. Vykukal and B. W. Webbon (NASA, Ames Research Center, Moffett Field, Calif.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-15.* 16 p. 14 refs. Members, $1.50; nonmembers, $3.00.

Space suit assemblies developed in the past provide candidate concepts to meet future extravehicular-activity requirements. The paper is concerned with the development of the modular 8-psi Ames AX-3 high-pressure suit assembly on the basis of a review of existing suit assemblies, component developments, and mobility exercises. The discussion covers description of the AX-3 suit, its performance, and technology developments. In conclusion, high-pressure space suit technology is demonstrated with the development of the Ames AX-3 suit assembly. Several photographs and diagrams supplement the text. S.D.

A80-15241 * # **Design and development of a trace contaminant removal canister for Spacelab.** C. D. Ray, J. W. Littles, J. L. Blair (NASA, Marshall Space Flight Center, Huntsville, Ala.), and R. B. Jagow (Lockheed Missiles and Space Co., Inc., Sunnyvale, Calif.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-16.* 11 p. 15 refs. Members, $1.50; nonmembers, $3.00. NASA-supported research.

The paper describes the overall approach used by NASA-MSFC to design and develop a trace contaminant removal canister for Spacelab. The elements of this approach include the establishment of a trace contaminant load model, analysis and testing to define a preliminary design, development testing to verify the adequacy of the selected design, and testing to define a suitable canister location in the transfer tunnel ventilation system. The canister utilizes a catalyst material which is effective in removing carbon monoxide at room temperature, as well as plain and acid treated charcoal. The canister alone will control all contaminants in the load model below their maximum allowable concentration (MAC) levels without assistance from the baseline environmental control system (ECS) except for methyl alcohol and ammonia. V.T.

A80-15243 # **Development of a Space Shuttle plant growth unit.** R. B. Maine, P. A. Wagner, T. M. Olcott, and R. S. Luce (Lockheed Missiles and Space Co., Inc., Sunnyvale, Calif.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-19.* 11 p. 7 refs. Members, $1.50; nonmembers, $3.00.

The Space Shuttle Plant Growth Experiment studies the effects of space flight on plant lignification. The hardware required to support scientific investigations designed to examine whether the polymer lignin will aid plants in growing upright against the force of gravity is examined. Experiments are conducted using a self-contained package which holds six plant growth chambers each containing 16 plant seedlings for a total of 96 plants. Attention is given to the subsystems that provide lighting, thermal control, instrumentation/data management, power and control/display functions meeting both environmental and data acquisition requirements. C.F.W.

A80-15251 * # **Closed-ecology life support systems /CELSS/ for long-duration, manned missions.** M. Modell (MIT, Cambridge, Mass.) and J. M. Spurlock (Georgia Institute of Technology, Atlanta, Ga.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-27.* 7 p. 10 refs. Members, $1.50; nonmembers, $3.00. NASA-sponsored research.

Studies were conducted to scope the principal areas of technology that can contribute to the development of closed-ecology life support systems (CELSS). Such systems may be required for future space activities, such as space stations, manufacturing facilities, or colonies. A major feature of CELSS is the regeneration of food from carbon in waste materials. Several processes, using biological and/or physico-chemical components, have been postulated for closing the recycle loop. At the present time, limits of available technical information preclude the specification of an optimum scheme. Nevertheless, the most significant technical requirements can be determined by way of an iterative procedure of formulating, evaluating and comparing various closed-system scenario. The functions features and applications of this systems engineering procedure are discussed. (Author)

A80-15252 # **Use of phytotrons in assessing environmental requirements for plants in space habitats.** C. D. Raper, Jr., J. F. Thomas (North Carolina State University, Raleigh, N.C.), and T. A. Pollock (East Carolina University, Greenville, N.C.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-28.* 6 p. 12 refs. Members, $1.50; nonmembers, $3.00.

Phytotrons are laboratories designed for study of plant responses to artificial light, temperature, humidity, nutrition, and carbon dioxide composition of the atmosphere. Thus, phytotrons provide an existing capability for determining the environmental requirements for higher plant culture in a space habitat. Coupled with mathematical modeling, data from phytotron experimentation can become the basis for projections of amounts of material that are tied up in the agricultural system at any time as well as the rate of removal of carbon dioxide and evolution of oxygen. Such information is critical for feasibility studies of the life support system. Other examples of critical information that can be gained in phytotron experimentation will be discussed. (Author)

A80-15253 * # **Recycling plant, human and animal wastes to plant nutrients in a closed ecological system.** H. P. Meissner and M. Modell (MIT, Cambridge, Mass.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-29.* 6 p. Members, $1.50; nonmembers, $3.00. NASA-supported research.

The essential minerals for plant growth are nitrogen, phosphorous, potassium (macronutrients), calcium, magnesium, sulfur (secondary nutrients), iron, manganese, boron, copper, zinc, chlorine, sodium, and molybdenum (micronutrients). The first step in recycling wastes will undoubtedly be oxidation of carbon and hydrogen to CO2 and H2O. Transformation of minerals to plant nutrients depends upon the mode of oxidation to define the state of the nutrients. For the purpose of illustrating the type of processing required, ash and off-gas compositions of an incineration process were assumed and subsequent processing requirements were identified. Several processing schemes are described for separating out sodium chloride from the ash, leading to reformulation of a nutrient solution which should be acceptable to plants. (Author)

A80-15254 # **Controlled-environment agricultural systems as food sources for large space habitats.** J. M. Phillips (Arizona Research Associates, Inc., Tucson, Ariz.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-30.* 7 p. 22 refs. Members, $1.50; nonmembers, $3.00.

Controlled-environment agriculture (CEA), presently used in countries that are congested (Japan, Europe) or have severe weather problems (Soviet Union, Abu Dhabi), may be applied in the near future towards developing large space habitats into closed life support systems. CEA systems have provided such benefits as increased crop yield, accelerated growth rates, efficient resource utilization and predictability of production, but their drawback is expense in terms of capital, energy, labor, and materials. Applying CEA technology in space (using recycled wastes) could generate beneficial spin-offs for earth, including development of more efficient greenhouses and recycling programs, productivity research in agriculture, and increased knowledge regarding the quantitative requirements to sustain human life. J.P.B.

A80-15255 * # **Food technology in space habitats.** M. Karel (MIT, Cambridge, Mass.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-31.* 6 p. 10 refs. Members, $1.50; nonmembers, $3.00. NASA-supported research.

The research required to develop a system that will provide for acceptable, nutritious, and safe diets for man during extended space missions is discussed. The development of a food technology system for space habitats capable of converting raw materials produced in the space habitats into acceptable food is examined. C.F.W.

A80-15256 * # **Bosch - An alternate CO2 reduction technology.** D. B. Heppner, T. M. Hallick (Life Systems, Inc., Cleveland, Ohio), D. C. Clark (NASA, Marshall Space Flight Center, Huntsville, Ala.), and P. D. Quattrone (NASA, Ames Research Center, Moffett Field, Calif.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-32.* 9 p. 11 refs. Members, $1.50; nonmembers, $3.00. Contracts No. NAS8-30891; No. NAS8-32492; No. NAS2-8666.

The Bosch process is the most promising CO2 reduction concept for future prolonged space missions. The paper presents the design of a three-person-capacity preprototype B-CRS (Bosch-based CO2 Reduction Subsystem). It is sized to reduce 3.0 kg/d CO2 generated by the crew and to supply the product water to an O2 generation subsystem to obtain O2. The design supports future development of the B-CRS as an alternative CO2 reduction subsystem to the Sabatier-based process presently under test at NASA. The discussion covers the Bosch CO2 reduction concept, process and hardware description, performance parameters, design specifications, subsystem schematic and operation, mechanical subsystem summary, control/monitor instrumentation, and subsystem packaging. A B-CRS with a proven technological base is an attractive CO2 reduction subsystem that eliminates overboard venting. S.D.

A80-15257 * # **Development of the electrochemically regenerable carbon dioxide absorber for portable life support system application.** R. R. Woods, D. B. Heppner, R. D. Marshall (Life Systems, Inc., Cleveland, Ohio), and P. D. Quattrone (NASA, Ames Research Center, Moffett Field, Calif.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-33.* 9 p. 12 refs. Members, $1.50; nonmembers, $3.00. Contract No. NAS2-8666.

As the length of manned space missions increase, more ambitious extravehicular activities (EVAs) are required. For the projected longer mission the use of expendables in the portable life support system (PLSS) will become prohibited due to high launch weight and volume requirements. Therefore, the development of a regenerable CO2 absorber for the PLSS application is highly desirable. The paper discusses the concept, regeneration mechanism, performance, system design, and absorption/regeneration cycle tessting of a most promising concept known as ERCA (Electrochemically Regenerable CO2 Absorber). This concept is based on absorbing CO2 into an alkaline absorbent similar to LiOH. The absorbent is an aqueous solution supported in a porous matrix which can be electrochemically regenerated on board the primary space vehicle. With the metabolic CO2 recovery the ERCA concept results in a totally regenerable CO2 scrubber. The ERCA test hardware has passed 200 absorption/regeneration cycles without performance degradation. S.D.

A80-15258 # **EDC - A regenerable CO2 removal subsystem for an enhanced capability orbiter.** R. D. Marshall, F. H. Schubert, and P. Y. Yang (Life Systems, Inc., Cleveland, Ohio). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-34.* 12 p. 17 refs. Members, $1.50; nonmembers, $3.00.

The Electrochemical Depolarized Carbon Dioxide (CO2) Concentrator (EDC) is being developed as an advanced CO2 removal concept to replace the baseline lithium hydroxide (LiOH) system. The EDC offers significant weight savings through reduced expendables for projected enhanced capability Orbiter missions. The EDC can be integrated with existing Shuttle resources or, as mission profiles require, combined with Water Vapor Electrolysis (WVE) for oxygen (O2) regeneration to further reduce mission expendables. The EDC and EDC/WVE subsystems were evaluated for: (1) the baseline Shuttle when expanded to accommodate a crew of seven, (2) an Extended Duration Orbiter (EDO) with a Power Extension Package (PEP) to reduce fuel cell expendables and (3) an EDO with a full capability power module to eliminate fuel cell expendables. Weight savings attainable using EDC CO2 Removal Subsystem are 59 kg (130 lb), 218 kg (480 lb), and 363 kg (800 lb), respectively, for the mission options evaluated. (Author)

A80-15260 # **Development of an improved Sabatier reactor.** P. J. Birbara and F. Sribnik (United Technologies Corp., Hamilton Standard Div., Windsor Locks, Conn.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-36.* 10 p. 7 refs. Members, $1.50; nonmembers, $3.00.

This paper presents the results of recent experimental and analytical studies of a Sabatier reactor where carbon dioxide and hydrogen in the presence of a catalyst react to form water, methane, and heat. The work undertaken in this program was aimed at simplification of design and control concepts of Sabatier subsystems. To this end, effort was expended to the development of UASC-151G, a highly active, physically durable catalyst composed of ruthenium on alumina. UASC-151G is five times as active as that supplied for the SSP program. The use of this improved catalyst has very significant effects on the Sabatier reaction subsystem design including: (1) lower temperature starting capability, (2) simiplification of active control and instrumentation requirements, (3) simplified reactor design, (4) improved reliability, and (5) high conversion efficiencies using only small amounts of catalyst. Reasonable agreement between test and computer simulation has been obtained for temperature and lean component conversion efficiencies for both steady-state and cyclic operation. (Author)

A80-15266 # **/Hard Hat/ EVA, personal equipment to support large scale construction in space.** R. C. Wilde (United Technologies Corp., Hamilton Standard Div., Windsor Locks, Conn.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-43.* 9 p. Members, $1.50; nonmembers, $3.00.

During the next 20 years, extravehicular activity (EVA) to assemble large-scale space structures in orbit will require equipment with high cycle life, high mobility joints and improved hygiene for use up to 8 hours during both orbital light and dark periods, at pressures up to 0.54 Atm (to eliminate the purge oxygen prebreathe). The pressure enclosure will feature no don-doff assistance, wrist-mounted displays and controls, the movable scye bearing (to allow overhead arm movement), and modular construction for comfort. The materials evaluated for up to 29 kg of radiation shielding are metallic glass, multidrawn Chromel-R metal fabric and flexible laminated sheet material. The transmissibility of wide angle helmet visors will be automatically controlled by miniature photo sensors, while there is a novel concept of thermal insulation for the gloves. The potassium carbonate liquid sorbent process (regenerable) may replace lithium hydroxide (non-regenerable) as a carbon dioxide remover in the life support system, and thermal control will be effected by a hybrid concept: a sublimator/phase change material, radiator approach. J.P.B.

A80-15268 # **Environmental systems for aquatic animal studies in the Shuttle era.** R. B. Hoffman (General Electric Co., Space Div., Houston, Tex.), S. R. Hunt, Jr. (General Electric Co., Space Div., Valley Forge, Pa.), G. Kring, and G. Wirths (Dornier System GmbH, Friedrichshafen, West Germany). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-45.* 8 p. 9 refs. Members, $1.50; nonmembers, $3.00.

Open and closed life support systems for aquatic animals utilized in parabolic aircraft flight and spaceborne biomedical experiments are reviewed. The gas-permeable polyethylene bags used to house fish eggs on the Skylab and ASTP missions, the plexiglass fish cages used in parabolic flight experiments and the Biosatellite frog egg modules are described as instances of short duration open systems. Long duration closed systems proposed as part of the Life Sciences Laboratory Equipment inventory for Spacelab are detailed, including a modified Dornier fish incubator for behavioral, developmental and vestibular investigations, and an integrated modular frog-holding facility containing a specimen container with provisions for stereotaxic positioning and a pump separator for gas exchange and fluid purification. The systems are shown to be capable of accommodating a large diversity of experiments under habitable conditions for long and short duration flights. A.L.W.

A80-15271 # **Applications of the thermoelectrically integrated membrane evaporator subsystem.** A. O. Brouillet and C. K. Boynton, Jr. (United Technologies Corp., Hamilton Standard Div., Windsor Locks, Conn.). *American Society of Mechanical Engineers, Intersociety Conference on Environmental Systems, 9th, San Francisco, Calif., July 16-19, 1979, Paper 79-ENAs-48.* 7 p. Members, $1.50; nonmembers, $3.00.

Future extended duration space missions will benefit from conservation and recovery of vehicle and crew waste products to reduce resupply expenditures. Reclamation of potable water from urine, humidity condensate, and wash water is the single most significant candidate for recovery. The Thermoelectrically Integrated Membrane Evaporator Subsystem (TIMES) distillation water recovery concept utilizing hollow fiber membranes for phase separation and thermoelectric heat pumps for latent heat recovery brings unique advantages to meet the challenge of reliable, efficient, zero gravity water recovery. The TIMES concept limits precision moving parts to valves and pumps leaving small, lightweight static parts for the evaporation and condensation modules. The many varied applications of the TIMES, e.g., Extended Duration Orbiter, space 'Construction Shacks', free-flying space labs, and Space Station will benefit from the modularity of the concept. The paper discusses the optimization and application of the TIMES concept and the benefit of the concept's modularity to these aspects. Further vehicular and other subsystem integration flexibility of the TIMES concept are presented. (Author)

A80-15629 **The place of computerized axial tomography /CAT/ in the examination of flight crews (Place de la tomodensitométrie /TDM/ dans l'expertise du personnel navigant).** E. A. Cabanis, M. T. Iba-Zizen, L. Guillaumat, E. Queiroz, K. I. S. Teixeira, G. Porret (Centre National d'Ophtalmologie des 15/20, Paris, France), R. P. Delahaye, and P. Metges (Hôpital d'Instruction des Armées Begin, Saint-Mandé, Val-de-Marne, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 2nd Quarter, 1979, p. 114-123. In French.

The principles and techniques of cephalic computerized axial tomography (CAT) are reviewed, and results of the application of the technique are presented, with a consideration of its use for the diagnosis of pathological conditions in flight crews. The computerized registration of X-ray fluxes and generation of the X-ray image are discussed, and the practical conditions of examination are outlined. Results of the CAT scan of a presumably normal cephalic cavity are illustrated, together with images obtained from persons suffering tumoral, vascular, traumatic, infectious, degenerative and malformation syndromes. Indications, contraindications, and clinical situations for the application of the technique to flight personnel are discussed, and an increase in CAT indications for flight crews is predicted. A.L.W.

A80-15633 **The physiopathology of vertebral pain in helicopter pilots (Physiopathologie des algies vertébrales des pilotes d'hélicoptères).** R. P. Delahaye, R. Auffret, P. J. Metges, J. L. Poirier, and J. Vicens (Hôpital d'Instruction des Armées Begin, Saint Mandé, Val-de-Marne; Centre d'Essais en Vol, Brétigny-sur-Orge, Essonne; Armée de l'Air, Ecole d'Application, Paris, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 2nd Quarter, 1979, p. 142-145. In French.

The effects of posture and vibration on spinal pathology in helicopter pilots are discussed, and preventative measures are presented. Consideration is given to the physical requirements of the task of piloting a helicopter, the relations between pilot postures determined by the seats of various helicopters and optimal comfort angles, and the origin of vertebral pain. The physiological effects of resonant vibrations in the z-axis on a spine already sensitized by poor posture are discussed, noting the apparition of clinically observed degenerative discopathy. Attempts to adapt aircraft to human requirements, such as the replacement of articulated metal systems by single plastic constructions, the installation of vibration dampers and the use of automatic postural stabilizers in the present-generation Gazelle, Dauphin, Ecureuil and Super Frelon helicopters, are presented, and the selection and periodic examination of helicopter pilots are discussed. A.L.W.

A80-15634 **Investigation of certain electrophysiological and biochemical parameters in hypoxia testing at a simulated altitude of 5500 m (Investigation de certains paramètres électrophysiologiques et biochimiques dans l'épreuve d'hypoxie simulée à une altitude de 5500 m).** A. T. C. Popescu, I. Pintilie, I. Nastoiu, L. Constantinescu, and V. Cumpanasu (Centre Médical Aéronautique, Bucharest, Rumania). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 2nd Quarter, 1979, p. 146-149. In French.

Electrophysiological and biochemical changes in healthy subjects following exposure to 15 min at a simulated altitude of 5500 m in a pressure chamber are determined. Electrophysiological changes are found to be within the classical range of hypoxia effects, consisting of a progressive tachycardia parallel to the increase in altitude. Biochemical analyses reveal no significant changes in blood composition following hypoxia, however a marked increase in potassium levels and significant decreases in magnesium and phosphorous levels in the urine are observed. The lack of myocardial electrical variations obtained is interpreted as a demonstration of the innocuousness of the test procedure, and changes in urine electrolyte concentrations are discussed in terms of the renin-angiothensin-aldosterone mechanism and the compensations of respiratory alkalosis. A.L.W.

A80-15635 **The importance of continuous electrocardiogram recording in conduction disorders in flight crews (Intérêt de l'enregistrement continu de l'électro cardiogramme dans les troubles de la conduction chez le personnel navigant).** A. Seigneuric, G. Leguay, and J. M. Denee (Hôpital d'Instruction des Armées Dominique Larrey, Versailles, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare*, vol. 18, 2nd Quarter, 1979, p. 150-153. 5 refs. In French.

The importance of continuous electrocardiography in localizing and determining the nature of conduction disorders in flight crews is demonstrated, and a technique for continuous electrocardiogram recording is presented. The case history of a 31-year-old pilot with an intermittently appearing atrioventricular block is used to illustrate the utility of the Holter technique of continuous electrocardiography. The Holter technique is described as consisting of recording an electrocardiogram on magnetic tape continuously for periods of 12, 24 or even 72 hours and reading it semiautomatically at accelerated speeds. It is pointed out that continuous electrocardiography for 24 hours and during a normal flight allowed the diagnosis of a second degree Wenkebach atrioventricular block associated with a sinus rate slowing, which implied a vagal origin. A.L.W.

A80-15636 **The application of indirect oxymetry in the criticism of the dilution standards of oxygen regulators (Apport de l'oxymétrie indirecte dans la critique des normes de dilution des régulateurs d'oxygène).** H. Marotte and H. Vieillefond (Centre d'Essais en Vol, Brétigny-sur-Orge, Essonne, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare*, vol. 18, 2nd Quarter, 1979, p. 154-156. In French.

A noninvasive means of measuring arterial oxygen saturation is applied to the evaluation of two emergency oxygen masks for airline personnel. The efficacies of two oxygen masks which did not meet FAA dilution standards at simulated altitudes between 10,000 and 20,000 ft in supplying sufficient amounts of oxygen to the blood were determined by means of an ear oxymeter which measures the absorption of eight wavelengths of light by arterial blood. Results indicate that neither of the masks allowed oxygen saturation to fall below 92 percent at simulated altitudes up to 25,000 ft, thus demonstrating the sufficiency of the masks in question, in contrast to the results of standard tests. A.L.W.

A80-15996 **Unreliability of exercise-induced R wave changes as indexes of coronary artery disease.** S. Wagner, K. Cohn, and A. Selzer (Presbyterian Hospital, San Francisco, Calif.). *American Journal of Cardiology*, vol. 44, Dec. 1979, p. 1241-1246. 38 refs.

The responses of 40 young normal subjects and 28 patients with chest pain and no significant coronary arterial obstruction were compared with those of 73 patients with coronary arterial narrowing of various degrees of severity, all having undergone submaximal, multiple-lead multistaged treadmill exercise testing. The objective was to assess the diagnostic value of exercise-related QRS amplitude changes. No significant relation was found between the extent of coronary artery disease (CAD) and R wave changes. An analysis of multiple variables suggested possible correlations with factors not directly related to ischemia. It is concluded that exercise-induced QRS amplitude changes are unreliable predictors of the presence, absence or severity of CAD. S.D.

A80-15997 **Analysis of exercise-induced R wave amplitude changes in detection of coronary artery disease in asymptomatic men with left bundle branch block.** G. S. Uhl, J. Andrew, and C. Hopkirk (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *American Journal of Cardiology*, vol. 44, Dec. 1979, p. 1247-1250. 18 refs.

Results are presented for a study designed to assess the usefulness of exercise-induced R wave amplitude changes in detecting coronary artery disease (CAD) in asymptomatic men with acquired left bundle branch block (LBBB). The treadmill exercise ECGs of 44 test subjects were analyzed and the results correlated with findings on selective coronary angiography. The results indicate that the increase in R wave amplitude with exercise appears to be a sensitive test in identifying CAD in asymptomatic persons with LBBB. S.D.

A80-15998 **Echocardiographic recognition of atrioventricular valve stenosis associated with endocardial cushion defect - Pathologic and surgical correlates.** K. R. Bloom, R. M. Freedom, C. M. Williams, G. A. Trusler, and R. D. Rowe (Hospital for Sick Children, Toronto, Canada). *American Journal of Cardiology*, vol. 44, Dec. 1979, p. 1326-1331. 22 refs.

The paper describes nine infants who had clinical and angiocardiographic features of an endocardial cushion defect but who also had significant stenosis of either the mitral or tricuspid valve. The surgical repair of endocardial cushion defect is now an accepted practice. However, operation may not be possible in an important pathologic subgroup of infants with this defect because of associated A-V valve stenosis and a smaller than normal or even a hypoplastic ventricle. M mode echocardiography enables one to define the small ventricle and abnormal portion of the common A-V valve. One must then obtain angiograms in specific views to determine ventricular size. Preoperative recognition of this combination of defects may thus lead one to suggest a more palliative surgical approach in combination with a vigorous medical regimen for treatment of heart failure. These measures might enable some of these infants to survive to an age when ventricular growth could make a more definitive surgical approach possible. S.D.

A80-16068 **Uracil in carbonaceous meteorites.** P. G. Stoks and A. W. Schwartz (Nijmegen, Katholieke Universiteit, Nijmegen, Netherlands). *Nature*, vol. 282, Dec. 13, 1979, p. 709, 710. 18 refs.

The paper reports positive identification of uracil in water and formic acid extracts of Murchison, Murray, and Orgueil carbonaceous meteorites. This investigation was made because of the reported synthesis of uracil, thymine, and cytosine in Fischer-Tropsch-type reactions which may be significant in the production of organic material in meteorites and of interest to theories of chemical evolution and the origin of life. Control experiments showed that uracil and thymine were selectively eluted from meteorite sample extracts and analyzed by cation and anion exclusion chromatography. Peaks in the uracil position on the cation exclusion chromatograms were refractionated and analyzed by mass spectrometry which confirmed the identity of uracil. A.T.

A80-16393 **A closed system: Man-higher plants /four-month experiment/ (Zamknutaia sistema: Chelovek-vysshie rasteniia /chetyrekhmesiachnyi eksperiment/).** Edited by G. M. Lisovskii. Novosibirsk, Izdatel'stvo Nauka, 1979. 160 p. In Russian.

The monograph reports the results of a unique four-month experimental study in a hermetically closed system where the environment of human habitat was continuously regenerated by higher plants. These plants have fully provided the human subjects with oxygen, water, and the basic part of vegetable food. The experimental procedure used and the structure of the system are described. Also provided are data obtained from phytophysiological, medicobiological, biochemical and microbiological investigations of the man-higher plants system. S.D.

A80-16430 # **The Life Sciences Flight Experiments Program - An update.** J. C. Stonesifer. *American Astronautical Society, Annual Meeting, Los Angeles, Calif., Oct. 29-Nov. 1, 1979, Paper 79-250.* 9 p.

The Shuttle era will provide the first opportunity to carry out a thorough experimental program in the life sciences in space under conditions approximating those of ground-based laboratories. The

Life Sciences Flight Experiments Program is organized to take full advantage of this opportunity, and to provide the basic programmatic capabilities for the conduct of associated scientific investigations. The paper provides an update on this program as one moves from the early planning phases and the development of the programmatic capabilities into the implementation activities of the program. The discussion covers the experiment selection process; the experiment definition phase; the Life Sciences Laboratory Equipment; the life sciences support facilities; program data system design and implementation; and development, engineering and operations contract. S.D.

A80-16431 * # **Experiments for dedicated life science missions.** R. M. Farrell, J. A. Rummel (NASA, Life Sciences Div., Washington, D.C.), and T. L. Schilling (General Electric Co., Arlington, Va.). *American Astronautical Society, Annual Meeting, Los Angeles, Calif., Oct. 29-Nov. 1, 1979, Paper 79-251.* 22 p.

Over 80 investigations were selected recently as candidate experiments for Life Science Spacelab Missions in the 1983-1985 time frame. A payload consisting of perhaps 20 of these experiments will be selected in 1981, approximately two years before the first dedicated Life Sciences Spacelab Mission. Implementation of a carefully designed management process will be a prerequisite for accomplishing the development, flight, and post-flight analysis of a maximum number of these investigations, working within currently approved resources and schedules. This paper provides an overview of the Life Sciences Flight Experiments Program, and describes the approach being taken at NASA Headquarters in its planning and implementation. (Author)

A80-16452 **Use of microspheres in measurement of regional blood flows during +Gz stress.** M. H. Laughlin, J. W. Burns, and F. M. Loxsom (USAF, School of Aerospace Medicine, Brooks AFB; Trinity University, San Antonio, Tex.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 47, Dec. 1979, p. 1148-1156. 24 refs.

The use of the radiolabeled microsphere technique for the study of the effects of +G sub z acceleration on regional blood flow is examined and analysis of this technique in a high acceleration environment is presented. Chronically implanted, electromagnetic, aortic flow probes were used to determine the relationship between aortic blood flow velocity and +G sub z acceleration in conscious adult miniature swine. It was found that swine are able to compensate to acceleration levels equal to or below 7 G sub z, but exposure to +9 G sub z often resulted in unstable cardiovascular states and diminished cardiac outputs. It was also found that if aortic pressure and heart rate attain a steady state during acceleration, the application of the microsphere technique during +G sub z acceleration is theoretically valid. It is concluded the radiolabeled microsphere technique is as accurate in acceleration studies as it is in the laboratory work. A.T.

A80-16453 **Adrenocortical function in rats chronically exposed to high altitude.** L. C. Ou and S. M. Tenney (Dartmouth College, Hanover, N.H.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 47, Dec. 1979, p. 1185-1187. 22 refs. Grants No. NIH-HL-02888; No. NIH-HL-21159.

In rats exposed to a simulated altitude of 5,486 m for 3 mo, pituitary and adrenal glands hypertrophied and plasma levels of corticosterone increased more than threefold over sea-level controls. The in vitro rates of corticosterone production by the quartered adrenal gland were significantly enhanced, but the responsiveness of the adrenal gland to ACTH remained normal. (Author)

A80-16454 **Influence of air velocity and heat acclimation on human skin wettedness and sweating efficiency.** V. Candas, J. P. Libert, and J. J. Vogt (CNRS, Centre d'Etudes Bioclimatiques, Strasbourg, France). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 47, Dec. 1979, p. 1194-1200. 25 refs.

A80-16455 **Plasma catecholamines and cardiovascular responses to cold and mental activity.** J. LeBlanc, J. Cote, M. Jobin, and A. Labrie (Université Laval, Quebec, Canada). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 47, Dec. 1979, p. 1207-1211. 15 refs.

A80-16456 **Maximal work capacity of women during acute hypoxia.** J. A. Wagner, D. S. Miles, S. M. Horvath, and J. A. Reyburn (California, University, Santa Barbara, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 47, Dec. 1979, p. 1223-1227. 29 refs. Grants No. AF-AFOSR-78-3534; No. NIH-AG-00021.

Six healthy women (22-34 yr) performed maximal bicycle work in a hypobaric chamber at sea level and at simulated altitudes of 2,130 and 3,050 m. Maximal oxygen uptake decreased 10 and 15% from sea-level values at 2,130 and 3,050 m, respectively. At these altitudes minute ventilation increased 17 and 22% respectively, a consequence of increased respiratory rate. Respiratory exchange ratios increased 10 and 14%, and oxygen pulse decreased 9 and 12%, respectively, at 2,130 and 3,050 m. Maximal blood lactates, heart rates, cardiac outputs, and plasma volume shifts were unaffected by these altitudes. Although during maximal work the percentage increases in minute ventilation, respiratory rate, and respiratory exchange ratio that resulted from altitude exposure were greater in women than those previously reported for men, the decrements in minute ventilation were comparable to those in men. The results show that relative to their performance at sea level, men and women have equal ability to perform maximal work at altitudes up to 3,050 m. (Author)

A80-16457 **Effects of hypophysectomy and dexamethasone on rat adrenal response to microwaves.** W. G. Lotz and S. M. Michaelson (Rochester, University, Rochester, N.Y.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 47, Dec. 1979, p. 1284-1288. 14 refs. Research supported by the U.S. Department of Energy; U.S. Food and Drug Administration Contract No. 74-111.

Circulating corticosterone levels were measured to compare the adrenocortical response to acute microwave exposure of normal, hypophysectomized, or sham-hypophysectomized rats. Plasma corticosterone levels in acutely hypophysectomized rats exposed to 60 mW/sq cm for 60 min were below control levels, indicating that the microwave-induced corticosterone response observed in normal, intact rats is dependent on ACTH secretion by the pituitary. In other groups of rats pretreated with dexamethasone before being exposed to microwaves for 60 min, the corticosterone response to a 40-mW/sq cm exposure was completely suppressed by doses equal to or greater than 3.2 micrograms dexamethasone/100 g body weight. However, the corticosterone response to a 70-mW/sq cm exposure was only partially suppressed by prior adminstration of 3.2 or 5.6 dexamethasone/100 g body weight. The evidence obtained in these experiments, in conjunction with the results of other experiments previously reported, is consistent with the hypothesis that the stimulation of the adrenal axis in the microwave-exposed rat is a systemic integrative process due to a general hyperthermia. (Author)

A80-16459 # **Search for microorganisms in space (Poisk mikroorganizmov v kosmose).** L. I. Rubenchik. Kiev, Izdatel'stvo Naukova Dumka, 1979. 132 p. 24 refs. In Russian.

The book is concerned with the interesting problem of existence of life in space. The latest information about space biology is provided. Other aspects of interest are discussed, such as the origin of life on the earth, the possibility of life genesis on other planets, and related problems. Particular attention is given to the search for microorganisms beyond the earth. S.D.

A80-16461 # **Artificial sensory organs: Problems of modeling sensory systems (Iskusstvennye organy chuvstv: Problemy modelirovaniia sensornykh sistem).** S. V. Fomin, E. N. Sokolov, and G. G. Vaitkiavichius. Moscow, Izdatel'stvo Nauka, 1979. 180 p. 111 refs. In Russian.

The book summarizes the results of 15-year research work using psychophysical, neurophysiological and cybernetic methods. The investigations were carried out according to the man-neuron-model scheme. The discussion focuses on the construction of artificial human and animal sensory organs. Analyzer systems, based on the mechanism of differential-sensitivity enhancement, encode the stimulus by the number of the channel of maximum excitation. Attention is given to the analyzers of intensity, color, orientation, directional lines and velocity of an object, along with its position in space. S.D.

A80-16463 **Psychophysical studies of human-operator activity and instrumentation for these studies (Psikhofiziologicheskie issledovaniia deiatel'nosti cheloveka-operatora i ikh tekhnicheskoe obespechenie).** Edited by V. G. Volkov. Moscow, Izdatel'stvo Nauka, 1979. 92 p.

A collection of papers is presented on such topics as error analysis of operator recognition of visual images, autogenic training as a method of stimulator operator work capacity, pursuit-tracking simulator with adaptive marker-trajectory program, and psychic models of hypo- and hyper-gravity. Consideration is also given to: psychophysiological characteristics of man under extreme conditions, spectral correlation analysis of physiological processes, and eye-movement reaction during tracking of discrete stimuli. B.J.

A80-16464 # **Error dynamics of operator recognition of visual images (Dinamika oshibok raspoznavaniia operatorom zritel'nykh obrazov).** M. V. Frolov, E. P. Sviridov, and L. S. Khachatur'iants. In: Psychophysical studies of human-operator activity and instrumentation for these studies. Moscow, Izdatel'stvo Nauka, 1979, p. 3-7. In Russian.

Experimental results are presented on human-operator recognition of noisy visual images (the numeral 1-9) in the case of prolonged (multihour and multiday) operator activity. The error dynamics of recognition is evaluated as a function of fatigue caused by prolonged activity and absence of feedback on the results of the activity; the error dynamics is also studied as a function of preliminary instruction, forming a subjective model of the experimental situation. Various classes of errors are identified, including signal miss, false alarm, and signal confusion. Physiological indices of operator functional state are correlated with operator performance indices. B.J.

A80-16465 # **Autogenic training as a method of stimulating operator work capacity (Autogennaia trenirovka kak metod stimuliatsii rabotosposobnosti operatora).** Iu. F. Isaulov. In: Psychophysical studies of human-operator activity and instrumentation for these studies. Moscow, Izdatel'stvo Nauka, 1979, p. 12-15. 6 refs. In Russian.

The paper discusses experimental data characterizing the influence of special autogenic training on operator work capacity, determined in operation with various types of control systems. The efficiency of autogenic training for various levels of work-related fatigue is evaluated. It is shown that autogenic training leads to full recovery of work capacity, depressed after continuous activity in the course of three days and nights. B.J.

A80-16466 # **Pursuit-tracking simulator with adaptive pseudorandom program of marker trajectory (Imitator presleduiushchego slezheniia s adaptiruiushcheisia psevdosluchainoi programmoi traektorii metki).** V. G. Volkov. In: Psychophysical studies of human-operator activity and instrumentation for these studies. Moscow, Izdatel'stvo Nauka, 1979, p. 15-20. 9 refs. In Russian.

The paper describes method and equipment for a two-coordinate pursuit tracking test. The trajectory of the pursued marker simulates the motion of a material point located in a viscous medium and undergoing collisions with other material points. Marker trajectory on the display screen is determined by the direction and force of collisions, which are randomly distributed, while the 'mean' velocity of the marker is given by the number of these collisions and depends on the performance of the operator. B.J.

A80-16467 # **Physiological characteristics of psychic models of hypo- and hyper-gravity (Fiziologicheskie osobennosti psikhicheskikh modelei gipo- i gipergravitatsii).** L. P. Grimak and N. N. Lebedeva. In: Psychophysical studies of human-operator activity and instrumentation for these studies. Moscow, Izdatel'stvo Nauka, 1979, p. 26-34. 6 refs. In Russian.

The paper presents results of a 10-day experiment using psychic models of hypo- and hyper-gravity in a strict hypodynamic framework. EKG, EEG, EMG, and ERG, and X-ray cardiographic studies are used to conduct a differential analysis of functional changes in the organism within the framework of a given psychic model. Some suggestions are made as to the elimination of negative functional changes associated with weightlessness under conditions of actual space flight. B.J.

A80-16468 # **Investigation of the psychophysiological characteristics of man under extreme conditions (Izuchenie psikhofiziologicheskikh kharakteristik cheloveka v ekstremal'nykh usloviiakh).** N. F. Luk'ianova. In: Psychophysical studies of human-operator activity and instrumentation for these studies. Moscow, Izdatel'stvo Nauka, 1979, p. 34-39. 6 refs. In Russian.

The paper reports results of the psychological testing of 33 subjects under extreme conditions, namely survival on life rafts in the open sea. It is found that preliminary testing of functional, psychological, and personality characteristics of subjects makes it possible to predict their behavior in the extreme situation. A 'negative' dynamics in the occurrence of principal psychic processes (i.e., attention and thinking) is disclosed. B.J.

A80-16469 # **Analysis of the mean number of intersections of the zero level by physiological processes (Analiz srednego chisla peresechenii fiziologicheskim protsessom nulevogo urovnia).** M. V. Frolov. In: Psychophysical studies of human-operator activity and instrumentation for these studies. Moscow, Izdatel'stvo Nauka, 1979, p. 40-46. 5 refs. In Russian.

The paper discusses the use of spectral and spectral correlation methods in the analysis of medical (e.g., EKG and EEG) data. Particular consideration is given to aspects of evaluating the mean number of zero-level intersections in relation to finite time of analysis and unknown spectral shape. Formulas are presented making it possible to evaluate the centroid from the mean number of intersections per unit time. B.J.

A80-16470 # **Human operator eye-lid movement reaction during intense visual tasks involving the detection and tracking of visual signals (Vekodvigatel'naia reaktsiia u cheloveka-operatora pri napriazhennoi zritel'noi rabote no obnaruzheniiu i otslezhivaniiu zritel'nykh signalov).** E. P. Sviridov. In: Psychophysical studies of human-operator activity and instrumentation for these studies. Moscow, Izdatel'stvo Nauka, 1979, p. 46-52. 13 refs. In Russian.

A80-16471 # **Amplitude-phase discriminator with two-CRT oscillograph display (Amplitudno-fazovyi diskriminator s displeem na dvukhluchevom ostsillografe).** G. I. Nikitin. In: Psychophysical studies of human-operator activity and instrumentation for these studies. Moscow, Izdatel'stvo Nauka, 1979, p. 53-58. In Russian.

The paper describes an amplitude-phase discriminator for the recording of brain neuron activity. The examined signal, the lower and upper levels of the discriminator, and the output impulse of the discriminator are simultaneously displayed on a two-CRT oscillograph. The structural and functional characteristics of the discriminator and the display are examined. B.J.

A80-16472 # Determination of psychophysiological reaction norms of a pilot during work (Normirovanie psikhofiziologicheskikh reaktsii letchika v protsesse deiatel'nosti). E. A. Kozlovskii, V. F. Zhernavkov, and F. A. Zubets. In: Psychophysical studies of human-operator activity and instrumentation for these studies. Moscow, Izdatel'stvo Nauka, 1979, p. 58-60. In Russian.

The paper investigates the possibility of developing group norms for evaluating the psychophysiological reaction level of pilots. It is found that individual differences in response can best be taken into account through regression analysis of the relationships between the initial value of a given psychophysiological indicator and its value during flight. A method for indicating levels of pilot nervous and emotional stress is described. B.J.

A80-16473 # Method for generalizing operator performance factor evaluation in multidimensional tracking problems (Metodika obobshchennoi otsenki kachestva deiatel'nosti operatora v zadachakh mnogomernogo slezheniia). E. A. Kozlovskii and V. F. Zhernavkov. In: Psychophysical studies of human-operator activity and instrumentation for these studies. Moscow, Izdatel'stvo Nauka, 1979, p. 60-62. In Russian.

A80-16474 # Operator eye-movement reaction during tracking of discrete stimuli with random time and space distribution (Glazodvigatel'naia reaktsiia operatora pri slezhenii za diskretnymi stimulami so sluchainym vremennym i prostranstvennym raspredeleniem). V. G. Volkov, N. N. Lebedeva, and V. M. Mashkova. In: Psychophysical studies of human-operator activity and instrumentation for these studies. Moscow, Izdatel'stvo Nauka, 1979, p. 80-85. In Russian.

A80-16480 # Some aspects of processing physiological data (Nekotorye voprosy obrabotki fiziologicheskikh dannykh). E. P. Levchenko and T. C. Sidorenko. In: Computational mathematics, programming and experimental-data processing. Kiev, Izdatel'stvo Naukova Dumka, 1979, p. 81-96. 13 refs. In Russian.

Some aspects of processing and programming somato-autonomic indices are discussed. Particular attention is given to the elimination of artifacts from the electrocardiogram, correction of arterial pressure, and the identification of basic indices from the overall respiration process. V.P.

A80-16575 A possible mechanism for the influence of electromagnetic radiation on neuroelectric potentials. R. J. MacGregor (Colorado, University, Boulder, Colo.). *IEEE Transactions on Microwave Theory and Techniques,* vol. MTT-27, Nov. 1979, p. 914-921. 30 refs.

This paper explores the idea that the electrical component of applied microwave and radiowave radiation might induce transmembrane potentials in nerve cells and, thereby, disturb nervous function and behavior. The paper estimates the transmembrane currents and potentials induced in nerve cells by applied electrical fields and currents. Estimates are made for steady and for oscillating stimulation. The primary conclusion is that intracranial electrical fields associated with low-intensity irradiation in the frequency range of 1MHz to 10GHz may induce transmembrane potentials of tenths of millivolts (or more) and that, therefore, such externally applied fields may disturb normal nervous function through this mechanism. The paper also presents a discussion which indicates that the induced transmembrane potential should exhibit a maximum at about 100 MHz. Although some researchers suggest that the direct mechanism explored here may not represent the main influence of microwaves and radiowaves on biological tissue, this model together with a recent model by Barnes and Hu (1977) suggest that the results so produced may indeed be significant. (Author)

A80-16602 Mathematical model of respiratory rhythm generation. V. M. Nekrasova, P. I. Kuznetsov, and V. A. Safonov (II. Moskovskii Gosudarstvennyi Meditsinskii Institut, Moscow, USSR). *(Akademiia Nauk SSSR, Doklady,* vol. 245, Apr. 21, 1979, p. 1315-1318.) *Soviet Physics - Doklady,* vol. 24, Apr. 1979, p. 246-247. 5 refs. Translation.

An attempt is made to construct a mathematical model of the respiration center (in the medulla oblongata), capable of interpreting the principal adaptive reactions of the respiration center in the generation of the respiration rhythm. The model is based on Nekrasov and Safonov's (1973) classification of respiration neurons and on Posin and Shul'pin's (1970) isolated-neuron model. V.P.

A80-16793 Time-resolved spectrometry of in vivo firefly bioluminescence emissions. J. D. Barry (USAF, Space and Missile Systems Organization, Los Angeles, Calif.), J. M. Heitman, and C. R. Lane (USAF, Avionics Laboratory, Wright-Patterson AFB, Ohio). *Journal of Applied Physics,* vol. 50, Nov. 1979, pt. 1, p. 7181-7185. 10 refs.

The optical emissions of in vivo bioluminescence pulses have been evaluated by time-resolved spectrometry for the first time. The firefly Photinus pyralis (Linnaeus) (Coleoptera: Lampyridae) was used as the test specimen. The time-resolved spectrometry has allowed evaluation of the intrapulse characteristics as well as those of the overall envelope. The light pulses were found to last 0.3-0.4 sec, have a nonsymmetrical wavelength envelope, have an emission peak near 585 nm, have apparently continuous emission over the interval 500-720 nm, emit a power of the order of 1 x 10 to the -6 W/pulse and have an intrapulse peak wavelength shift to shorter wavelengths during the pulse period. Time-resolved spectrometry is recommended for intrapulse evaluation of other bioluminescence systems. (Author)

A80-17054 * Motion sickness susceptibility during rotation at 30 rpm in free-fall parabolic flight. A. Graybiel (U.S. Navy, Naval Aerospace Medical Research Laboratory, Pensacola, Fla.). *Acta Astronautica,* vol. 6, Nov. 1979, p. 1481-1487. 6 refs. NASA Order T-9140-E.

To make comparisons with experimental motion sickness susceptibility in Skylab missions, subjects were tested during free fall in parabolic flight and in ground-based simulation tests. They were rotated at 30 rpm in a rotating litter chair (RLC) with head fixed, head swiveling left-to-right, or with 90 degree forward and return head and body movements. Stressful accelerations similar to those in the Skylab RLC were generated only in the tests aloft, where subjects who made 'forward and return' movements (generating cross-coupled angular accelerations) were substantially more prone to motion sickness than those with either head fixed or head swiveling left-to-right. However, with head swiveling, susceptibility was slightly higher in the laboratory than aloft. J.P.B.

A80-17059 # Binocular and monocular stimuli for motion in depth - Changing-disparity and changing-size feed the same motion-in-depth stage. D. Regan and K. I. Beverley (Dalhousie University, Halifax, Nova Scotia, Canada). *Vision Research,* vol. 19, no. 12, 1979, p. 1331-1342. 30 refs. National Research Council of Canada Grant No. A-0323; Grant No. AF-AFOSR-78-3711.

Although changing-size stimulation and changing-disparity stimulation can both produce a sensation of motion in depth, they act largely independently. The motion-in-depth sensation produced by changing-size can be cancelled by antagonistic changing-disparity stimulation. Again, a motion-in-depth aftereffect built up by inspecting a changing-size stimulus can be nulled either by changing-size stimulation or by changing-disparity stimulation. The relative effectiveness of changing-disparity and changing-size as stimuli for motion-in-depth sensation varies as follows: (1) changing disparity grows relatively more effective as velocity increases (according to a power law); (2) changing disparity grows relatively more effective as inspection time increases; (3) changing disparity grows relatively more effective as the linear horizontal width of the target decreases;

(4) the relative effectiveness of changing disparity and changing size shows marked intersubject variability (at least 80:1). But relative effectiveness does not depend on viewing distance except at very short ranges. (Author)

A80-17060 **Processing of direction and magnitude by the saccadic eye-movement system.** R. L. Hou and D. H. Fender (California Institute of Technology, Pasadena, Calif.). *Vision Research,* vol. 19, no. 12, 1979, p. 1421-1426. 9 refs. Grants No. NIH-NS-03627; No. NIH-RR-07003.

The function of the saccadic programming system has been studied using a doublestep target movement in two dimensions. The results of these experiments suggest the following hypotheses. The information processing in the programming of a saccade consists of direction computation and magnitude computation. If the new target-step arrives before the direction computation of the previous saccade is complete, this saccade will be cancelled. The partial program concerning the direction of the saccade is kept in a buffer memory; if the direction of the new saccade is not in a direction similar to the old one, this partial program has to be erased, which takes an extra 40-80 msec of processing time. There is a stage in which the direction of the saccade cannot be reprogrammed but the magnitude can still be reduced. In other words, the magnitude computation seems to finish after the direction computation. If the new target-step arrives after the computation of both direction and magnitude are complete, two full saccades will be observed. (Author)

A80-17067 **Evaluation of heat convection and flow front influence on electrophoresis of biological substances in space flight conditions.** V. R. Sharipova. *International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979, Paper 79-ST-17.* 10 p.

The paper deals with a few mathematical simulation problems of continuous flow electrophoresis during space flight, by taking the convection that occurs at that time into account. A qualitative study of the influence of convection in continuous-flow electrophoresis is made by employing a nonelliptic eddy system. It is shown that it is possible to carry out a parameter analysis of agent input coordinates from the given model on electrophoretic separation accuracy. C.F.W.

A80-17100 **Radiation dose rate of a biological object from cosmic rays in the stratosphere and at the height of artificial earth satellites.** N. G. Skriabin, Iu. G. Shafer, and I. I. Sosin. *(Kosmicheskie Issledovaniia,* vol. 17, May-June 1979, p. 478, 479.) *Cosmic Research,* vol. 17, no. 3, Nov. 1979, p. 397, 398. 7 refs. Translation.

The dose rate of cosmic ray radiation absorbed by a living organism in the stratosphere and at an altitude of 350 km has been estimated. The dose rate expended in ionization in the organism has also been determined. The equivalent dose rate absorbed at altitudes of 12 and 21 km at auroral latitudes is expected to be 0.71 and 1.56 mrem/hr, respectively. Assuming a geomagnetic rigidity of 1-10 GeV/sec, the calculated equivalent dose absorbed at an altitude of 350 km is 0.73 + or - 0.23 mrem/hr. C.K.D.

A80-17262 # **Vertical stabilization of a quadriped walking machine (Vertikal'naia stabilizatsiia chetyrekhnogogo shagaiushchego apparata).** B. A. Bordiug (Akademiia Nauk Ukrainskoi SSR, Institut Matematiki, Kiev, Ukrainian SSR). *Kibernetika i Vychislitel'naia Tekhnika,* no. 43, 1979, p. 37-48. 6 refs. In Russian.

Aspects of stabilizing a quadriped walking machine with weightless legs are discussed with emphasis on the synthesis of a vertical stabilization algorithm. General equations of motion and their linearized variants are obtained for the machine. The vertical stabilization problem is then treated as one of periodic-system optimization in an infinite time interval on the basis of a quadratic performance criterion. B.J.

A80-17285 # **Active responses of the internal carotid artery to stretching (Ob aktivnykh reaktsiiakh vnutrennei sonnoi arterii na rastiazhenie).** V. A. Mamisashvili, G. I. Mchedlishvili, and L. G. Ormotsadze (Akademiia Nauk Gruzinskoi SSR, Institut Fiziologii, Tiflis, Georgian SSR). *(Vsesoiuznaia Konferentsiia po Problemam Biomekhaniki, Riga, Latvian SSR, Apr. 1979.) Mekhanika Kompozitnykh Materialov,* Sept.-Oct. 1979, p. 873-877. 9 refs. In Russian.

The role of the myogenic mechanism in the regulation of cerebral circulation under variable systemic arterial pressure is examined. In vitro data obtained by various investigators for isolated segments of vascular smooth muscles are extrapolated to the actual intravascular pressure. It is shown that myogenic responses of the internal carotid artery are capable of providing only partial regulation of cerebral circulation at variable arterial pressure in the case of pronounced and rapid variation of intravascular pressure. V.P.

A80-17288 # **In vivo investigation of the elastohysteresis properties of the aorta and its branches (Prizhiznennoe izuchenie uprugogisterezisnykh svoistv aorty i ee vetvei).** V. P. Pirogov, V. D. Ivanova, N. A. Volkov, Iu. Iu. Zhuravlev, and M. I. Kyz'min (Kuibyshevskii Meditsinskii Institut; Kuibyshevskii Aviatsionnyi Institut, Kuibyshev, USSR). *(Vsesoiuznaia Konferentsiia po Problemam Biomekhaniki, Riga, Latvian SSR, Apr. 1979.) Mekhanika Kompozitnykh Materialov,* Sept.-Oct. 1979, p. 933-937. In Russian.

The method proposed in the present paper for calculating arterial flows is based on substituting ordinary linearized differential equations for the partial differential equations. A solution is obtained for the first harmonic of the volumetric flow rate. Good qualitative agreement of the model with the experiment is demonstrated. V.P.

blank page

STAR ENTRIES

N80-12726 New York Univ., N. Y.
NUMERICAL SOLUTION OF A HYPERBOLIC SYSTEM OF CONSERVATION LAWS FOR BLOOD FLOW IN THE ARTERIAL TREE Ph.D. Thesis
David Moise Bellehsen 1979 130 p
Avail: Univ. Microfilms Order No. 7925440

A code for an arbitrary arterial tree was developed that can accommodate any prescribed physiological data. The partial differential equations which describe the flow of blood in the cardiovascular system are nonlinear. The flow is treated as one-dimensional. The equations form a hyperbolic system of conservation laws which are solved by the Lax-Wendroff method. Special cases of one branch and three branches were worked out numerically and analytically with computed results in the form of tables. As an application, a structured arterial tree was studied and some graphs are presented. The effect of varying the reflection coefficient is also discussed. Dissert. Abstr.

N80-12727 Ohio Univ., Athens.
HUMAN MUSCLE FIBER TYPES IN POWER LIFTERS, DISTANCE RUNNERS AND UNTRAINED SUBJECTS: A HISTOCHEMICAL AND ULTRASTRUCTURAL STUDY Ph.D. Thesis
Frederick Paul Prince 1979 39 p
Avail: Univ. Microfilms Order No. 7924429

Cellular aspects (fiber size and qualitative measures of contraction time and aerobic capacity via histochemistry) and sub-cellular (morphometric analysis of mitochondrial volume percent, lipid volume percent and Z-line width via electron microscopy) aspects of the vastus lateralis muscle, a major extensor of the knee joint, in male and female athletes and non-athletes were investigated. The cross-sectional area and metabolic profile was obtained for each fiber. The fibers were thus classified as slow-twitch-oxidative, fast-twitch-oxidative-glycolytic, and fast-twitch-glycolytic. Much individual variation is present in the percentages of histochemical fiber types and fiber cross-sectional area. Male and female fibers are similar in most respects. The major difference being that all 3 fiber types appear larger in males. Dissert. Abstr.

N80-12728 Utah Univ., Salt Lake City.
STATISTICAL REPRESENTATION OF ELECTROCARDIOGRAPHIC BODY SURFACE MAPS FOR FEATURE IDENTIFICATION DATA COMPRESSION AND CLASSIFICATION Ph.D. Thesis
Arnold Kerry Evans 1979 96 p
Avail: Univ. Microfilms Order No. 7924352

The development and evaluation of methods for providing accurate representation of ECG body surface potential map data are discussed. Identifying diagnostically important map features, providing data compression, and forming a basis for applying statistical pattern recognition techniques to map classification are studied. Dissert. Abstr.

N80-12729 Michigan Univ., Ann Arbor.
A POSTURAL MEASUREMENT SYSTEM FOR INDUCED BODY SWAY ASSESSMENT Ph.D. Thesis
Robert Owens Andres 1979 162 p
Avail: Univ. Microfilms Order No. 7925105

A microcomputer based stimulus delivery and response measurement system for the analysis of human sagittal plane body sway response to induced instabilities was developed. The system is called a postural measurement system (PMS). The PMS provides flexibility in stimulus delivery while assessing postural sway responses with known resolution. The PMS was implemented in a predesigned factorial experiment investigating both static and induced sinusoidal body sway responses of one healthy young male subject; PMS performance was monitored concurrently with the human sway responses. The spectrum of antero-posterior body sway during quiet stance was non-adaptive over the 45 minute test session. The waist swayed less than the shoulders; most sway displacement had frequency components less than .4 Hz. The lumbosacrum did not remain rigid during static sway as inverted pendulum body models assume. Dissert. Abstr.

N80-12730*# National Aeronautics and Space Administration. Pasadena Office, Calif.
SIMULTANEOUS MUSCLE FORCE AND DISPLACEMENT TRANSDUCER Patent Application
Cyril Feldstein (JPL), Gilbert W. Lewis (JPL), and Virgil H. Culler, inventors (to NASA) (JPL) Filed 30 Sep. 1977 12 p Sponsored by NASA
(NASA-Case-NPO-14212-1; US-Patent-Appl-SN-838308) Avail: NTIS HC A02/MF A01 CSCL 06B

A myocardial transducer for simultaneously measuring force and displacement within a very small area of myocardium is presented. Each branch of the forked transducer constitutes a low compliance tine for penetrating the heart. When the heart is penetrated, the surface membrane closes around indentations in the tines. A small piezoresistive element that converts a force into an electrical signal is bonded to one of the low compliance tines. A third high compliance tine is of a length that just pierces the surface membrane. Displacement of the myocardium in a direction in line with the two low compliance tines causes a deformation in curvature of the high compliance tine that is converted into an electrical signal by a second piezoresistive element. An electrode placed on the epicardium and referenced to the transducer provides an ECG with force and displacement measurements. NASA

N80-12731# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.
DESIGN OF A MICROPROCESSOR BASED CARDIOTACHOMETER
D. Ratino, G. Potor, A. Marko, and C. Sharper Apr. 1979 39 p refs
(AF Proj. 6893)
(AD-A073105; AMRL-TR-79-21) Avail: NTIS HC A03/MF A01 CSCL 09/2

A microprocessor based cardiotachometer has been designed and fabricated in-house using 8080 Intel microcomputer hardware and assembly language software. The cardiotachometer accurately calculates and digitally displays beat-by-beat heart rate in beats per minute. The design incorporates standard semiconductor memory and I/O integrated circuits. Operational understanding does not require extensive microprocessor design background. In fact, the cardiotach's design provides excellent basic information in the use of microprocessors in the instrumentation field. GRA

N80-12732*# National Aeronautics and Space Administration. Langley Research Center, Hampton, Va.
SINGLE PILOT SCANNING BEHAVIOR IN SIMULATED INSTRUMENT FLIGHT
Jack E. Pennington Oct. 1979 55 p refs
(NASA-TM-80178) Avail: NTIS HC A04/MF A01 CSCL 05I

A simulation of tasks associated with single pilot general aviation flight under instrument flight rules was conducted as a baseline for future research studies on advanced flight controls and avionics. The tasks, ranging from simple climbs and turns to an instrument landing systems approach, were flown on a fixed base simulator. During the simulation the control inputs, state variables, and the pilots visual scan pattern including point of regard were measured and recorded. Author

N80-12733# Hughes Aircraft Co., Culver City, Calif. Display Systems Lab.
DETECTION OF DIFFERENT TARGET TYPES IN REALISTIC TERRAIN Interim Report, Sep. 1978 - Jan. 1979
G. E. Corrick Mar. 1979 42 p refs
(Contract N60530-78-C-0240)
(AD-A072973; HAC-FR-79-27-676; HAC-Ref-E3900; NWC-TP-6107) Avail: NTIS HC A03/MF A01 CSCL 17/8

The effects of target and terrain characteristics on visual air-to-ground target acquisition were studied. Five target types--a portable bridge; a portable bridge with adjacent anti-aircraft artillery (AAA); a surface-to-air missile (SAM) site; a petroleum, oil, and lubricants (POL) supply dump; and a group of three tanks--were embedded into oblique aerial photos of real terrain at a simulated slant range of 1.6 km. Background scenes were selected to represent desert, desert/mountain, and rural terrain. Results of a search experiment showed that target type was the most important factor in determining acquisition performance, accounting for up to 40% of the experimental variance. The relative detectabilities of the target were found to group so that the bridge alone, the bridge with AAA site, and the SAM site were significantly easier to detect than the three tank group or POL site. Results are discussed in terms of the detectability of a target as related to the constraints on its possible scene location. Background was shown to be a significant effect, but accounted for about one-fourth as much of the variance as did target type. These results are compared to a previous similar study using multiple configurations of a single target type where background characteristics were shown to account for more variance. Implications for target acquisition modeling are discussed. GRA

N80-12734 Michigan Univ., Ann Arbor.
RATIONAL WAYS TO INCREASE PICTOGRAPHIC SYMBOL DISCRIMINABILITY Ph.D. Thesis
Paul Allan Green 1979 237 p
Avail: Univ. Microfilms Order No. 7925156

Several ways of increasing the discriminability of similar symbols were compared. Six alterations were considered: five modifications of symbol elements (changes in height to width ratio, strokewidth, rotation in the frontal plane, repetition, and filling in an enclosed area) and substitution of a new symbol (new prototype) for one member of a confusable pair. The last four changes were compared. To determine the effect of including confusable pairs of symbols in larger sets, symbols for several controls and displays (heater, air conditioner, vent, radio volume and tuning, exterior-lamp failure, and tire pressure) were developed. Suggestions for those symbols were drawn by 43 drivers in experiment two. Based on those drawings were several candidate symbols for each function. In the third experiment 62 drivers made magnitude estimates of how well each candidate's intended meaning was understood. From these data and existing standards a set of eight symbols was assembled. Dissert. Abstr.

N80-12735*# Georgia Inst. of Tech., Atlanta.
GUIDING THE DEVELOPMENT OF A CONTROLLED ECOLOGICAL LIFE SUPPORT SYSTEM
Robert M. Mason, ed. (Metrics, Inc., Atlanta) and John L. Carden, ed. Nov. 1979 98 p refs Report on workshop held at NASA/Ames, 8-12 Jan. 1979
(Grant NsG-2323)
(NASA-CR-162452) Avail: NTIS HC A05/MF A01 CSCL 06K

The workshop is reported which was held to establish guidelines for future development of ecological support systems, and to develop a group of researchers who understand the interdisciplinary requirements of the overall program.

N80-12736*# Georgia Inst. of Tech., Atlanta.
EVALUATION OF A GROUND BASED MANNED DEMONSTRATION AS A MILESTONE IN CELSS DEVELOPMENT
In its Guiding the Development of a Controlled Ecological Life Support System Nov. 1979 p 8-75

Avail: NTIS HC A05/MF A01 CSCL 06K

The requirements for a ground based manned controlled ecological life support system demonstration are summarized for the following: nutrition and food processing, food production, waste processing, systems engineering and modeling, and ecology-systems safety. F.O.S.

N80-12737*# Georgia Inst. of Tech., Atlanta.
DEVELOPMENT REQUIREMENTS FOR A SUCCESSFUL GROUND BASED CELSS DEMONSTRATION
In its Guiding the Development of a Controlled Ecological Life Support System Nov. 1979 p 16-49 refs

Avail: NTIS HC A05/MF A01 CSCL 06K

Considerations critical to a ground based control demonstration were identified. The controlled ecological life support system technologies were assessed for nutrition and food processing, food production, waste processing, and systems engineering/modeling. F.O.S.

N80-12738*# Georgia Inst. of Tech., Atlanta.
RESEARCH RECOMMENDATIONS
In its Guiding the Development of a Controlled Ecological Life Support System Nov. 1979 p 51-69

Avail: NTIS HC A05/MF A01 CSCL 06K

The research and development sequences and priorities for CELSS development were established for each of the following areas: nutrition and food processing, food production, waste processing, systems engineering/modeling, and ecology-systems safety. F.O.S.

N80-12739*# Society of Automotive Engineers, Inc., New York. Bioenvironmental Systems Study Group.
EVALUATION AND COMPARISON OF ALTERNATIVE DESIGNS FOR WATER/SOLID-WASTE PROCESSING SYSTEMS FOR SPACECRAFT Final Report
J. M. Spurlock Jul. 1975 135 p refs
(Contract NASw-2439)
(NASA-CR-162492) Avail: NTIS HC A07/MF A01 CSCL 06K

Promising candidate designs currently being considered for the management of spacecraft solid waste and waste-water materials were assessed. The candidate processes were: (1) the radioisotope thermal energy evaporation/incinerator process; (2) the dry incineration process; and (3) the wet oxidation process. The types of spacecraft waste materials that were included in the base-line computational input to the candidate systems were feces, urine residues, trash and waste-water concentrates. The performance characteristics and system requirements for each candidate process to handle this input and produce the specified acceptable output (i.e., potable water, a storable dry ash, and vapor phase products that can be handled by a spacecraft atmosphere control system) were estimated and compared. Recommendations are presented. R.E.S.

N80-12740# Wisconsin Univ. - Milwaukee. Dept. of Systems Design.
SOME MODELS OF HUMAN ERROR FOR MAN-MACHINE SYSTEM EVALUATION Final Technical Report, 1 Jul. 1977 - 30 Dec. 1978
Marlin U. Thomas 15 May 1979 32 p refs Prepared in cooperation with Chrysler Corp., Detroit and Michigan Univ., Ann Arbor
(Contract N00014-77-C-0587)
(AD-A072838; TR-79-5) Avail: NTIS HC A03/MF A01 CSCL 05/8

A framework is presented for quantifying and modeling the occurance of human error events in a system. Decision tasks are classified according to the stochastic behavior of the relevant variables associated with the man-machine linkages. A general semi-Markov formulation is presented for describing transitions among error states. Closed form results for the time-between-errors are given through transform relationships for the case where interdecision times form a renewal process. An approximate time-between-error distribution is given that provides computational ease and compared well with some experimental data obtained from a laboratory human decision-making task. GRA

N80-13757*# Florida Inst. of Tech., Melbourne. School of Science and Engineering.
PHOTOSYNTHETIC CARBON REDUCTION BY SEAGRASSES EXPOSED TO ULTRAVIOLET A RADIATION Final Report
15 Sep. 1979 38 p refs
(Contract NAS9-15846)
(NASA-CR-160397) Avail: NTIS HC A03/MF A01 CSCL 06C

The seagrasses Halophila engelmannii, Halodule wrightii, and Syringodium filiforme were examined for their intrinsic sensitivity to ultraviolet-A-UV-A and ultraviolet-B-UV-B radiation. The effect of UV-A on photosynthetically active radiation (PAR) was also determined. Ultraviolet-A and ultraviolet-B were studied with emphasis on the greater respective environmental consequence in terms of seagrass distribution and abundance. Results indicate that an intrinsic sensitivity to UV-A alone is apparent only in Halophila, while net photosynthesis in Halodule and Syringodium seems unaffected by the level of UV-A provided. The sensitivity of Halophila to UV-A in the absense of (PAR) indicates that the photosynthetic reaction does not need to be in operation for damage to occur. Other significant results are reported. R.C.T.

N80-13758*# Texas A&M Univ., College Station. Dept. of Plant Sciences.
A PRELIMINARY RESEARCH PLAN FOR DEVELOPMENT OF A PHOTOSYNTHETIC LINK IN A CLOSED ECOLOGICAL LIFE SUPPORT SYSTEM Final Report
Page W. Morgan Nov. 1979 135 p refs
(Contract NAS9-15873)
(NASA-CR-160399; Rept-79-556) Avail: NTIS HC A07/MF A01 CSCL 06C

The use of higher plants in a closed ecological life support system for long duration space missions involving large numbers of people is considered. The approach to planning and developing both the habitat for a long term space mission and closed ecological life support systems are discussed with emphasis on environmental compatibility and integrated systems design. The requirements of photosynthetic processes are summarized and evaluated in terms of their availability within a closed ecological life support environment. Specific references are recommended as a data base for future research on this topic. R.C.T.

N80-13759*# General Electric Co., Houston, Tex.
SYSTEM PARAMETERS FOR ERYTHROPOIESIS CONTROL MODEL: COMPARISON OF NORMAL VALUES IN HUMAN AND MOUSE MODEL
15 Dec. 1979 29 p refs
(Contract NAS9-15487)
(NASA-CR-160401; TIR-741-LSP-8024) Avail: NTIS HC A03/MF A01 CSCL 06C

The computer model for erythropoietic control was adapted to the mouse system by altering system parameters originally given for the human to those which more realistically represent the mouse. Parameter values were obtained from a variety of literature sources. Using the mouse model, the mouse was studied as a potential experimental model for spaceflight. Simulation studies of dehydration and hypoxia were performed. A comparison of system parameters for the mouse and human models is presented. Aside from the obvious differences expected in fluid volumes, blood flows and metabolic rates, larger differences were observed in the following: erythrocyte life span, erythropoietin half-life, and normal arterial pO2. R.E.S.

N80-13760# State Univ. of New York, Stony Brook.
DETERMINING BIOLOGICAL FINE STRUCTURE BY DIFFERENTIAL ABSORPTION OF SOFT X-RAY
B. J. Panessa-Warren and J. B. Warren (BNL) Jun. 1979 23 p refs Presented at the Conf. on Ultrasoft X-Ray Microscopy, N.Y., 13 Jun. 1979 Submitted for publication
(Contract EY-76-C-02-0016)
(BNL-26282; CONF-790674-3) Avail: NTIS HC A02/MF A01

The use of soft X-ray contact microscopy in examining histo-chemically treated human tissue embedded in plastic and exposed as unstained thin sections is demonstrated. Preliminary data revealed that the histochemical reaction product, and the unstained biological fine structure of the surrounding tissues can be clearly imaged. Hydrated proteoglycan aggregates were examined. Proteoglycans are an essential component of the organic matrix of cartilage, and play a primary role in the retention and maintenance of extracellular water. To avoid any artifacts due to the introduction of exogeneous materials, and examine the proteoglycan aggregates in their hydrated, natural configuration, contact X-ray images of isolated proteoglycan aggregates in water were made. DOE

N80-13761 Johns Hopkins Univ., Baltimore, Md.
THE EFFECTS OF CONTEXT ON THE STRUCTURE OF PAIN Ph.D. Thesis
Mark Harold Bradshaw 1979 138 p
Avail: Univ. Microfilms Order No. 7924603

Multidimensional scaling (MDS) was used to determine whether the structure of a set of pain descriptors varied as a function of the area of the body to which those descriptors referred. Three body areas (head, arms and legs, and torso) were chosen, and a set of 13 words were found which were judged by subjects to be highly applicable to the description of pain in all three body areas. These words, plus a few body-area-specific words, were used as stimuli in four MDS studies. In each of the studies pain descriptors were judged in the context of a specific body area. It was concluded that differences in the structure of the pain descriptors across different body areas were minimal to nonexistant. Thus, this research supports the view that a single taxonomy of pain descriptors can represent the major pain qualities in different parts of the body and that MDS is a good method for establishing such a taxonomy. Dissert. Abstr.

N80-13763 Virginia Univ., Charlottesville.
MODELING STUDIES OF THE PRESSURE-FLOW RELATIONSHIP OF THE CENTRAL AIRWAYS Ph.D. Thesis
David Burkman Reynolds 1978 249 p
Avail: Univ. Microfilms Order No. 7928032

The spacing of junctions that control the pressure flow relation of the bronchial tree was investigated. A mathematical model simulating these relations was developed. Airway models included single bifurcations, bifurcating networks, and a latex airway reproduction of a dog lung. The total flow rate of water and aqueous solutions of sucrose and sodium carboxymethyl cellulose and the static pressure at selected locations of the airway models was measured for steady and unsteady, inspiratory, and expiratory flow corresponding to tracheal Reynolds number in the range 1000-10,000. A dimensionless form of the Rohrer equation was used to simulate the data and to partition the total loss into that of an individual bifurcation. By appropriate sealing relationships, the results with aqueous solutions were extended to the flow of air. Dissert. Abstr.

N80-13764# Clemson Univ., S.C. Coll. of Engineering.
RESUSCITATION FROM HYPOTHERMIA: A LITERATURE REVIEW Final Report, 17 Jan. 1978 - 14 Feb. 1979
R. Michael Harnett, Fred R. Sias, and James R. Pruitt 14 Feb. 1979 64 p refs
(Contract DOT-CG-72074-A)
(AD-A069093; USCG-D-26-79) Avail: NTIS HC A04/MF A01 CSCL 06/5

This report summarizes medical and scientific aspects of the general literature debate over rapid versus slow rewarming and selected specific rewarming approaches. The specific approaches were selected largely on the basis of being difficult to evaluate with in vivo experiments with human subjects. Findings in basic medical literature, research reports and clinical medical literature are analyzed leading to recommendations of the suitability of each specific therapy for use as a first-aid treatment in the field. GRA

N80-13765# Army Research Inst. of Environmental Medicine, Natick, Mass.
DEVELOPMENT AND DESCRIPTION OF A DEVICE FOR STATIC STRENGTH MEASUREMENT IN THE ARMED FORCES EXAMINATION AND ENTRANCE STATION

Joseph Knapik, Dennis Kowal, Patrick Riley, James Wright, and Michael Sacco 9 Jan. 1979 44 p refs
(AD-A068684; USARIEM-T-2/79) Avail: NTIS HC A03/MF A01 CSCL 06/14

A device for muscular strength measurement designed for possible use in the AFEES is presented. Muscle groups involving the upper body, legs and trunk, were selected for measurement as being most representative of the functional muscle groups most relevant to the Army's needs. The isometric (static) mode of testing was selected due to its simplicity of administration, reliability and reduced susceptibility to motivational influences. Biomechanical factors including subject-machine couplings, anatomical angles and minimization of synkinetic movement patterns are considered. The apparatus and calibration techniques are described. Standardized postures, anatomical angles and instructions are included. Reliability coefficients of 0.97, 0.92 and 0.83 were obtained for the upper body, legs and trunk respectively. Descriptive statistics and histograms for a representative population are included. GRA

N80-13766# Coast Guard, Washington, D.C. Office of Research and Development.
RELIABILITY, VALIDITY AND APPLICATION OF AN IMPROVED SCALE FOR ASSESSMENT OF MOTION SICKNESS SEVERITY Final Report, Apr. 1978 - May 1979
S. F. Wiker, R. S. Kennedy (Naval Aviation Med. Res. Lab., New Orleans), M. E. McCauley (Human Performance Res., Inc., Goleta, Calif.), and R. L. Pepper (Naval Ocean Systems center, Kaila, Hawaii) May 1979 29 p refs
(AD-A069130; USCG-D-29-79) Avail: NTIS HC A03/MF A01 CSCL 06/5

Three sea going vessels steamed side-by-side through slight seas off the coast of Oahu, Hawaii. A four-hour octagon was transmitted twice each day for three consecutive days while motion sickness symptomatology was recorded from eighteen enlisted men who alternated among the vessels. Dramatic differences in illness severity were obtained, whether comparisons were made using objective evidence of vomiting episodes, or subjective reporting of symptoms on questionnaires. Reliability of this scoring method was excellent ($r = .95$). In addition to face and construct validity, evidence is presented of the predictive validity of the scoring method in a separate octogonal steaming experiment, using a 95 ft Coast Guard Patrol Boat in an equivalent experimental paradigm. This study showed significant covariance between the magnitude of motion sickness symptomatology and the encounter direction of the vessel to the primary swell ($p < .01$). Additional significant correlations were found between sickness severity and test subject concentration, fatigue, urine production and urine specific gravity. The majority of these relationships would not have been disclosed had only the dichotomous criterion of vomit/nonvomit been employed in assessing motion sickness severity. Implications of these data as design criteria for marine vehicles are discussed. GRA

N80-13767# California Univ., Berkeley. Lawrence Berkeley Lab. Div. of Biology and Medicine.
EFFECTS OF IONIZING RADIATION ON THE LIGHT SENSING ELEMENTS OF THE RETINA Ph.D. Thesis
Michael J. Malachowski Jul. 1978 236 p refs
(Contract W-7405-eng-48)
(LBL-5683) Avail: NTIS HC A11/MF A01

Morphological and physiological effects of particles of high linear energy transfer on the retina, in comparison with X-ray effects were investigated. The particles used were accelerated atomic nuclei of helium, carbon, and neon at kinetic energies of several hundred MeV/nucleon. For morphological studies, scanning and transmission electron microscopy and light microscopy were used. Physiological studies consisted of autoradiographic data of the rate of incorporation of labeled protein in the structures (opsin) of the outer segment of visual cells. Structural changes were found in the nuclei, as well as the inner and outer segments of visual cells, rods and cones. At a low of dose of 10 rad, X-ray and helium had no statistically significant morphological effects, but carbon and neon beams did cause significant degeneration of individual cells, pointing to the existence of a linear dose effect relationship. Other significant results are reported. DOE

N80-13768# Dornier-Werke G.m.b.H., Friedrichshafen (West Germany).
APPARATUS FOR MEASUREMENT OF TISSUE COMPLIANCE Final Report
Wolfgang Gerhard, Wolfgang Hepp, and Karl-Frieder Sahm Bonn Bundesmin. fuer Forsch. u. Technol. Nov. 1978 60 p refs In GERMAN; ENGLISH summary
(Contracts BMFT-WRT-1076; DFVLR-BPT-01-00-096)
(BMFT-FB-W-78-05) Avail: NTIS HC A05/MF A01; Fachinformationszentrum, Karlsruhe, West Germany DM 12,60

It is supposed that the compliance of tissues under weightlessness produces changes in the distribution of fluids in the tissues which can be observed in space. These changes give rise to changes in the tissue thickness; analogous thickness variations can be produced by application of external pressure to tissue. A concept for measuring these variations in tissue thickness is studied. After a critical analysis of the experimental situation, possible procedures for thickness measurement are discussed. As a suitable procedure, an ultrasonic echo method was chosen which works with impulses similar to shock waves. For the application of pressure to the tissue a special pressure chamber was developed. Problems connected with coupling of the chamber and the ultrasonic probe to the tissue surface were solved. A laboratory test of the measuring equipment gives results which are reproducible and of adequate precision. Author (ESA)

N80-13769*# National Aeronautics and Space Administration. Langley Research Center, Hampton, Va.
EFFECT OF NOISE SPECTRA AND A LISTENING TASK UPON PASSENGER ANNOYANCE IN A HELICOPTER INTERIOR NOISE ENVIRONMENT
Sherman A. Clevenson and Jack D. Leatherwood Dec. 1979 26 p refs
(NASA-TP-1590; L-13233) Avail: NTIS HC A03/MF A01 CSCL 05I

The effects of helicopter interior noise on passenger annoyance were studied. Both reverie and listening situations were studied as well as the relative effectiveness of several descriptors (i.e., overall sound pressure level, A-weighted sound pressure level, and speech interference level) for quantifying annoyance response for these situations. The noise stimuli were based upon recordings of the interior noise of a civil helicopter research aircraft. These noises were presented at levels ranging from approximately 68 to 86 dB(A) with various gear clash tones selectively attenuated to give a range of spectra. Results indicated that annoyance during a listening condition is generally higher than annoyance during a reverie condition for corresponding interior noise environments. Attenuation of the planetary gear clash tone results in increases in listening performance but has negligible effect upon annoyance for a given noise level. The noise descriptor most effective for estimating annoyance response under conditions of reverie and listening situations is shown to be the A-weighted sound pressure level. R.E.S.

N80-13770*# General Electric Co., Houston, Tex. Apollo Systems Dept.
ANALYSIS OF METABOLIC ENERGY UTILIZATION IN THE SKYLAB ASTRONAUTS
J. I. Leonard 19 Dec. 1977 97 p
(Contract NAS9-14523)
(NASA-CR-160402; TIR-741-MED-7018) Avail: NTIS HC A05/MF A01 CSCL 05H

Skylab biomedical data regarding man's metabolic processes for extended periods of weightlessness is presented. The data was used in an integrated metabolic balance analysis which included analysis of Skylab water balance, electrolyte balance, evaporative water loss, and body composition. A theoretical analysis of energy utilization in man is presented. The results of the analysis are presented in tabular and graphic format. R.E.S.

N80-13771*# General Electric Co., Houston, Tex. Apollo Systems Dept.
SKYLAB WATER BALANCE ERROR ANALYSIS
J. I. Leonard 5 May 1977 39 p refs
(Contract NAS9-14523)
(NASA-CR-160403; TIR-782-LSP-7006) Avail: NTIS HC A03/MF A01 CSCL 05H

Estimates of the precision of the net water balance were obtained for the entire Skylab preflight and inflight phases as well as for the first two weeks of flight. Quantitative estimates of both total sampling errors and instrumentation errors were obtained. It was shown that measurement error is minimal in comparison to biological variability and little can be gained from improvement in analytical accuracy. In addition, a propagation of error analysis demonstrated that total water balance error could be accounted for almost entirely by the errors associated with body mass changes. Errors due to interaction between terms in the water balance equation (covariances) represented less than 10% of the total error. Overall, the analysis provides evidence that daily measurements of body water changes obtained from the indirect balance technique are reasonable, precise, and relaible. The method is not biased toward net retention or loss. R.E.S.

N80-13772# Bendix Corp., Davenport, Iowa. Instruments and Life Support Div.
ANTI-SUFFOCATION VALVE BENDIX TYPE NO. 3267010-0101 Final Report
J. Mientus, R. Cramer, and J. Dunbar 16 Apr. 1979 26 p refs
(Contract N62269-76-C-0214)
(AD-A068927; NADC-79010-60) Avail: NTIS HC A03/MF A01 CSCL 06/11

The oxygen supply currently located in the RSSK (Rigid Seat Survival Kit) provides the aircrew member with an emergency source of oxygen in the event of an in-flight failure of the aircraft oxygen system, during parachute descent, or in the event of aircraft ditching. An inherent danger in the system is the suffocation of an unconscious aircrew member who cannot remove his mask in the event the emergency oxygen supply becomes depleted or is malfunctioning. The protection envelope currently provided the aircrew member will be greatly enhanced through the incorporation of an anti-suffocation valve, providing the capability of breathing ambient air when oxygen from the emergency supply is no longer available. The valve overcomes the danger of an aircrew member unknowingly breathing air during normal in-flight operation, and prevents the entrance of water during an underwater or flotation condition. GRA

N80-13773# ITT Electro-Optical Products Div., Roanoke, Va.
AVIATION NIGHT VISION GOGGLE Final Report, 13 Jul. 1977 - 16 Mar. 1979
Pete Hartman 29 Mar. 1979 54 p
(Contract DAAK70-77-C-0179)
(AD-A073296) Avail: NTIS HC A04/MF A01 CSCL 17/8

The intent of this program was to demonstrate the feasibility of a lightweight goggle which possessed a unique 'flip-up' capability and utilized the existing Generation II or (Gen III) lightweight image intensifier assembly. The contract consisted of the design, fabrication, test, and delivery of two Aviation Goggles with two minor design iterations. The contract modification consisted of retrofitting two sets of goggles with lightweight image intensifier. GRA

N80-13774# Messerschmitt-Boelkow-Blohm G.m.b.H., Munich (West Germany). Unternehmensbereich Raumfahrt.
SPACELAB ENVIRONMENT INVESTIGATION BY MASS SPECTROMETER Final Report
Gunther Kupfahl and Rolf Maisch Bonn Bundesmin. fuer Forsch. u. Technol. Nov. 1978 70 p refs In GERMAN; ENGLISH summary
(Contracts BMFT-WRT-1075; DFVLR-BPT-01-00-016)
(BMFT-FB-W-78-02) Avail: NTIS HC A04/MF A01; Fachinformationszentrum, Karlsruhe, West Germany DM 14,50

The aptness of the extremely clean environment onboard Spacelab to scientific and technological experimentation is considered. The limitations of this cleanliness due to leakage and outgassing from the Shuttle-Spacelab system are defined. Contamination control, mandatory for certain missions, is described. The use of mass spectrometers, being best suited to this purpose, as measuring instruments is recommended. Type and preliminary specifications for this equipment are given. It is pointed out that this instrument can be used simultaneously for aeronomic research, because the undisturbed and contaminated atmosphere can be separated by an energy discriminator. A set of control mechanisms is suggested to cover at least one halfsphere of the space around is Spacelab. Author (ESA)

N80-13775# Forschungsinstitut fuer Anthropotechnik, Meckenheim (West Germany).
A FIELD OF VIEW SIMULATOR EQUIPPED FOR PERSPECTIVE TRANSFORMATION ON A TELEVISION RASTER [EIN SICHTSIMULATOR MIT PERSPEKTIVISCHER VERZEICHNUNG DES RASTERS VON FERNSEHBILDERN]
H. Heising Dec. 1977 78 p refs In GERMAN; ENGLISH summary
(FB-34) Avail: NTIS HC A05/MF A01; Forschungsinst. fuer Anthropotech., Meckenheim, West Ger. DM 10

For ergonomical investigations of visual simulation problems a system which simulates the outside visual environment as seen by an aircraft pilot was developed. Television technology was used for storage and display of moving images because of its low cost and technical maturity. High accuracy and fast computation requirements are accomplished with a specially built analog computing network which is described in detail. This visual simulation technique is applicable to a wide range of tasks and visual situations in which perspective transformations of images are desired. Author (ESA)

N80-13776# Forschungsinstitut fuer Anthropotechnik, Meckenheim (West Germany).
ON THE OPTIMIZATION OF SPRING ELASTICITY, DAMPING, AND INERTIA EFFECTS ON THE SPRING LOADING OF A CONTROL STICK [ZUR OPTIMIERUNG VON FEDER-, DAEMPFUNGS- UND MASSEANTEILEN BEIM BEWEGUNGSWIDERSTAND EINES LENKKNUEPPELS]
W. Krueger May 1978 41 p refs In GERMAN; ENGLISH summary
(FB-37) Avail: NTIS HC A03/MF A01; Forschungssinst. fuer Anthropotech., Meckenheim, West Germany DM 10

In manual control the performance of the human operator can be influenced by the design of controls. Deflection-resistance characteristics are of special interest due to the movement resistance of the control. In order to investigate several reaction forces of a joystick, a series of experiments was conducted. The optimal control forces as a combination of spring force (0, 1, 2, 3.5 N/cm) viscous damping (0, 0.2, 0.35 N/cm/sec), and inertia (0, 2 kg) were obtained. A second and third order tracking task (simplified longitudinal and lateral dynamics of an airplane) was used. Results show that only spring force (1.0 to 3.5 N/cm), can improve tracking performance. Damping and inertia effects were negative using a low spring stiffness of 1.0 N/cm. Self adjusted stiffness by well trained subjects was 1.7 N/cm. Author (ESA)

N80-13777# Forschungsinstitut fuer Anthropotechnik, Meckenheim (West Germany).
A COMPARISON OF CONTROL SIMULATORS HAVING FORCE INPUTS AND DISPLACEMENT FEEDBACK. APPLICATIONS TO THE MANUAL CONTROL OF UNDERWATER VEHICLES [UNTERSUCHLING EINES BEDIENELEMENTS MIT KRAFTEINGABE UND WEGRUECKMELDUNG BEI DER MANNELLEN LENKUNG VON UNTERWASSERFAHRZEUGEN]
H. E. Boller and W. Krueger May 1978 32 p refs In GERMAN; ENGLISH summary
(FB-38) Avail: NTIS HC A03/MF A01; Forschungsinst. fuer Anthropotech., Meckenheim, West Germany DM 10

In manual control, human operator performance can be improved by kinesthetic feedback of vehicle dynamic behavior. In a low-frequency system, the advantage of kinesthetic feedback may be reduced by slow system reactions. Two different single axis control yokes, each with the functional capability of either pure displacement inputs of force input with a displacement feedback as a kinesthetic display of vehicle response were compared. Eight subjects were used in controlling a simulated submarine while making several changes in depth. Results did not support a preference for the force yoke with a displacement

feedback. It is recommended not to use this type of control device in steering such a one-axis low-frequency system.
Author (ESA)

N80-13778# Forschungsinstitut fuer Anthropotechnik, Meckenheim (West Germany).

ON THE PROBLEM OF SPRING LOADED RESISTANCE TO SIMPLE AND COMPLEX POSITIONING OF A CONTROL STICK [ZUM PROBLEM DES BEWEGUNGS- WIDERSTANDS BEI EINFACHEN UND KOMPLEXEN STELLBEWEGUNGEN DES ARMES]

G. Rothbauer Oct. 1978 150 p refs In GERMAN, ENGLISH summary
(FB-40) Avail: NTIS HC A07/MF A01; Forschungsinst. fuer Anthropotech., Meckenheim, West Germany DM 10

To provide good proprioceptive feedback in a manual control device for a designation task, spring resistance of a joystick was optimized by using the psychophysical method of cross modality matching. Designation with zero and first order systems showed that the coarse adjustment was insensitive to stick and certain task parameters, although it was influenced by some biomechanical parameters and the anticipated demands of the final control positioning. Only the more difficult fine adjustment is sensitive to parameter alteration and therefore suitable for optimization attempts. The strong centering of the stick by nonlinear degressive spring resistance facilitates fine adjustment. Through this, total adjustment time with the first order system is reduced by more than 30%, compared to a linear resistance. Tracking experiments confirm the usefulness and preference of nonlinear spring resistance.
Author (ESA)

N80-13779# Forschungsinstitut fuer Anthropotechnik, Meckenheim (West Germany).

THE AUTOMOBILE DRIVING SIMULATOR FOR ANTHROPOGENIC RESEARCH

E. Donges Jul. 1978 48 p refs In GERMAN; ENGLISH summary uft der fahrsimulator des forschungsinstituts fuer anthropotechnik
(FB-41) Avail: NTIS HC A03/MF A01; Forschungsinst. fuer Anthropotech., Meckenheim, West Germany DM 10

The setup of a driving simulator which is used for the investigation of human behavior in guiding motor vehicles is described. The front part of a fully equipped car body serves as a mock-up for the driver. The simulation of lateral and longitudinal vehicle dynamics is based on simplified motion equations and characteristics implemented on a digital process computer. An electronic visual outside world simulation generates a synthetic, central perspective view of a two lane road according to vehicle motions. The driving noise is composed of simulated engine, tire, and wind noise. The simulator mock-up can be rotated in degrees of freedom (roll and pitch) by an electro-hydraulic servosystem. Steering wheel forces are provided by an electromechanical servosystem corresponding to a static characteristic with hysteresis. The data transfer between the simulator components, the simulation mode control, and data acquisition is coordinated by a digital process computer which also solves the dynamic equations of vehicle motion in real time.
Author (ESA)

N80-13780# Forschungsinstitut fuer Anthropotechnik, Meckenheim (West Germany).

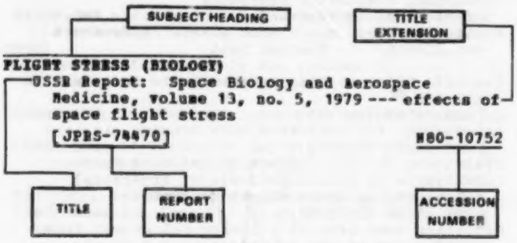
ON THE INTERACTION BETWEEN SYSTEM AND TASK PARAMETERS THROUGH CONTINUOUS MANUAL CONTROL [INTERAKTION VON SYSTEM- UND AUFGABENPARAMETERN BEI KONTINUIERLICHER MANUELLER REGFLUNG]

G. Rothbauer Mar. 1979 39 p refs In GERMAN; ENGLISH summary
(FB-42) Avail: NTIS HC A03/MF A01; Forschungsinst. fuer Anthropotech., Meckenheim, West Germany. DM 10

Experiments in pursuit tracking with a first order system were conducted. Tracking performance, depending on the forcing function bandwidth, the system parameters control gain and control spring resistance as well as their interactive influence, was investigated. These experiments, giving six subjects the possibility of self adjusting the system parameters according to the task, resulted in parameter settings which required an intraindividually constant average control force for the accomplishment of the task. It is noted that the average control deflection varied considerably. Results are interpreted according to the importance of proprioceptive force-feedback in continuous control.
Author (ESA)

SUBJECT INDEX

Typical Subject Index Listing



The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABSORBERS (EQUIPMENT)
Development of the electrochemically regenerable carbon dioxide absorber for portable life support system application
[ASME PAPER 79-ENAS-33] A80-15257

ACCELERATION STRESSES (PHYSIOLOGY)
Relationship between recovery and hypothermia induced by centrifugation in rats
A80-13372

Effects of long-term repetitive exposure to centrifugation of 2G on developing rat
A80-13373

Use of microspheres in measurement of regional blood flows during +Gz stress
A80-16452

ADAPTATION
Memory and adaptation --- Russian Book
A80-14098

ADAPTIVE CONTROL
Interdependence between the saccadic and the continuous eye movement control systems
A80-14797

Pursuit-tracking simulator with adaptive pseudorandom program of marker trajectory
A80-16466

ADRENAL GLAND
Adrenocortical function in rats chronically exposed to high altitude
A80-16453

Effects of hypophysectomy and dexamethasone on rat adrenal response to microwaves
A80-16457

ADRENOCORTICOTROPIN (ACTH)
Adrenocortical function in rats chronically exposed to high altitude
A80-16453

Effects of hypophysectomy and dexamethasone on rat adrenal response to microwaves
A80-16457

AEROBIOLOGY
Effects and post-effects of two-hour exhausting exercise on composition and gas transport functions of blood
A80-13273

Difference between end-tidal and arterial P/CO2/ in exercise
A80-13505

AEROSPACE ENVIRONMENTS
High-pressure protective systems technology
[ASME PAPER 79-ENAS-15] A80-15240

Use of phytotrons in assessing environmental requirements for plants in space habitats
[ASME PAPER 79-ENAS-28] A80-15252

AEROSPACE MEDICINE
The place of computerized axial tomography /CAT/ in the examination of flight crews
A80-15629

The physiopathology of vertebral pain in helicopter pilots
A80-15633

The importance of continuous electrocardiogram recording in conduction disorders in flight crews
A80-15635

A closed system: Man-higher plants /four-month experiment/ --- Russian book
A80-16393

Plasma catecholamines and cardiovascular responses to cold and mental activity
A80-16455

Motion sickness susceptibility during rotation at 30 rpm in free-fall parabolic flight
A80-17054

Analysis of metabolic energy utilization in the Skylab astronauts
[NASA-CR-160402] N80-13770

Skylab water balance error analysis
[NASA-CR-160403] N80-13771

AEROSPACE TECHNOLOGY TRANSFER
Medical applications of aerospace technology
A80-14793

AGRICULTURE
Recycling plant, human and animal wastes to plant nutrients in a closed ecological system
[ASME PAPER 79-ENAS-29] A80-15253

Controlled-environment agricultural systems as food sources for large space habitats
[ASME PAPER 79-ENAS-30] A80-15254

AIR COOLING
The use of a positive displacement air cycle machine in a closed-loop environmental control system
[ASME PAPER 79-ENAS-6] A80-15231

AIRCRAFT EQUIPMENT
Anti-suffocation valve Bendix type no. 3267010-0101
[AD-A068927] N80-13772

AIRCRAFT HAZARDS
A procedure for electronically monitoring animal response parameters using the rotating wheel --- aircraft fire hazard application
A80-13322

AIRCRAFT NOISE
Effect of noise spectra and a listening task upon passenger annoyance in a helicopter interior noise environment
[NASA-TP-1590] N80-13769

AIRCRAFT PILOTS
The place of computerized axial tomography /CAT/ in the examination of flight crews
A80-15629

The physiopathology of vertebral pain in helicopter pilots
A80-15633

The application of indirect oxymetry in the criticism of the dilution standards of oxygen regulators
A80-15636

A field of view simulator equipped for perspective transformation on a television raster
[PB-34] N80-13775

AIRCRAFT SAFETY
A procedure for electronically monitoring animal response parameters using the rotating wheel --- aircraft fire hazard application
A80-13322

ALTITUDE ACCLIMATIZATION
Prediction of the physical work capacity of persons at mountain altitudes A80-14165
Adrenocortical function in rats chronically exposed to high altitude A80-16453
ALTITUDE SIMULATION
Investigation of certain electrophysiological and biochemical parameters in hypoxia testing at a simulated altitude of 5500 m A80-15634
ALTITUDE TOLERANCE
Water-electrolyte metabolism and the function of human kidneys at mountain altitudes A80-13477
AMINES
Interhemispheric relationships of monoamine oxidase activity and norepinephrine content in the cortical centers of the skin and motor analyzers in the human brain A80-14257
AMINO ACIDS
Amino acids in the Yamato carbonaceous chrondrite from Antarctica A80-13548
AMPLITUDE DISTRIBUTION ANALYSIS
Amplitude-phase discriminator with two-CRT oscillograph display A80-16471
ANNUAL VARIATIONS
Seasonal variation in work performance and heart rate response to exercise - A study of 1,835 middle-aged men A80-13274
ANTARCTIC REGIONS
Amino acids in the Yamato carbonaceous chrondrite from Antarctica A80-13548
ARTERIES
Active responses of the internal carotid artery to stretching A80-17285
In vivo investigation of the elastohysteresis properties of the aorta and its branches A80-17288
Numerical solution of a hyperbolic system of conservation laws for blood flow in the arterial tree N80-12726
ASTRONAUT PERFORMANCE
Physiological characteristics of psychic models of hypo- and hyper-gravity A80-16467
AUDITORY PERCEPTION
Effect of noise spectra and a listening task upon passenger annoyance in a helicopter interior noise environment [NASA-TP-1590] N80-13769
AUTOMATA THEORY
Vertical stabilization of a quadriped walking machine A80-17262
AUTOMOBILES
Rational ways to increase pictographic symbol discriminability N80-12734
The automobile driving simulator for anthropogenic research [PB-41] N80-13779

B

BALLOON FLIGHT
Biological investigations carried out in balloons A80-13451
BEHAVIOR
Microwaves - Effect on thermoregulatory behavior in rats A80-13590
BINOCULAR VISION
Humans deprived of normal binocular vision have binocular interactions tuned to size and orientation A80-13864
Binocular and monocular stimuli for motion in depth - Changing-disparity and changing-size feed the same motion-in-depth stage A80-17059
BIOASSAY
Determining biological fine structure by differential absorption of soft X-ray [BNL-26282] N80-13760
BIOASTRONAUTICS
Closed-ecology life support systems /CELSS/ for long-duration, manned missions [ASME PAPER 79-ENAS-27] A80-15251
Use of phytotrons in assessing environmental requirements for plants in space habitats [ASME PAPER 79-ENAS-28] A80-15252
Applications of the thermoelectrically integrated membrane evaporator subsystem [ASME PAPER 79-ENAS-48] A80-15271
A closed system: Man-higher plants /four-month experiment/ --- Russian book A80-16393
The Life Sciences Flight Experiments Program - An update [AAS PAPER 79-250] A80-16430
Experiments for dedicated life science missions [AAS PAPER 79-251] A80-16431
Evaluation of heat convection and flow front influence on electrophoresis of biological substances in space flight conditions [IAF PAPER 79-ST-17] A80-17067
Radiation dose rate of a biological object from cosmic rays in the stratosphere and at the height of artificial earth satellites A80-17100
BIOCHEMISTRY
Catecholamines and chemical thermoregulation during cold acclimation A80-14260
BIOCONTROL SYSTEMS
Interdependence between the saccadic and the continuous eye movement control systems A80-14797
BIODYNAMICS
General characteristics of the rheological properties of the soft tissues of the human body using local cycling loading measurements and a simple phenomenological model of these properties A80-13243
Active responses of the internal carotid artery to stretching A80-17285
In vivo investigation of the elastohysteresis properties of the aorta and its branches A80-17288
BIOELECTRIC POTENTIAL
A possible mechanism for the influence of electromagnetic radiation on neuroelectric potentials A80-16575
BIOELECTRICITY
Electromagnetic absorption in multilayered cylindrical models of man A80-13216
Amplitude-phase discriminator with two-CRT oscillograph display A80-16471
BIOENGINEERING
Artificial sensory organs: Problems of modeling sensory systems --- Russian book A80-16461
BIOINSTRUMENTATION
Medical applications of aerospace technology A80-14793
Use of microspheres in measurement of regional blood flows during +Gz stress A80-16452
Design of a microprocessor based cardiotachometer [AD-A073105] N80-12731
BIOLOGICAL EFFECTS
Biological investigations carried out in balloons A80-13451
BIOLOGICAL EVOLUTION
Search for microorganisms in space --- Russian book A80-16459
BIOLUMINESCENCE
Time-resolved spectrometry of in vivo firefly bioluminescence emissions A80-16793
BIOMEDICAL DATA
Some aspects of processing physiological data A80-16480

Human muscle fiber types in power lifters, distance runners and untrained subjects: A histochemical and ultrastructural study N80-12727
Analysis of metabolic energy utilization in the Skylab astronauts [NASA-CR-160402] N80-13770
Skylab water balance error analysis [NASA-CR-160403] N80-13771

BIOMETRICS
A postural measurement system for induced body sway assessment N80-12729
Design of a microprocessor based cardiotachometer [AD-A073105] N80-12731

BIONICS
Separation of motions in the problem of stabilizing biped walking A80-14382
Mathematical model of respiratory rhythm generation A80-16602
Processing of direction and magnitude by the saccadic eye-movement system A80-17060
Numerical solution of a hyperbolic system of conservation laws for blood flow in the arterial tree N80-12726
A postural measurement system for induced body sway assessment N80-12729
System parameters for erythropoiesis control model: Comparison of normal values in human and mouse model [NASA-CR-160401] N80-13759

BLOOD CIRCULATION
Effects and post-effects of two-hour exhausting exercise on composition and gas transport functions of blood A80-13273
Parameter estimation of radiocardiogram using a minicomputer A80-14798
In vivo investigation of the elastohysteresis properties of the aorta and its branches A80-17288

BLOOD FLOW
Use of microspheres in measurement of regional blood flows during +Gz stress A80-16452
Numerical solution of a hyperbolic system of conservation laws for blood flow in the arterial tree N80-12726

BLOOD PLASMA
Plasma volume during stress in man - Osmolality and red cell volume A80-13506
Plasma catecholamines and cardiovascular responses to cold and mental activity A80-16455

BLOOD PRESSURE
Active responses of the internal carotid artery to stretching A80-17285

BLOOD VOLUME
Plasma volume during stress in man - Osmolality and red cell volume A80-13506

BODY FLUIDS
Water-electrolyte metabolism and the function of human kidneys at mountain altitudes A80-13477

BODY MEASUREMENT (BIOLOGY)
Apparatus for measurement of tissue compliance [BMFT-FB-W-78-05] N80-13768

BODY TEMPERATURE
Relationship between recovery and hypothermia induced by centrifugation in rats A80-13372
Effects of cold exposure on circadian rhythm of body temperature in rats and rabbits A80-13374

BODY WEIGHT
Effects of long-term repetitive exposure to centrifugation of 2G on developing rat A80-13373

BOTANY
Use of phytotrons in assessing environmental requirements for plants in space habitats [ASME PAPER 79-ENAS-28] A80-15252

BRAIN
Interhemispheric relationships of monoamine oxidase activity and norepinephrine content in the cortical centers of the skin and motor analyzers in the human brain A80-14257
The place of computerized axial tomography /CAT/ in the examination of flight crews A80-15629
Amplitude-phase discriminator with two-CRT oscillograph display A80-16471

BRAIN CIRCULATION
Active responses of the internal carotid artery to stretching A80-17285

BRONCHI
Modeling studies of the pressure-flow relationship of the central airways N80-13763

C

CANS
Design and development of a trace contaminant removal canister for Spacelab [ASME PAPER 79-ENAS-16] A80-15241

CARBON DIOXIDE
A study of the reduction of carbon dioxide in a silent electric discharge [ASME PAPER 79-ENAS-13] A80-15238
Development of an improved Sabatier reactor --- catalytic oxygen recovery from carbon dioxide [ASME PAPER 79-ENAS-36] A80-15260

CARBON DIOXIDE REMOVAL
Bosch - An alternate CO2 reduction technology [ASME PAPER 79-ENAS-32] A80-15256
Development of the electrochemically regenerable carbon dioxide absorber for portable life support system application [ASME PAPER 79-ENAS-33] A80-15257
EDC - A regenerable CO2 removal subsystem for an enhanced capability orbiter [ASME PAPER 79-ENAS-34] A80-15258

CARBON DIOXIDE TENSION
Difference between end-tidal and arterial P/CO2/ in exercise A80-13505

CARBONACEOUS CHONDRITES
Amino acids in the Yamato carbonaceous chrondrite from Antarctica A80-13548
Quantification of monocarboxylic acids in the Murchison carbonaceous meteorite A80-13549

CARBONACEOUS METEORITES
Uracil in carbonaceous meteorites A80-16068

CARBOXYLIC ACIDS
Quantification of monocarboxylic acids in the Murchison carbonaceous meteorite A80-13549

CARDIAC VENTRICLES
Echocardiographic recognition of atrioventricular valve stenosis associated with endocardial cushion defect - Pathologic and surgical correlates A80-15998

CARDIOGRAMS
Parameter estimation of radiocardiogram using a minicomputer A80-14798
Simultaneous muscle force and displacement transducer [NASA-CASE-NPO-14212-1] N80-12730

CARDIOTACHOMETERS
Design of a microprocessor based cardiotachometer [AD-A073105] N80-12731

CARDIOVASCULAR SYSTEM
Plasma catecholamines and cardiovascular responses to cold and mental activity A80-16455

CAROTID SINUS BODY
Active responses of the internal carotid artery to stretching
A80-17285

CATALYTIC ACTIVITY
Development of an improved Sabatier reactor --- catalytic oxygen recovery from carbon dioxide
[ASME PAPER 79-ENAS-36] A80-15260

CATECHOLAMINE
Catecholamines and chemical thermoregulation during cold acclimation
A80-14260
Plasma catecholamines and cardiovascular responses to cold and mental activity
A80-16455

CELLS (BIOLOGY)
Problems and potentialities of cultured plant cells in retrospect and prospect
A80-15225

CENTRAL NERVOUS SYSTEM
Memory and adaptation --- Russian Book
A80-14098

CENTRIFUGING STRESS
Relationship between recovery and hypothermia induced by centrifugation in rats
A80-13372
Effects of long-term repetitive exposure to centrifugation of 2G on developing rat
A80-13373

CHEMICAL COMPOSITION
Effects and post-effects of two-hour exhausting exercise on composition and gas transport functions of blood
A80-13273

CHEMICAL REACTIONS
Catecholamines and chemical thermoregulation during cold acclimation
A80-14260

CHEMOTHERAPY
Eye movements in paralyzed cats induced by drugs and sympathetic stimulation
A80-13591

CIRCADIAN RHYTHMS
Effects of cold exposure on circadian rhythm of body temperature in rats and rabbits
A80-13374

CIRCULAR CYLINDERS
Electromagnetic absorption in multilayered cylindrical models of man
A80-13216

CLINICAL MEDICINE
Medical applications of aerospace technology
A80-14793
Echocardiographic recognition of atrioventricular valve stenosis associated with endocardial cushion defect - Pathologic and surgical correlates
A80-15998
The effects of context on the structure of pain
N80-13761

CLOSED ECOLOGICAL SYSTEMS
Closed-ecology life support systems /CELSS/ for long-duration, manned missions
[ASME PAPER 79-ENAS-27] A80-15251
Use of phytotrons in assessing environmental requirements for plants in space habitats
[ASME PAPER 79-ENAS-28] A80-15252
Recycling plant, human and animal wastes to plant nutrients in a closed ecological system
[ASME PAPER 79-ENAS-29] A80-15253
Controlled-environment agricultural systems as food sources for large space habitats
[ASME PAPER 79-ENAS-30] A80-15254
Environmental systems for aquatic animal studies in the Shuttle era
[ASME PAPER 79-ENAS-45] A80-15268
A closed system: Man-higher plants /four-month experiment/ --- Russian book
A80-16393
Evaluation and comparison of alternative designs for water/solid-waste processing systems for spacecraft
[NASA-CR-162492] N80-12739
A preliminary research plan for development of a photosynthetic link in a closed ecological life support system
[NASA-CR-160399] N80-13758

COLD ACCLIMATIZATION
Effects of cold exposure on circadian rhythm of body temperature in rats and rabbits
A80-13374
Catecholamines and chemical thermoregulation during cold acclimation
A80-14260

COLD TOLERANCE
Investigation of thermoregulatory mechanisms
A80-13476
Thermogenic control during exercise in a cold environment
A80-13507
Plasma catecholamines and cardiovascular responses to cold and mental activity
A80-16455

COMPRESSED AIR
Effect of human exposure to a nitrogen-oxygen environment at 5-12 kgf/sq cm on certain indices of the higher nervous activity
A80-14258

COMPUTER PROGRAMS
Some aspects of processing physiological data
A80-16480

COMPUTERIZED SIMULATION
Integrated walking robot simulation and modelling
A80-14801
Processing of direction and magnitude by the saccadic eye-movement system
A80-17060

CONFERENCES
Guiding the development of a controlled ecological life support system
[NASA-CR-162452] N80-12735

CONSUMABLES (SPACECREW SUPPLIES)
Food technology in space habitats
[ASME PAPER 79-ENAS-31] A80-15255

CONTROL BOARDS
Rational ways to increase pictographic symbol discriminability
N80-12734

CONTROL SIMULATION
On the problem of spring loaded resistance to simple and complex positioning of a control stick --- in manual control experiments
[FB-40] N80-13778

CONTROL STABILITY
Ergonomical studies about the superposition of control activity and mechanical vibration
A80-13272

CONTROL STICKS
On the optimization of spring elasticity, damping, and inertia effects on the spring loading of a control stick
[FB-37] N80-13776
On the problem of spring loaded resistance to simple and complex positioning of a control stick --- in manual control experiments
[FB-40] N80-13778

CONTROL THEORY
Separation of motions in the problem of stabilizing biped walking
A80-14382

CONVECTIVE HEAT TRANSFER
Evaluation of heat convection and flow front influence on electrophoresis of biological substances in space flight conditions
[IAF PAPER 79-ST-17] A80-17067

CORONARY ARTERY DISEASE
Unreliability of exercise-induced R wave changes as indexes of coronary artery disease
A80-15996
Analysis of exercise-induced R wave amplitude changes in detection of coronary artery disease in asymptomatic men with left bundle branch block
A80-15997

CORTICOSTEROIDS
Effects of hypophysectomy and dexamethasone on rat adrenal response to microwaves
A80-16457

COSMIC RAYS
Biological investigations carried out in balloons
A80-13451
Radiation dose rate of a biological object from cosmic rays in the stratosphere and at the height of artificial earth satellites
A80-17100

CROP GROWTH
Use of phytotrons in assessing environmental requirements for plants in space habitats
[ASME PAPER 79-ENAS-26] A80-15252
CULTURE TECHNIQUES
Problems and potentialities of cultured plant cells in retrospect and prospect
A80-15225
CYTOLOGY
Human muscle fiber types in power lifters, distance runners and untrained subjects: A histochemical and ultrastructural study
N80-12727

D

DATA PROCESSING
Some aspects of processing physiological data
A80-16480
DENSITOMETERS
The place of computerized axial tomography /CAT/ in the examination of flight crews
A80-15629
DEOXYRIBONUCLEIC ACID
Radiation and DNA --- Russian book
A80-14097
DIAGNOSIS
Reliability, validity and application of an improved scale for assessment of motion sickness severity
[AD-A069130] N80-13766
DILUTION
The application of indirect oxymetry in the criticism of the dilution standards of oxygen regulators
A80-15636
DISCRIMINATORS
Amplitude-phase discriminator with two-CRT oscillograph display
A80-16471
DISPLACEMENT MEASUREMENT
Simultaneous muscle force and displacement transducer
[NASA-CASE-NPO-14212-1] N80-12730
DYNAMIC MODELS
Integrated walking robot simulation and modelling
A80-14801

E

ECHOCARDIOGRAPHY
Echocardiographic recognition of atrioventricular valve stenosis associated with endocardial cushion defect - Pathologic and surgical correlates
A80-15998
ECOLOGY
Guiding the development of a controlled ecological life support system
[NASA-CR-162452] N80-12735
Evaluation of a ground based manned demonstration as a milestone in CELSS development
N80-12736
Development requirements for a successful ground based CELSS demonstration
N80-12737
EDEMA
Resuscitation from hypothermia: A literature review
[AD-A069093] N80-13764
EFFERENT NERVOUS SYSTEMS
Interhemispheric relationships of monoamine oxidase activity and norepinephrine content in the cortical centers of the skin and motor analyzers in the human brain
A80-14257
ELASTIC DAMPING
On the problem of spring loaded resistance to simple and complex positioning of a control stick --- in manual control experiments
[PB-40] N80-13778
ELASTIC PROPERTIES
In vivo investigation of the elastohysteresis properties of the aorta and its branches
A80-17288
ELECTRIC DISCHARGES
A study of the reduction of carbon dioxide in a silent electric discharge
[ASME PAPER 79-ENAS-13] A80-15238
ELECTROCARDIOGRAPHY
The importance of continuous electrocardiogram recording in conduction disorders in flight crews
A80-15635
Analysis of exercise-induced R wave amplitude changes in detection of coronary artery disease in asymptomatic men with left bundle branch block
A80-15997
Analysis of the mean number of intersections of the zero level by physiological processes
A80-16469
Statistical representation of electrocardiographic body surface maps for feature identification data compression and classification
N80-12728
ELECTROCHEMICAL CELLS
EDC - A regenerable CO2 removal subsystem for an enhanced capability orbiter
[ASME PAPER 79-ENAS-34] A80-15258
ELECTROCHEMISTRY
Development of the electrochemically regenerable carbon dioxide absorber for portable life support system application
[ASME PAPER 79-ENAS-33] A80-15257
ELECTROCONDUCTIVITY
The importance of continuous electrocardiogram recording in conduction disorders in flight crews
A80-15635
ELECTROENCEPHALOGRAPHY
T-waves in the exercise ECG - Their location and occurrence
A80-13263
Analysis of the mean number of intersections of the zero level by physiological processes
A80-16469
ELECTROLYTE METABOLISM
Water-electrolyte metabolism and the function of human kidneys at mountain altitudes
A80-13477
ELECTROMAGNETIC ABSORPTION
Electromagnetic absorption in multilayered cylindrical models of man
A80-13216
ELECTROMAGNETIC RADIATION
A possible mechanism for the influence of electromagnetic radiation on neuroelectric potentials
A80-16575
ELECTROPHORESIS
Evaluation of heat convection and flow front influence on electrophoresis of biological substances in space flight conditions
[IAF PAPER 79-ST-17] A80-17067
ELECTROPHYSIOLOGY
Investigation of certain electrophysiological and biochemical parameters in hypoxia testing at a simulated altitude of 5500 m
A80-15634
Analysis of the mean number of intersections of the zero level by physiological processes
A80-16469
ENERGY CONVERSION EFFICIENCY
A study of the reduction of carbon dioxide in a silent electric discharge
[ASME PAPER 79-ENAS-13] A80-15238
ENERGY REQUIREMENTS
Analysis of metabolic energy utilization in the Skylab astronauts
[NASA-CR-160402] N80-13770
ENVIRONMENT SIMULATORS
A field of view simulator equipped for perspective transformation on a television raster
[PB-34] N80-13775
ENVIRONMENTAL CONTROL
The use of a positive displacement air cycle machine in a closed-loop environmental control system
[ASME PAPER 79-ENAS-6] A80-15231
ERROR ANALYSIS
Error dynamics of operator recognition of visual images
A80-16464
Skylab water balance error analysis
[NASA-CR-160403] N80-13771
ERRORS
Some models of human error for man-machine system evaluation
[AD-A072838] N80-12740

ERYTHROCYTES
Plasma volume during stress in man - Osmolality and red cell volume A80-13506
System parameters for erythropoiesis control model: Comparison of normal values in human and mouse model [NASA-CR-160401] N80-13759
ESTIMATING
Parameter estimation of radiocardiogram using a minicomputer A80-14798
EVAPORATORS
Applications of the thermoelectrically integrated membrane evaporator subsystem [ASME PAPER 79-ENAS-48] A80-15271
EXOBIOLOGY
Search for microorganisms in space --- Russian book A80-16459
EXTRAVEHICULAR ACTIVITY
High-pressure protective systems technology [ASME PAPER 79-ENAS-15] A80-15240
Development of the electrochemically regenerable carbon dioxide absorber for portable life support system application [ASME PAPER 79-ENAS-33] A80-15257
/Hard Hat/ EVA, personal equipment to support large scale construction in space [ASME PAPER 79-ENAS-43] A80-15266
EYE MOVEMENTS
Eye movements in paralyzed cats induced by drugs and sympathetic stimulation A80-13591
Calculation of the surface on which the corneal flash is located with application to the development of a system for recording eye movement A80-13859
Characteristics of oculomotor responses and their sensory components during simulation of low-altitude flights A80-14166
Interdependence between the saccadic and the continuous eye movement control systems A80-14797
Human operator eye-lid movement reaction during intense visual tasks involving the detection and tracking of visual signals A80-16470
Operator eye-movement reaction during tracking of discrete stimuli with random time and space distribution A80-16474

F

FEEDBACK CONTROL
The use of a positive displacement air cycle machine in a closed-loop environmental control system [ASME PAPER 79-ENAS-6] A80-15231
On the interaction between system and task parameters through continuous manual control [PB-42] N80-13780
FEMALES
Maximal work capacity of women during acute hypoxia A80-16456
FIBERS
Human muscle fiber types in power lifters, distance runners and untrained subjects: A histochemical and ultrastructural study N80-12727
FINE STRUCTURE
Determining biological fine structure by differential absorption of soft X-ray [BNL-26282] N80-13760
FIREFLIES
Time-resolved spectrometry of in vivo firefly bioluminescence emissions A80-16793
FIRES
A procedure for electronically monitoring animal response parameters using the rotating wheel --- aircraft fire hazard application A80-13322
FISHES
Environmental systems for aquatic animal studies in the Shuttle era [ASME PAPER 79-ENAS-45] A80-15268
FLIGHT CREWS
Detection of different target types in realistic terrain --- visual air to ground recognition [AD-A072973] N80-12733
Aviation night vision goggle [AD-A073296] N80-13773
FLIGHT SIMULATION
Characteristics of oculomotor responses and their sensory components during simulation of low-altitude flights A80-14166
FLIGHT TESTS
Environmental systems for aquatic animal studies in the Shuttle era [ASME PAPER 79-ENAS-45] A80-15268
The Life Sciences Flight Experiments Program - An update [AAS PAPER 79-250] A80-16430
FOOD INTAKE
Effects of long-term repetitive exposure to centrifugation of 2G on developing rat A80-13373
FREE FALL
Motion sickness susceptibility during rotation at 30 rpm in free-fall parabolic flight A80-17054

G

GAS COMPOSITION
The application of indirect oxymetry in the criticism of the dilution standards of oxygen regulators A80-15636
GAS EXCHANGE
Difference between end-tidal and arterial P/CO2/ in exercise A80-13505
GAS REACTORS
A study of the reduction of carbon dioxide in a silent electric discharge [ASME PAPER 79-ENAS-13] A80-15238
Development of an improved Sabatier reactor --- catalytic oxygen recovery from carbon dioxide [ASME PAPER 79-ENAS-36] A80-15260
GAS TRANSPORT
Effects and post-effects of two-hour exhausting exercise on composition and gas transport functions of blood A80-13273
GENETICS
Problems and potentialities of cultured plant cells in retrospect and prospect A80-15225
GOGGLES
Aviation night vision goggle [AD-A073296] N80-13773
GRAVITATIONAL EFFECTS
Use of microspheres in measurement of regional blood flows during +Gz stress A80-16452

H

HEAD (ANATOMY)
The place of computerized axial tomography /CAT/ in the examination of flight crews A80-15629
HEART DISEASES
Echocardiographic recognition of atrioventricular valve stenosis associated with endocardial cushion defect - Pathologic and surgical correlates A80-15998
HEART RATE
T-waves in the exercise ECG - Their location and occurrence A80-13263
Seasonal variation in work performance and heart rate response to exercise - A study of 1,835 middle-aged men A80-13274
HEAT ACCLIMATIZATION
Influence of air velocity and heat acclimation on human skin wettedness and sweating efficiency A80-16454

HELICOPTERS
The physiopathology of vertebral pain in helicopter pilots A80-15633
Effect of noise spectra and a listening task upon passenger annoyance in a helicopter interior noise environment [NASA-TP-1590] N80-13769

HEMATOPOIESIS
System parameters for erythropoiesis control model: Comparison of normal values in human and mouse model [NASA-CR-160401] N80-13759

HEMOGLOBIN
Plasma volume during stress in man - Osmolality and red cell volume A80-13506

HIBERNATION
Current problems of hypothermy A80-14259

HIGH ALTITUDE
Adrenocortical function in rats chronically exposed to high altitude A80-16453

HIGH ALTITUDE PRESSURE
Investigation of certain electrophysiological and biochemical parameters in hypoxia testing at a simulated altitude of 5500 m A80-15638

HIGH PRESSURE
Foundation of hyperbaric physiology --- Russian book A80-13526
High-pressure protective systems technology [ASME PAPER 79-ENAS-15] A80-15240

HIS BUNDLE
The importance of continuous electrocardiogram recording in conduction disorders in flight crews A80-15635
Analysis of exercise-induced R wave amplitude changes in detection of coronary artery disease in asymptomatic men with left bundle branch block A80-15997

HISTOLOGY
Determining biological fine structure by differential absorption of soft X-ray [BNL-26282] N80-13760

HUMAN BEHAVIOR
Investigation of the psychophysiological characteristics of man under extreme conditions A80-16468

HUMAN BODY
Electromagnetic absorption in multilayered cylindrical models of man A80-13216
General characteristics of the rheological properties of the soft tissues of the human body using local cycling loading measurements and a simple phenomenological model of these properties A80-13243

HUMAN FACTORS ENGINEERING
Innovations in transportation engineering and human factors A80-13186
Ergonomical studies about the superposition of control activity and mechanical vibration A80-13272
/Hard Hat/ EVA, personal equipment to support large scale construction in space [ASME PAPER 79-ENAS-43] A80-15266
Investigation of the psychophysiological characteristics of man under extreme conditions A80-16468
Method for generalizing operator performance factor evaluation in multidimensional tracking problems A80-16473
A postural measurement system for induced body sway assessment N80-12729
Single pilot scanning behavior in simulated instrument flight [NASA-TM-80178] N80-12732
Some models of human error for man-machine system evaluation [AD-A072838] N80-12740
Anti-suffocation valve Bendix type no. 3267010-0101 [AD-A068927] N80-13772
Aviation night vision goggle [AD-A073296] N80-13773

HUMAN PATHOLOGY
The place of computerized axial tomography /CAT/ in the examination of flight crews A80-15629
The physiopathology of vertebral pain in helicopter pilots A80-15633

HUMAN PERFORMANCE
Seasonal variation in work performance and heart rate response to exercise - A study of 1,835 middle-aged men A80-13274
Difference between end-tidal and arterial P/CO2/ in exercise A80-13505
Plasma volume during stress in man - Osmolality and red cell volume A80-13506
Thermogenic control during exercise in a cold environment A80-13507
The importance of pattern information for the resolution of depth-ambiguous apparent motion A80-13999
Memory and adaptation --- Russian Book A80-14098
Artificial sensory organs: Problems of modeling sensory systems --- Russian book A80-16461
Some aspects of processing physiological data A80-16480
Detection of different target types in realistic terrain --- visual air to ground recognition [AD-A072973] N80-12733
Some models of human error for man-machine system evaluation [AD-A072838] N80-12740
Reliability, validity and application of an improved scale for assessment of motion sickness severity [AD-A069130] N80-13766

HUMAN REACTIONS
Choice reaction time to movement of eccentric visual targets during concurrent rotary acceleration A80-14000
Influence of air velocity and heat acclimation on human skin wettedness and sweating efficiency A80-16454
Effect of noise spectra and a listening task upon passenger annoyance in a helicopter interior noise environment [NASA-TP-1590] N80-13769

HUMAN TOLERANCES
Investigation of thermoregulatory mechanisms A80-13476
Water-electrolyte metabolism and the function of human kidneys at mountain altitudes A80-13477
Foundation of hyperbaric physiology --- Russian book A80-13526
Prediction of the physical work capacity of persons at mountain altitudes A80-14165

HYDROGEN
Development of an improved Sabatier reactor --- catalytic oxygen recovery from carbon dioxide [ASME PAPER 79-ENAS-36] A80-15260

HYDROPONICS
Recycling plant, human and animal wastes to plant nutrients in a closed ecological system [ASME PAPER 79-ENAS-29] A80-15253

HYPERBARIC CHAMBERS
Foundation of hyperbaric physiology --- Russian book A80-13526

HYPOTHERMIA
Relationship between recovery and hypothermia induced by centrifugation in rats A80-13372
Current problems of hypothermy A80-14259
Resuscitation from hypothermia: A literature review [AD-A069093] N80-13764

HYPOXIA
Eye movements in paralyzed cats induced by drugs and sympathetic stimulation A80-13591

Investigation of certain electrophysiological and biochemical parameters in hypoxia testing at a simulated altitude of 5500 m A80-15634
Maximal work capacity of women during acute hypoxia A80-16456

HYSTERESIS
In vivo investigation of the elastohysteresis properties of the aorta and its branches A80-17288

I

IMAGE INTENSIFIERS
Aviation night vision goggle [AD-A073296] N80-13773

IMAGE PROCESSING
Visual information and vision of robots --- Russian book A80-14099

INFORMATION SYSTEMS
Visual information and vision of robots --- Russian book A80-14099

INSTRUMENT ERRORS
T-waves in the exercise ECG - Their location and occurrence A80-13263

INSTRUMENT FLIGHT RULES
Single pilot scanning behavior in simulated instrument flight [NASA-TM-80178] N80-12732

IONIZING RADIATION
Radiation and DNA --- Russian book A80-14097
Effects of ionizing radiation on the light sensing elements of the retina [LBL-5683] N80-13767

ISOTOPIC LABELING
Parameter estimation of radiocardiogram using a minicomputer A80-14798
Use of microspheres in measurement of regional blood flows during +Gz stress A80-16452

K

KIDNEYS
Water-electrolyte metabolism and the function of human kidneys at mountain altitudes A80-13477

L

LEG (ANATOMY)
Integrated walking robot simulation and modelling A80-14801

LIFE CYCLE COSTS
The use of a positive displacement air cycle machine in a closed-loop environmental control system [ASME PAPER 79-ENAS-6] A80-15231

LIFE SCIENCES
Experiments for dedicated life science missions [AAS PAPER 79-251] A80-16431

LIFE SUPPORT SYSTEMS
Development of a Space Shuttle plant growth unit [ASME PAPER 79-ENAS-19] A80-15243
Bosch - An alternate CO2 reduction technology [ASME PAPER 79-ENAS-32] A80-15256
EDC - A regenerable CO2 removal subsystem for an enhanced capability orbiter [ASME PAPER 79-ENAS-34] A80-15258
/Hard Hat/ EVA, personal equipment to support large scale construction in space [ASME PAPER 79-ENAS-43] A80-15266
Environmental systems for aquatic animal studies in the Shuttle era [ASME PAPER 79-ENAS-45] A80-15268
Applications of the thermoelectrically integrated membrane evaporator subsystem [ASME PAPER 79-ENAS-48] A80-15271
Guiding the development of a controlled ecological life support system [NASA-CR-162452] N80-12735
Evaluation of a ground based manned demonstration as a milestone in CELSS development N80-12736
Development requirements for a successful ground based CELSS demonstration N80-12737
Research recommendations N80-12738

LONG TERM EFFECTS
Effects of long-term repetitive exposure to centrifugation of 2G on developing rat A80-13373

LOW ALTITUDE
Characteristics of oculomotor responses and their sensory components during simulation of low-altitude flights A80-14166

LUNGS
Modeling studies of the pressure-flow relationship of the central airways N80-13763

M

MAN ENVIRONMENT INTERACTIONS
A closed system: Man-higher plants /four-month experiment/ --- Russian book A80-16393

MAN MACHINE SYSTEMS
Innovations in transportation engineering and human factors A80-13186
Psychophysical studies of human-operator activity and instrumentation for these studies --- Russian book A80-16463
Error dynamics of operator recognition of visual images A80-16464
Autogenic training as a method of stimulating operator work capacity A80-16465
Pursuit-tracking simulator with adaptive pseudorandom program of marker trajectory A80-16466
Determination of psychophysiological reaction norms of a pilot during work A80-16472
Some models of human error for man-machine system evaluation [AD-A072838] N80-12740
On the interaction between system and task parameters through continuous manual control [PB-42] N80-13780

MANNED SPACE FLIGHT
Closed-ecology life support systems /CELSS/ for long-duration, manned missions [ASME PAPER 79-ENAS-27] A80-15251
Evaluation of a ground based manned demonstration as a milestone in CELSS development N80-12736
Development requirements for a successful ground based CELSS demonstration N80-12737
Research recommendations N80-12738

MANUAL CONTROL
A comparison of control simulators having force inputs and displacement feedback. Applications to the manual control of underwater vehicles [PB-38] N80-13777
On the interaction between system and task parameters through continuous manual control [PB-42] N80-13780

MAPPING
Statistical representation of electrocardiographic body surface maps for feature identification data compression and classification N80-12728

MASS SPECTROMETERS
Spacelab environment investigation by mass spectrometer [BMFT-FB-W-78-02] N80-13774

MATERIALS RECOVERY
Recycling plant, human and animal wastes to plant nutrients in a closed ecological system [ASME PAPER 79-ENAS-29] A80-15253

MATHEMATICAL MODELS
Electromagnetic absorption in multilayered cylindrical models of man A80-13216

Mathematical model of respiratory rhythm generation A80-16602
Numerical solution of a hyperbolic system of conservation laws for blood flow in the arterial tree N80-12726
System parameters for erythropoiesis control model: Comparison of normal values in human and mouse model [NASA-CR-160401] N80-13759

MEDICAL ELECTRONICS
Simultaneous muscle force and displacement transducer [NASA-CASE-NPO-14212-1] N80-12730

MEDICAL SERVICES
Medical applications of aerospace technology A80-14793

MEMBRANES
Applications of the thermoelectrically integrated membrane evaporator subsystem [ASME PAPER 79-ENAS-48] A80-15271

MEMORY
Memory and adaptation --- Russian Book A80-14098

MENTAL PERFORMANCE
Choice reaction time to movement of eccentric visual targets during concurrent rotary acceleration A80-14000
Effect of human exposure to a nitrogen-oxygen environment at 5-12 kgf/sq cm on certain indices of the higher nervous activity A80-14258
Plasma catecholamines and cardiovascular responses to cold and mental activity A80-16455

METABOLISM
Analysis of metabolic energy utilization in the Skylab astronauts [NASA-CR-160402] N80-13770

METEORITIC COMPOSITION
Amino acids in the Yamato carbonaceous chrondrite from Antarctica A80-13548
Quantification of monocarboxylic acids in the Murchison carbonaceous meteorite A80-13549
Uracil in carbonaceous meteorites A80-16068

MICROORGANISMS
Search for microorganisms in space --- Russian book A80-16459

MICROPROCESSORS
Design of a microprocessor based cardiotachometer [AD-A073105] N80-12731

MICROWAVES
Microwaves - Effect on thermoregulatory behavior in rats A80-13590
Effects of hypophysectomy and dexamethasone on rat adrenal response to microwaves A80-16457

MILITARY AIRCRAFT
The use of a positive displacement air cycle machine in a closed-loop environmental control system [ASME PAPER 79-ENAS-6] A80-15231

MINICOMPUTERS
Parameter estimation of radiocardiogram using a minicomputer A80-14798

MISSION PLANNING
Experiments for dedicated life science missions [AAS PAPER 79-251] A80-16431

MOMENTS OF INERTIA
On the optimization of spring elasticity, damping, and inertia effects on the spring loading of a control stick [PB-37] N80-13776

MONOCULAR VISION
Binocular and monocular stimuli for motion in depth - Changing-disparity and changing-size feed the same motion-in-depth stage A80-17059

MOTION PERCEPTION
The importance of pattern information for the resolution of depth-ambiguous apparent motion A80-13999
Binocular and monocular stimuli for motion in depth - Changing-disparity and changing-size feed the same motion-in-depth stage A80-17059

MOTION SICKNESS
Motion sickness susceptibility during rotation at 30 rpm in free-fall parabolic flight A80-17054
Reliability, validity and application of an improved scale for assessment of motion sickness severity [AD-A069130] N80-13766

MOTION SIMULATORS
Pursuit-tracking simulator with adaptive pseudorandom program of marker trajectory A80-16466
A comparison of control simulators having force inputs and displacement feedback. Applications to the manual control of underwater vehicles [PB-38] N80-13777
The automobile driving simulator for anthropogenic research [PB-41] N80-13779

MOTION STABILITY
Separation of motions in the problem of stabilizing biped walking A80-14382
Vertical stabilization of a quadriped walking machine A80-17262

MOUNTAIN INHABITANTS
Water-electrolyte metabolism and the function of human kidneys at mountain altitudes A80-13477
Prediction of the physical work capacity of persons at mountain altitudes A80-14165

MUSCLES
Human muscle fiber types in power lifters, distance runners and untrained subjects: A histochemical and ultrastructural study N80-12727

MUSCULAR STRENGTH
Development and description of a device for static strength measurement in the armed forces examination and entrance station [AD-A068684] N80-13765

MYOCARDIUM
Simultaneous muscle force and displacement transducer [NASA-CASE-NPO-14212-1] N80-12730

N

NASA PROGRAMS
Medical applications of aerospace technology A80-14793
The Life Sciences Flight Experiments Program - An update [AAS PAPER 79-250] A80-16430

NERVOUS SYSTEM
Effect of human exposure to a nitrogen-oxygen environment at 5-12 kgf/sq cm on certain indices of the higher nervous activity A80-14258

NEUROMUSCULAR TRANSMISSION
The importance of continuous electrocardiogram recording in conduction disorders in flight crews A80-15635

NEURONS
Amplitude-phase discriminator with two-CRT oscillograph display A80-16471
Mathematical model of respiratory rhythm generation A80-16602

NEUROPHYSIOLOGY
Memory and adaptation --- Russian Book A80-14098
Artificial sensory organs: Problems of modeling sensory systems --- Russian book A80-16461
A possible mechanism for the influence of electromagnetic radiation on neuroelectric potentials A80-16575

NIGHT VISION
Aviation night vision goggle [AD-A073296] N80-13773

NITROGEN
Effect of human exposure to a nitrogen-oxygen environment at 5-12 kgf/sq cm on certain indices of the higher nervous activity
A80-14258

NOISE TOLERANCE
Effect of noise spectra and a listening task upon passenger annoyance in a helicopter interior noise environment
[NASA-TP-1590] N80-13769

NONDESTRUCTIVE TESTS
Determining biological fine structure by differential absorption of soft X-ray
[BNL-26282] N80-13760

NONLINEAR FEEDBACK
On the problem of spring loaded resistance to simple and complex positioning of a control stick --- in manual control experiments
[PB-40] N80-13778

NOREPINEPHRINE
Interhemispheric relationships of monoamine oxidase activity and norepinephrine content in the cortical centers of the skin and motor analyzers in the human brain
A80-14257

NUTRITIONAL REQUIREMENTS
Food technology in space habitats
[ASME PAPER 79-ENAS-31] A80-15255

O

OCULOMOTOR NERVES
Characteristics of oculomotor responses and their sensory components during simulation of low-altitude flights
A80-14166

OPERATOR PERFORMANCE
Ergonomical studies about the superposition of control activity and mechanical vibration
A80-13272

Psychophysical studies of human-operator activity and instrumentation for these studies --- Russian book
A80-16463

Error dynamics of operator recognition of visual images
A80-16464

Autogenic training as a method of stimulating operator work capacity
A80-16465

Pursuit-tracking simulator with adaptive pseudorandom program of marker trajectory
A80-16466

Human operator eye-lid movement reaction during intense visual tasks involving the detection and tracking of visual signals
A80-16470

Operator eye-movement reaction during tracking of discrete stimuli with random time and space distribution
A80-16474

The automobile driving simulator for anthropogenic research
[PB-41] N80-13779

OPTICAL EMISSION SPECTROSCOPY
Time-resolved spectrometry of in vivo firefly bioluminescence emissions
A80-16793

OPTICAL ILLUSION
The importance of pattern information for the resolution of depth-ambiguous apparent motion
A80-13999

OPTICAL MEASURING INSTRUMENTS
Calculation of the surface on which the corneal flash is located with application to the development of a system for recording eye movement
A80-13859

OPTICAL TRACKING
Human operator eye-lid movement reaction during intense visual tasks involving the detection and tracking of visual signals
A80-16470

Operator eye-movement reaction during tracking of discrete stimuli with random time and space distribution
A80-16474

Single pilot scanning behavior in simulated instrument flight
[NASA-TM-80178] N80-12732

OPTIMAL CONTROL
Interdependence between the saccadic and the continuous eye movement control systems
A80-14797

On the optimization of spring elasticity, damping, and inertia effects on the spring loading of a control stick
[PB-37] N80-13776

OSCILLOGRAPHS
Amplitude-phase discriminator with two-CRT oscillograph display
A80-16471

OXIDASE
Interhemispheric relationships of monoamine oxidase activity and norepinephrine content in the cortical centers of the skin and motor analyzers in the human brain
A80-14257

OXYGEN MASKS
The application of indirect oxymetry in the criticism of the dilution standards of oxygen regulators
A80-15636

Anti-suffocation valve Bendix type no. 3267010-0101
[AD-A068927] N80-13772

OXYGEN METABOLISM
Current problems of hypothermy
A80-14259

OXYGEN SUPPLY EQUIPMENT
Anti-suffocation valve Bendix type no. 3267010-0101
[AD-A068927] N80-13772

OXYGEN TENSION
Effect of human exposure to a nitrogen-oxygen environment at 5-12 kgf/sq cm on certain indices of the higher nervous activity
A80-14258

The application of indirect oxymetry in the criticism of the dilution standards of oxygen regulators
A80-15636

P

PAIN
The effects of context on the structure of pain
N80-13761

PAIN SENSITIVITY
The effects of context on the structure of pain
N80-13761

PARABOLIC FLIGHT
Motion sickness susceptibility during rotation at 30 rpm in free-fall parabolic flight
A80-17054

PARALYSIS
Eye movements in paralyzed cats induced by drugs and sympathetic stimulation
A80-13591

PASSENGERS
Innovations in transportation engineering and human factors
A80-13186

PERCEPTION
The effects of context on the structure of pain
N80-13761

PERFORMANCE PREDICTION
Prediction of the physical work capacity of persons at mountain altitudes
A80-14165

PERFORMANCE TESTS
A comparison of control simulators having force inputs and displacement feedback. Applications to the manual control of underwater vehicles
[PB-38] N80-13777

PERSPIRATION
Influence of air velocity and heat acclimation on human skin wettedness and sweating efficiency
A80-16454

PHOTORECEPTORS
Effects of ionizing radiation on the light sensing elements of the retina
[LBL-5683] N80-13767

PHOTOSYNTHESIS
Photosynthetic carbon reduction by seagrasses exposed to ultraviolet A radiation
[NASA-CR-160397] N80-13757

A preliminary research plan for development of a photosynthetic link in a closed ecological life support system
[NASA-CR-160399] N80-13758

PHYSICAL EXERCISE
T-waves in the exercise ECG - Their location and occurrence A80-13263
Effects and post-effects of two-hour exhausting exercise on composition and gas transport functions of blood A80-13273
Seasonal variation in work performance and heart rate response to exercise - A study of 1,835 middle-aged men A80-13274
Difference between end-tidal and arterial P/CO2/ in exercise A80-13505
Thermogenic control during exercise in a cold environment A80-13507
Unreliability of exercise-induced R wave changes as indexes of coronary artery disease A80-15996
Analysis of exercise-induced R wave amplitude changes in detection of coronary artery disease in asymptomatic men with left bundle branch block A80-15997

PHYSICAL FITNESS
Seasonal variation in work performance and heart rate response to exercise - A study of 1,835 middle-aged men A80-13274
Development and description of a device for static strength measurement in the armed forces examination and entrance station [AD-A068684] N80-13765

PHYSIOLOGICAL EFFECTS
Microwaves - Effect on thermoregulatory behavior in rats A80-13590
Memory and adaptation --- Russian Book A80-14098
Effects of hypophysectomy and dexamethasone on rat adrenal response to microwaves A80-16457
Physiological characteristics of psychic models of hypo- and hyper-gravity A80-16467

PHYSIOLOGICAL FACTORS
Some aspects of processing physiological data A80-16480

PHYSIOLOGICAL RESPONSES
Relationship between recovery and hypothermia induced by centrifugation in rats A80-13372
Foundation of hyperbaric physiology --- Russian book A80-13526
The physiopathology of vertebral pain in helicopter pilots A80-15633
Maximal work capacity of women during acute hypoxia A80-16456
A possible mechanism for the influence of electromagnetic radiation on neuroelectric potentials A80-16575

PHYSIOLOGICAL TESTS
Investigation of certain electrophysiolcgical and biochemical parameters in hypoxia testing at a simulated altitude of 5500 m A80-15634
Unreliability of exercise-induced R wave changes as indexes of coronary artery disease A80-15996
Analysis of the mean number of intersections of the zero level by physiological processes A80-16469
Statistical representation of electrocardiographic body surface maps for feature identification data compression and classification N80-12728

PHYTOTRONS
Use of phytotrons in assessing environmental requirements for plants in space habitats [ASME PAPER 79-ENAS-28] A80-15252

PIEZOELECTRIC TRANSDUCERS
Simultaneous muscle force and displacement transducer [NASA-CASE-NPO-14212-1] N80-12730

PILOT PERFORMANCE
Characteristics of oculomotor responses and their sensory components during simulation of low-altitude flights A80-14166
Determination of psychophysiological reaction norms of a pilot during work A80-16472
Method for generalizing operator performance factor evaluation in multidimensional tracking problems A80-16473
Single pilot scanning behavior in simulated instrument flight [NASA-TM-80178] N80-12732

PILOTS (PERSONNEL)
The importance of continuous electrocardiogram recording in conduction disorders in flight crews A80-15635

PITUITARY GLAND
Adrenocortical function in rats chronically exposed to high altitude A80-16453
Effects of hypophysectomy and dexamethasone on rat adrenal response to microwaves A80-16457

PLANTS (BOTANY)
Problems and potentialities of cultured plant cells in retrospect and prospect A80-15225
Development of a Space Shuttle plant growth unit [ASME PAPER 79-ENAS-19] A80-15243
A closed system: Man-higher plants /four-month experiment/ --- Russian book A80-16393

PORTABLE LIFE SUPPORT SYSTEMS
Development of the electrochemically regenerable carbon dioxide absorber for portable life support system application [ASME PAPER 79-ENAS-33] A80-15257

POSTURE
The physiopathology of vertebral pain in helicopter pilots A80-15633
A postural measurement system for induced body sway assessment N80-12729

PRESSURE BREATHING
Modeling studies of the pressure-flow relationship of the central airways N80-13763

PRESSURE CHAMBERS
Effect of human exposure to a nitrogen-oxygen environment at 5-12 kgf/sq cm on certain indices of the higher nervous activity A80-14258

PROPORTIONAL LIMIT
On the optimization of spring elasticity, damping, and inertia effects on the spring loading of a control stick [FB-37] N80-13776

PROSTHETIC DEVICES
Artificial sensory organs: Problems of modeling sensory systems --- Russian book A80-16461

PSYCHOLOGICAL TESTS
Investigation of the psychophysiological characteristics of man under extreme conditions A80-16468

PSYCHOMOTOR PERFORMANCE
A procedure for electronically monitoring animal response parameters using the rotating wheel --- aircraft fire hazard application A80-13322
Physiological characteristics of psychic models of hypo- and hyper-gravity A80-16467
Determination of psychophysiological reaction norms of a pilot during work A80-16472

PSYCHOPHYSICS
Psychophysical studies of human-operator activity and instrumentation for these studies --- Russian book A80-16463

PSYCHOPHYSIOLOGY
Psychophysical studies of human-operator activity and instrumentation for these studies --- Russian book
A80-16463
Determination of psychophysiological reaction norms of a pilot during work
A80-16472
Operator eye-movement reaction during tracking of discrete stimuli with random time and space distribution
A80-16474

PUBLIC HEALTH
Seasonal variation in work performance and heart rate response to exercise - A study of 1,835 middle-aged men
A80-13274

PULSED RADIATION
Time-resolved spectrometry of in vivo firefly bioluminescence emissions
A80-16793

PUPIL SIZE
Calculation of the surface on which the corneal flash is located with application to the development of a system for recording eye movement
A80-13859

PURSUIT TRACKING
Interdependence between the saccadic and the continuous eye movement control systems
A80-14797
Pursuit-tracking simulator with adaptive pseudorandom program of marker trajectory
A80-16466
Method for generalizing operator performance factor evaluation in multidimensional tracking problems
A80-16473
On the interaction between system and task parameters through continuous manual control
[PB-42] N80-13780

PYROLYTIC MATERIALS
A procedure for electronically monitoring animal response parameters using the rotating wheel --- aircraft fire hazard application
A80-13322

R

RADIATION DOSAGE
Radiation dose rate of a biological object from cosmic rays in the stratosphere and at the height of artificial earth satellites
A80-17100

RADIATION EFFECTS
Microwaves - Effect on thermoregulatory behavior in rats
A80-13590
Radiation and DNA --- Russian book
A80-14097
Effects of hypophysectomy and dexamethasone on rat adrenal response to microwaves
A80-16457
A possible mechanism for the influence of electromagnetic radiation on neuroelectric potentials
A80-16575
Effects of ionizing radiation on the light sensing elements of the retina
[LBL-5683] N80-13767

RADIOBIOLOGY
Radiation and DNA --- Russian book
A80-14097
Parameter estimation of radiocardiogram using a minicomputer
A80-14798

REACTION TIME
Choice reaction time to movement of eccentric visual targets during concurrent rotary acceleration
A80-14000

REACTOR DESIGN
Development of an improved Sabatier reactor --- catalytic oxygen recovery from carbon dioxide
[ASME PAPER 79-ENAS-36] A80-15260

REAL TIME OPERATION
The automobile driving simulator for anthropogenic research
[PB-41] N80-13779

RECORDING INSTRUMENTS
Calculation of the surface on which the corneal flash is located with application to the development of a system for recording eye movement
A80-13859

REDUCTION (CHEMISTRY)
A study of the reduction of carbon dioxide in a silent electric discharge
[ASME PAPER 79-ENAS-13] A80-15238

REGENERATORS
Development of the electrochemically regenerable carbon dioxide absorber for portable life support system application
[ASME PAPER 79-ENAS-33] A80-15257

RESEARCH AND DEVELOPMENT
Research recommendations
N80-12738

RESONANT FREQUENCIES
Electromagnetic absorption in multilayered cylindrical models of man
A80-13216

RESPIRATORY RATE
Mathematical model of respiratory rhythm generation
A80-16602

RESUSCITATION
Resuscitation from hypothermia: A literature review
[AD-A069093] N80-13764

RETINA
Effects of ionizing radiation on the light sensing elements of the retina
[LBL-5683] N80-13767

RHEOLOGY
General characteristics of the rheological properties of the soft tissues of the human body using local cycling loading measurements and a simple phenomenological model of these properties
A80-13243

ROBOTS
Visual information and vision of robots --- Russian book
A80-14099
Integrated walking robot simulation and modelling
A80-14801
Vertical stabilization of a quadriped walking machine
A80-17262

ROTATING BODIES
Choice reaction time to movement of eccentric visual targets during concurrent rotary acceleration
A80-14000

ROTATING ENVIRONMENTS
A procedure for electronically monitoring animal response parameters using the rotating wheel --- aircraft fire hazard application
A80-13322

S

SABATIER REACTION
Development of an improved Sabatier reactor --- catalytic oxygen recovery from carbon dioxide
[ASME PAPER 79-ENAS-36] A80-15260

SACCADIC EYE MOVEMENTS
Interdependence between the saccadic and the continuous eye movement control systems
A80-14797
Processing of direction and magnitude by the saccadic eye-movement system
A80-17060

SAFETY DEVICES
/Hard Hat/ EVA, personal equipment to support large scale construction in space
[ASME PAPER 79-ENAS-43] A80-15266

SATELLITE ORBITS
Radiation dose rate of a biological object from cosmic rays in the stratosphere and at the height of artificial earth satellites
A80-17100

SATELLITE ROTATION
Motion sickness susceptibility during rotation at 30 rpm in free-fall parabolic flight
A80-17054

SEA GRASSES
Photosynthetic carbon reduction by seagrasses exposed to ultraviolet A radiation
[NASA-CR-160397] N80-13757

SENSE ORGANS
Artificial sensory organs: Problems of modeling sensory systems --- Russian book
A80-16461

SENSORY FEEDBACK
A comparison of control simulators having force inputs and displacement feedback. Applications to the manual control of underwater vehicles
[PB-38] N80-13777

SENSORY PERCEPTION
Characteristics of oculomotor responses and their sensory components during simulation of low-altitude flights
A80-14166
Artificial sensory organs: Problems of modeling sensory systems --- Russian book
A80-16461

SERVOMECHANISMS
Integrated walking robot simulation and modelling
A80-14801

SIGNS AND SYMPTOMS
Unreliability of exercise-induced R wave changes as indexes of coronary artery disease
A80-15996
Analysis of exercise-induced R wave amplitude changes in detection of coronary artery disease in asymptomatic men with left bundle branch block
A80-15997

SKIN (ANATOMY)
Interhemispheric relationships of monoamine oxidase activity and norepinephrine content in the cortical centers of the skin and motor analyzers in the human brain
A80-14257

SKYLAB PROGRAM
Analysis of metabolic energy utilization in the Skylab astronauts
[NASA-CR-160402] N80-13770
Skylab water balance error analysis
[NASA-CR-160403] N80-13771

SOCIAL FACTORS
Innovations in transportation engineering and human factors
A80-13186

SPACE ERECTABLE STRUCTURES
/Hard Hat/ EVA, personal equipment to support large scale construction in space
[ASME PAPER 79-ENAS-43] A80-15266

SPACE FLIGHT
The Life Sciences Flight Experiments Program - An update
[AAS PAPER 79-250] A80-16430

SPACE FLIGHT FEEDING
Closed-ecology life support systems /CELSS/ for long-duration, manned missions
[ASME PAPER 79-ENAS-27] A80-15251
Controlled-environment agricultural systems as food sources for large space habitats
[ASME PAPER 79-ENAS-30] A80-15254
Food technology in space habitats
[ASME PAPER 79-ENAS-31] A80-15255

SPACE FLIGHT STRESS
Physiological characteristics of psychic models of hypo- and hyper-gravity
A80-16467

SPACE PERCEPTION
Humans deprived of normal binocular vision have binocular interactions tuned to size and orientation
A80-13864
The importance of pattern information for the resolution of depth-ambiguous apparent motion
A80-13999
Binocular and monocular stimuli for motion in depth - Changing-disparity and changing-size feed the same motion-in-depth stage
A80-17059

SPACE PROCESSING
Food technology in space habitats
[ASME PAPER 79-ENAS-31] A80-15255
Evaluation of heat convection and flow front influence on electrophoresis of biological substances in space flight conditions
[IAF PAPER 79-ST-17] A80-17067

SPACE RATIONS
Food technology in space habitats
[ASME PAPER 79-ENAS-31] A80-15255

SPACE SHUTTLE PAYLOADS
Development of a Space Shuttle plant growth unit
[ASME PAPER 79-ENAS-19] A80-15243
The Life Sciences Flight Experiments Program - An update
[AAS PAPER 79-250] A80-16430

SPACE SHUTTLES
Spacelab environment investigation by mass spectrometer
[BMFT-FB-W-78-02] N80-13774

SPACE SUITS
High-pressure protective systems technology
[ASME PAPER 79-ENAS-15] A80-15240
/Hard Hat/ EVA, personal equipment to support large scale construction in space
[ASME PAPER 79-ENAS-43] A80-15266

SPACEBORNE EXPERIMENTS
Development of a Space Shuttle plant growth unit
[ASME PAPER 79-ENAS-19] A80-15243
The Life Sciences Flight Experiments Program - An update
[AAS PAPER 79-250] A80-16430
Experiments for dedicated life science missions
[AAS PAPER 79-251] A80-16431

SPACECRAFT CABIN ATMOSPHERES
Bosch - An alternate CO2 reduction technology
[ASME PAPER 79-ENAS-32] A80-15256
EDC - A regenerable CO2 removal subsystem for an enhanced capability orbiter
[ASME PAPER 79-ENAS-34] A80-15258

SPACECRAFT CONTAMINATION
Design and development of a trace contaminant removal canister for Spacelab
[ASME PAPER 79-ENAS-16] A80-15241
Spacelab environment investigation by mass spectrometer
[BMFT-FB-W-78-02] N80-13774

SPACECRAFT DESIGN
Design and development of a trace contaminant removal canister for Spacelab
[ASME PAPER 79-ENAS-16] A80-15241
EDC - A regenerable CO2 removal subsystem for an enhanced capability orbiter
[ASME PAPER 79-ENAS-34] A80-15258

SPACECRAFT ENVIRONMENTS
Recycling plant, human and animal wastes to plant nutrients in a closed ecological system
[ASME PAPER 79-ENAS-29] A80-15253
Controlled-environment agricultural systems as food sources for large space habitats
[ASME PAPER 79-ENAS-30] A80-15254
Environmental systems for aquatic animal studies in the Shuttle era
[ASME PAPER 79-ENAS-45] A80-15268
Applications of the thermoelectrically integrated membrane evaporator subsystem
[ASME PAPER 79-ENAS-48] A80-15271
A closed system: Man-higher plants /four-month experiment/ --- Russian book
A80-16393
Evaluation and comparison of alternative designs for water/solid-waste processing systems for spacecraft
[NASA-CR-162492] N80-12739
A preliminary research plan for development of a photosynthetic link in a closed ecological life support system
[NASA-CR-160399] N80-13758
Spacelab environment investigation by mass spectrometer
[BMFT-FB-W-78-02] N80-13774

SPACELAB
Spacelab environment investigation by mass spectrometer
[BMFT-FB-W-78-02] N80-13774

SPACELAB PAYLOADS
Design and development of a trace contaminant removal canister for Spacelab
[ASME PAPER 79-ENAS-16] A80-15241
Experiments for dedicated life science missions
[AAS PAPER 79-251] A80-16431

SPECTRAL CORRELATION
Analysis of the mean number of intersections of the zero level by physiological processes
A80-16469

SPECTRUM ANALYSIS
Analysis of the mean number of intersections of the zero level by physiological processes
A80-16469

SPRINGS (ELASTIC)

On the optimization of spring elasticity, damping, and inertia effects on the spring loading of a control stick [FB-37] N80-13776

STATIC TESTS

Development and description of a device for static strength measurement in the armed forces examination and entrance station [AD-A068684] N80-13765

STATISTICAL ANALYSIS

Statistical representation of electrocardiographic body surface maps for feature identification data compression and classification N80-12728

STEREOTELEVISION

A field of view simulator equipped for perspective transformation on a television raster [FB-34] N80-13775

STIMULANT

Eye movements in paralyzed cats induced by drugs and sympathetic stimulation A80-13591

STRATOSPHERE RADIATION

Radiation dose rate of a biological object from cosmic rays in the stratosphere and at the height of artificial earth satellites A80-17100

STRESS (PHYSIOLOGY)

T-waves in the exercise ECG - Their location and occurrence A80-13263

Ergonomical studies about the superposition of control activity and mechanical vibration A80-13272

Plasma volume during stress in man - Osmolality and red cell volume A80-13506

Some aspects of processing physiological data A80-16480

SUBMARINES

A comparison of control simulators having force inputs and displacement feedback. Applications to the manual control of underwater vehicles [FB-38] N80-13777

SURVIVAL

Investigation of the psychophysiological characteristics of man under extreme conditions A80-16468

SWEAT COOLING

Influence of air velocity and heat acclimation on human skin wettedness and sweating efficiency A80-16454

SYMBOLS

Rational ways to increase pictographic symbol discriminability N80-12734

SYMPATHETIC NERVOUS SYSTEM

Eye movements in paralyzed cats induced by drugs and sympathetic stimulation A80-13591

SYSTEMS ENGINEERING

Closed-ecology life support systems /CELSS/ for long-duration, manned missions [ASME PAPER 79-ENAS-27] A80-15251

T

TARGET ACQUISITION

Detection of different target types in realistic terrain --- visual air to ground recognition [AD-A072973] N80-12733

TARGET RECOGNITION

Detection of different target types in realistic terrain --- visual air to ground recognition [AD-A072973] N80-12733

TASK COMPLEXITY

On the interaction between system and task parameters through continuous manual control [FB-42] N80-13780

TECHNOLOGY ASSESSMENT

Innovations in transportation engineering and human factors A80-13186

TECHNOLOGY UTILIZATION

Food technology in space habitats [ASME PAPER 79-ENAS-31] A80-15255

TEMPERATURE CONTROL

Thermogenic control during exercise in a cold environment A80-13507

The use of a positive displacement air cycle machine in a closed-loop environmental control system [ASME PAPER 79-ENAS-6] A80-15231

TEMPERATURE EFFECTS

Effects of cold exposure on circadian rhythm of body temperature in rats and rabbits A80-13374

TENSILE STRESS

Active responses of the internal carotid artery to stretching A80-17285

TERRAIN

Detection of different target types in realistic terrain --- visual air to ground recognition [AD-A072973] N80-12733

THERAPY

Resuscitation from hypothermia: A literature review [AD-A069093] N80-13764

THERMOELECTRIC GENERATORS

Applications of the thermoelectrically integrated membrane evaporator subsystem [ASME PAPER 79-ENAS-48] A80-15271

THERMOREGULATION

Investigation of thermoregulatory mechanisms A80-13476

Thermogenic control during exercise in a cold environment A80-13507

Microwaves - Effect on thermoregulatory behavior in rats A80-13590

Current problems of hypotheray A80-14259

Catecholamines and chemical thermoregulation during cold acclimation A80-14260

THICKNESS

Apparatus for measurement of tissue compliance [BMFT-FB-W-78-05] N80-13768

THREE DIMENSIONAL MOTION

A field of view simulator equipped for perspective transformation on a television raster [FB-34] N80-13775

THRESHOLDS (PERCEPTION)

Humans deprived of normal binocular vision have binocular interactions tuned to size and orientation A80-13864

TIME RESPONSE

Operator eye-movement reaction during tracking of discrete stimuli with random time and space distribution A80-16474

TISSUES (BIOLOGY)

General characteristics of the rheological properties of the soft tissues of the human body using local cycling loading measurements and a simple phenomenological model of these properties A80-13243

Apparatus for measurement of tissue compliance [BMFT-FB-W-78-05] N80-13768

TOLERANCES (PHYSIOLOGY)

Investigation of thermoregulatory mechanisms A80-13476

TOMOGRAPHY

The place of computerized axial tomography /CAT/ in the examination of flight crews A80-15629

TOXIC HAZARDS

A procedure for electronically monitoring animal response parameters using the rotating wheel --- aircraft fire hazard application A80-13322

TRACE CONTAMINANTS

Design and development of a trace contaminant removal canister for Spacelab [ASME PAPER 79-ENAS-16] A80-15241

TRAINING EVALUATION

Autogenic training as a method of stimulating operator work capacity A80-16465

Method for generalizing operator performance factor evaluation in multidimensional tracking problems A80-16473

TRAINING SIMULATORS
Pursuit-tracking simulator with adaptive pseudorandom program of marker trajectory A80-16466

TRANSPORTATION
Innovations in transportation engineering and human factors A80-13186

U

ULTRASONIC TESTS
Apparatus for measurement of tissue compliance [BMFT-FB-W-78-05] N80-13768

ULTRAVIOLET ABSORPTION
Uracil in carbonaceous meteorites A80-16068

ULTRAVIOLET RADIATION
Photosynthetic carbon reduction by seagrasses exposed to ultraviolet A radiation [NASA-CR-160397] N80-13757

URACIL
Uracil in carbonaceous meteorites A80-16068

URINALYSIS
Investigation of certain electrophysiological and biochemical parameters in hypoxia testing at a simulated altitude of 5500 m A80-15634

V

VEINS
In vivo investigation of the elastohysteresis properties of the aorta and its branches A80-17288

VERTEBRAL COLUMN
The physiopathology of vertebral pain in helicopter pilots A80-15633

VERTICAL MOTION
Vertical stabilization of a quadriped walking machine A80-17262

VIBRATION EFFECTS
Ergonomical studies about the superposition of control activity and mechanical vibration A80-13272
The physiopathology of vertebral pain in helicopter pilots A80-15633

VISCOUS DAMPING
On the optimization of spring elasticity, damping, and inertia effects on the spring loading of a control stick [FB-37] N80-13776

VISUAL DISCRIMINATION
Choice reaction time to movement of eccentric visual targets during concurrent rotary acceleration A80-14000
Error dynamics of operator recognition of visual images A80-16464
Human operator eye-lid movement reaction during intense visual tasks involving the detection and tracking of visual signals A80-16470
Detection of different target types in realistic terrain --- visual air to ground recognition [AD-A072973] N80-12733

VISUAL PERCEPTION
Humans deprived of normal binocular vision have binocular interactions tuned to size and orientation A80-13864
The importance of pattern information for the resolution of depth-ambiguous apparent motion A80-13999
Visual information and vision of robots --- Russian book A80-14099
Processing of direction and magnitude by the saccadic eye-movement system A80-17060

A field of view simulator equipped for perspective transformation on a television raster [FB-34] N80-13775

VISUAL SIGNALS
Error dynamics of operator recognition of visual images A80-16464
Human operator eye-lid movement reaction during intense visual tasks involving the detection and tracking of visual signals A80-16470

VISUAL STIMULI
Choice reaction time to movement of eccentric visual targets during concurrent rotary acceleration A80-14000
Operator eye-movement reaction during tracking of discrete stimuli with random time and space distribution A80-16474

W

WALKING
Integrated walking robot simulation and modelling A80-14801

WALKING MACHINES
Separation of motions in the problem of stabilizing biped walking A80-14382
Vertical stabilization of a quadriped walking machine A80-17262

WASTE TREATMENT
Evaluation and comparison of alternative designs for water/solid-waste processing systems for spacecraft [NASA-CR-162492] N80-12739

WASTE UTILIZATION
Recycling plant, human and animal wastes to plant nutrients in a closed ecological system [ASME PAPER 79-ENAS-29] A80-15253
Controlled-environment agricultural systems as food sources for large space habitats [ASME PAPER 79-ENAS-30] A80-15254

WATER BALANCE
Analysis of metabolic energy utilization in the Skylab astronauts [NASA-CR-160402] N80-13770
Skylab water balance error analysis [NASA-CR-160403] N80-13771

WATER INTAKES
Effects of long-term repetitive exposure to centrifugation of 2G on developing rat A80-13373

WATER RECLAMATION
Applications of the thermoelectrically integrated membrane evaporator subsystem [ASME PAPER 79-ENAS-48] A80-15271

WEIGHTLESSNESS SIMULATION
Physiological characteristics of psychic models of hypo- and hyper-gravity A80-16467

WIND EFFECTS
Influence of air velocity and heat acclimation on human skin wettedness and sweating efficiency A80-16454

WORK CAPACITY
Seasonal variation in work performance and heart rate response to exercise - A study of 1,835 middle-aged men A80-13274
Prediction of the physical work capacity of persons at mountain altitudes A80-14165
Maximal work capacity of women during acute hypoxia A80-16456
Autogenic training as a method of stimulating operator work capacity A80-16465

WORK-REST CYCLE
Autogenic training as a method of stimulating operator work capacity A80-16465

WORKLOADS (PSYCHOPHYSIOLOGY)
Autogenic training as a method of stimulating operator work capacity A80-16465

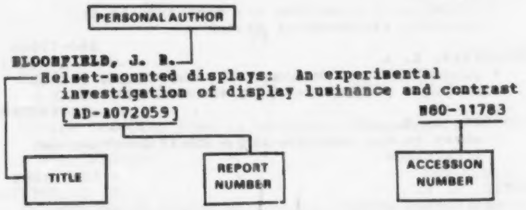
X

X RAY ABSORPTION
Determining biological fine structure by differential absorption of soft X-ray
[BNL-26282] N80-13760

PERSONAL AUTHOR INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 204)* MARCH 1980

Typical Personal Author Index Listing


PERSONAL AUTHOR
BLOOMFIELD, J. R.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059]
N80-11783
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ANDRES, R. O.
A postural measurement system for induced body sway assessment
N80-12729

ANDREW, J.
Analysis of exercise-induced R wave amplitude changes in detection of coronary artery disease in asymptomatic men with left bundle branch block
A80-15997

AUFFRET, R.
The physiopathology of vertebral pain in helicopter pilots
A80-15633

B

BABIIAK, V. I.
Characteristics of oculomotor responses and their sensory components during simulation of low-altitude flights
A80-14166

BARBER, P. W.
Electromagnetic absorption in multilayered cylindrical models of man
A80-13216

BARRY, J. D.
Time-resolved spectrometry of in vivo firefly bioluminescence emissions
A80-16793

BELAIA, E. V.
General characteristics of the rheological properties of the soft tissues of the human body using local cycling loading measurements and a simple phenomenological model of these properties
A80-13243

BELLEHSEN, D. H.
Numerical solution of a hyperbolic system of conservation laws for blood flow in the arterial tree
N80-12726

BEVERLEY, K. I.
Binocular and monocular stimuli for motion in depth - Changing-disparity and changing-size feed the same motion-in-depth stage
A80-17059

BIRBARA, P. J.
Development of an improved Sabatier reactor
[ASME PAPER 79-ENAS-36] A80-15260

BLAIR, J. L.
Design and development of a trace contaminant removal canister for Spacelab
[ASME PAPER 79-ENAS-16] A80-15241

BLOOM, K. R.
Echocardiographic recognition of atrioventricular valve stenosis associated with endocardial cushion defect - Pathologic and surgical correlates
A80-15998

BOENING, D.
Effects and post-effects of two-hour exhausting exercise on composition and gas transport functions of blood
A80-13273

BOLLER, H. E.
A comparison of control simulators having force inputs and displacement feedback. Applications to the manual control of underwater vehicles
[PB-38] N80-13777

BOLOTIN, IU. V.
Separation of motions in the problem of stabilizing biped walking
A80-14382

BORDIUG, B. A.
Vertical stabilization of a quadriped walking machine
A80-17262

BOUIS, D.
Interdependence between the saccadic and the continuous eye movement control systems
A80-14797

BOYNTON, C. K., JR.
Applications of the thermoelectrically integrated membrane evaporator subsystem
[ASME PAPER 79-ENAS-48] A80-15271

BRADSHAW, H. H.
The effects of context on the structure of pain
N80-13761

BRENNAN, L. F.
Medical applications of aerospace technology
A80-14793

BROUILLET, A. O.
Applications of the thermoelectrically integrated membrane evaporator subsystem
[ASME PAPER 79-ENAS-48] A80-15271

BURNS, J. W.
Use of microspheres in measurement of regional blood flows during +Gz stress
A80-16452

C

CABANIS, E. A.
The place of computerized axial tomography /CAT/ in the examination of flight crews
A80-15629

CANDAS, V.
Influence of air velocity and heat acclimation on human skin wettedness and sweating efficiency
A80-16454

CARDEN, J. L.
Guiding the development of a controlled ecological life support system
[NASA-CR-162452] N80-12735

CHUSOV, IU. N.
Investigation of thermoregulatory mechanisms
A80-13476

CLARK, D. C.
Bosch - An alternate CO2 reduction technology
[ASME PAPER 79-ENAS-32] A80-15256

CLEVENSON, S. A.
Effect of noise spectra and a listening task upon passenger annoyance in a helicopter interior noise environment
[NASA-TP-1590] N80-13769

COHN, K.
Unreliability of exercise-induced R wave changes as indexes of coronary artery disease
A80-15996

CONSTANTINESCU, L.
Investigation of certain electrophysiological and biochemical parameters in hypoxia testing at a simulated altitude of 5500 m
A80-15634

CONVERTINO, V. A.
Plasma volume during stress in man - Osmolality and red cell volume
A80-13506

CORRICK, G. E.
Detection of different target types in realistic terrain
[AD-A072973] N80-12733

COTE, J.
Plasma catecholamines and cardiovascular responses to cold and mental activity
A80-16455

CRAMER, R.
Anti-suffocation valve Bendix type no. 3267010-0101
[AD-A068927] N80-13772

CULLER, V. H.
Simultaneous muscle force and displacement transducer
[NASA-CASE-NPO-14212-1] N80-12730

CUMPANASU, V.
Investigation of certain electrophysiological and biochemical parameters in hypoxia testing at a simulated altitude of 5500 m
A80-15634

CURTHOYS, I. S.
The importance of pattern information for the resolution of depth-ambiguous apparent motion
A80-13999

D

DELAHAYE, R. P.
The place of computerized axial tomography /CAT/ in the examination of flight crews
A80-15629

The physiopathology of vertebral pain in helicopter pilots
A80-15633

DENEE, J. H.
The importance of continuous electrocardiogram recording in conduction disorders in flight crews
A80-15635

DEVIANIN, E. A.
Integrated walking robot simulation and modelling
A80-14801

DONGES, E.
The automobile driving simulator for anthropogenic research
[FB-41] N80-13779

DOTSENKO, M. A.
Water-electrolyte metabolism and the function of human kidneys at mountain altitudes
A80-13477

DUNBAR, J.
Anti-suffocation valve Bendix type no. 3267010-0101
[AD-A068927] N80-13772

DURNEY, C. H.
Electromagnetic absorption in multilayered cylindrical models of man
A80-13216

E

ERIKSSEN, J.
Seasonal variation in work performance and heart rate response to exercise - A study of 1,835 middle-aged men
A80-13274

EVANS, A. K.
Statistical representation of electrocardiographic body surface maps for feature identification data compression and classification
N80-12728

F

FARRELL, R. H.
Experiments for dedicated life science missions
[AAS PAPER 79-251] A80-16431

FEHER, R. R.
A procedure for electronically monitoring animal response parameters using the rotating wheel
A80-13322

FELDSTEIN, C.
Simultaneous muscle force and displacement transducer
[NASA-CASE-NPO-14212-1] N80-12730

FENDER, D. H.
Processing of direction and magnitude by the saccadic eye-movement system
A80-17060

FILIPCZAK, R. A.
A procedure for electronically monitoring animal response parameters using the rotating wheel
A80-13322

FISCHER, J. R., JR.
T-waves in the exercise ECG - Their location and occurrence
A80-13263

FOMIN, S. V.
Artificial sensory organs: Problems of modeling sensory systems
A80-16461

FREEDOM, R. M.
Echocardiographic recognition of atrioventricular valve stenosis associated with endocardial cushion defect - Pathologic and surgical correlates
A80-15998

FROLOV, M. V.
Error dynamics of operator recognition of visual images
A80-16464

Analysis of the mean number of intersections of the zero level by physiological processes
A80-16469

FUJIWARA, M.
Relationship between recovery and hypothermia induced by centrifugation in rats
A80-13372

Effects of long-term repetitive exposure to centrifugation of 2G on developing rat
A80-13373

G

GASSET, G.
Biological investigations carried out in balloons
A80-13451

GERHARD, W.
Apparatus for measurement of tissue compliance
[BMFT-FB-W-78-05] N80-13768

GERKEEN-GUBANOV, G. V.
Integrated walking robot simulation and modelling
A80-14801

GRAYBIEL, A.
Motion sickness susceptibility during rotation at 30 rpm in free-fall parabolic flight
A80-17054

GREEN, P. A.
Rational ways to increase pictographic symbol discriminability
N80-12734

GREENLEAF, J. E.
Plasma volume during stress in man - Osmolality and red cell volume
A80-13506

GRIGOREV, A. I.
Water-electrolyte metabolism and the function of human kidneys at mountain altitudes
A80-13477

GRIMAK, L. P.
Physiological characteristics of psychic models of hypo- and hyper-gravity
A80-16467

GRINEVICH, V. A.
Effect of human exposure to a nitrogen-oxygen environment at 5-12 kgf/sq cm on certain indices of the higher nervous activity
A80-14258

GUILLAUMAT, L.
The place of computerized axial tomography /CAT/ in the examination of flight crews
A80-15629

GULIAN, S. A.
Effect of human exposure to a nitrogen-oxygen environment at 5-12 kgf/sq cm on certain indices of the higher nervous activity
A80-14258

GURFINKEL, V. S.
Integrated walking robot simulation and modelling
A80-14801

GURGENIDZE, A. G.
Foundation of hyperbaric physiology
A80-13526

H

HALLICK, T. M.
Bosch - An alternate CO2 reduction technology
[ASME PAPER 79-ENAS-32] A80-15256

HAMERMAN, J. A.
Choice reaction time to movement of eccentric visual targets during concurrent rotary acceleration
A80-14000

HARNETT, R. M.
Resuscitation from hypothermia: A literature review
[AD-A069093] N80-13764

HARRISON, D. C.
Medical applications of aerospace technology
A80-14793

HARTMAN, P.
Aviation night vision goggle
[AD-A073296] N80-13773

HARWERTH, R. S.
Humans deprived of normal binocular vision have binocular interactions tuned to size and orientation
A80-13864

HEEDT, P.
Effects and post-effects of two-hour exhausting exercise on composition and gas transport functions of blood
A80-13273

HEISING, M.
A field of view simulator equipped for perspective transformation on a television raster
[FB-34] N80-13775

HEITMAN, J. M.
Time-resolved spectrometry of in vivo firefly bioluminescence emissions
A80-16793

HELBIG, R.
Ergonomical studies about the superposition of control activity and mechanical vibration
A80-13272

HEPP, W.
Apparatus for measurement of tissue compliance
[BMFT-FB-W-78-05] N80-13768

HEPPNER, D. B.
Bosch - An alternate CO2 reduction technology
[ASME PAPER 79-ENAS-32] A80-15256
Development of the electrochemically regenerable carbon dioxide absorber for portable life support system application
[ASME PAPER 79-ENAS-33] A80-15257

HERTZ, B. G.
Eye movements in paralyzed cats induced by drugs and sympathetic stimulation
A80-13591

HIRAKAWA, A.
Parameter estimation of radiocardiogram using a minicomputer
A80-14798

HOFFMAN, R. B.
Environmental systems for aquatic animal studies in the Shuttle era
[ASME PAPER 79-ENAS-45] A80-15268

HONG, S.-I.
Thermogenic control during exercise in a cold environment
A80-13507

HOPKIRK, A.
T-waves in the exercise ECG - Their location and occurrence
A80-13263

HOPKIRK, C.
Analysis of exercise-induced R wave amplitude changes in detection of coronary artery disease in asymptomatic men with left bundle branch block
A80-15997

HORVATH, S. M.
Maximal work capacity of women during acute hypoxia
A80-16456

HOU, R. L.
Processing of direction and magnitude by the saccadic eye-movement system
A80-17060

HUNT, S. R., JR.
Environmental systems for aquatic animal studies in the Shuttle era
[ASME PAPER 79-ENAS-45] A80-15268

I

IBA-ZIZEN, M. T.
The place of computerized axial tomography /CAT/ in the examination of flight crews
A80-15629

ILIUCHENOK, R. IU.
Memory and adaptation
A80-14098

ISAULOV, IU. F.
Autogenic training as a method of stimulating operator work capacity
A80-16465

ISKANDER, M. F.
Electromagnetic absorption in multilayered cylindrical models of man
A80-13216

IVANOVA, V. D.
In vivo investigation of the elastohysteresis properties of the aorta and its branches
A80-17288

J

JAGOW, R. B.
Design and development of a trace contaminant removal canister for Spacelab
[ASME PAPER 79-ENAS-16] A80-15241

JENKER, W.
Effects and post-effects of two-hour exhausting exercise on composition and gas transport functions of blood
A80-13273

JOBIN, M.
Plasma catecholamines and cardiovascular responses to cold and mental activity
A80-16455

JONES, N. L.
Difference between end-tidal and arterial P/CO2/ in exercise
A80-13505

K

KAMEI, E.
Relationship between recovery and hypothermia induced by centrifugation in rats
A80-13372
Effects of long-term repetitive exposure to centrifugation of 2G on developing rat
A80-13373

KANE, J. W.
Difference between end-tidal and arterial P/CO2/ in exercise
A80-13505

KAREL, M.
Food technology in space habitats
[ASME PAPER 79-ENAS-31] A80-15255

KATYS, G. P.
Visual information and vision of robots
A80-14099

KEISER, B.
T-waves in the exercise ECG - Their location and occurrence
A80-13263

KENNEDY, R. S.
Reliability, validity and application of an improved scale for assessment of motion sickness severity
[AD-A069130] N80-13766

KHACHATURIANTS, L. S.
Error dynamics of operator recognition of visual images
A80-16464

KNAPIK, J.
Development and description of a device for static strength measurement in the armed forces examination and entrance station
[AD-A068684] N80-13765

KONONENKO, V. S.
Interhemispheric relationships of monoamine oxidase activity and norepinephrine content in the cortical centers of the skin and motor analyzers in the human brain
A80-14257

KOROLKOV, V. I.
Water-electrolyte metabolism and the function of human kidneys at mountain altitudes
A80-13477

KOWAL, D.
Development and description of a device for static strength measurement in the armed forces examination and entrance station
[AD-A068684] N80-13765

KOZLOVSKII, E. A.
Determination of psychophysiological reaction norms of a pilot during work
A80-16472

Method for generalizing operator performance factor evaluation in multidimensional tracking problems
A80-16473

KOZYREVSKAIA, G. I.
Water-electrolyte metabolism and the function of human kidneys at mountain altitudes
A80-13477

KRIKORIAN, A. D.
Problems and potentialities of cultured plant cells in retrospect and prospect
A80-15225

KRING, G.
Environmental systems for aquatic animal studies in the Shuttle era
[ASME PAPER 79-ENAS-45] A80-15268

KRUEGER, W.
On the optimization of spring elasticity, damping, and inertia effects on the spring loading of a control stick
[FB-37] N80-13776

A comparison of control simulators having force inputs and displacement feedback. Applications to the manual control of underwater vehicles
[FB-38] N80-13777

KUCHUK, G. A.
Foundation of hyperbaric physiology
A80-13526

KUPPAHL, G.
Spacelab environment investigation by mass spectrometer
[BMFT-FB-W-78-02] N80-13774

KUSHPIL, V. I.
Calculation of the surface on which the corneal flash is located with application to the development of a system for recording eye movement
A80-13859

KUWAHARA, M.
Parameter estimation of radiocardiogram using a minicomputer
A80-14798

KUZNETSOV, P. I.
Mathematical model of respiratory rhythm generation
A80-16602

KUZNETSOV, V. G.
Integrated walking robot simulation and modelling
A80-14801

KYZHIN, M. I.
In vivo investigation of the elastohysteresis properties of the aorta and its branches
A80-17288

L

LABRIE, A.
Plasma catecholamines and cardiovascular responses to cold and mental activity
A80-16455

LANE, C. R.
Time-resolved spectrometry of in vivo firefly bioluminescence emissions
A80-16793

LAUGHLIN, M. H.
Use of microspheres in measurement of regional blood flows during +Gz stress
A80-16452

LAWLESS, J. G.
Quantification of monocarboxylic acids in the Murchison carbonaceous meteorite
A80-13549

LEATHERWOOD, J. D.
Effect of noise spectra and a listening task upon passenger annoyance in a helicopter interior noise environment
[NASA-TP-1590] N80-13769

LEBEDEVA, N. N.
Physiological characteristics of psychic models of hypo- and hyper-gravity
A80-16467

Operator eye-movement reaction during tracking of discrete stimuli with random time and space distribution
A80-16474

LEBLANC, J.
Plasma catecholamines and cardiovascular responses to cold and mental activity
A80-16455

LEGUAY, G.
The importance of continuous electrocardiogram recording in conduction disorders in flight crews
A80-15635

LENSKII, A. V.
Integrated walking robot simulation and modelling
A80-14801

LEONARD, J. I.
Analysis of metabolic energy utilization in the Skylab astronauts
[NASA-CR-160402] N80-13770

Skylab water balance error analysis
[NASA-CR-160403] N80-13771

LEVCHENKO, N. P.
Some aspects of processing physiological data
A80-16480

LEVI, D. M.
Humans deprived of normal binocular vision have binocular interactions tuned to size and orientation
A80-13864

LEWIS, G. W.
Simultaneous muscle force and displacement transducer
[NASA-CASE-NPO-14212-1] N80-12730

LIBERT, J. P.
Influence of air velocity and heat acclimation on human skin wettedness and sweating efficiency
A80-16454

LINSENMEIER, R. A.
Eye movements in paralyzed cats induced by drugs and sympathetic stimulation
A80-13591

LISOVSKII, G. M.
A closed system: Man-higher plants /four-month experiment/
A80-16393

LITTLES, J. W.
Design and development of a trace contaminant removal canister for Spacelab
[ASME PAPER 79-ENAS-16] A80-15241

LOTZ, W. G.
Effects of hypophysectomy and dexamethasone on rat adrenal response to microwaves
A80-16457

LOXSON, F. M.
Use of microspheres in measurement of regional blood flows during +Gz stress
A80-16452

LU, S.-T.
Microwaves - Effect on thermoregulatory behavior in rats
A80-13590

LUCE, R. S.
A study of the reduction of carbon dioxide in a silent electric discharge
[ASME PAPER 79-ENAS-13] A80-15238

Development of a Space Shuttle plant growth unit
[ASME PAPER 79-ENAS-19] A80-15243

LUCZAK, H.
Ergonomical studies about the superposition of control activity and mechanical vibration
A80-13272

LUKIANOVA, N. V.
Investigation of the psychophysiological characteristics of man under extreme conditions
A80-16468

M

MACGREGOR, R. J.
A possible mechanism for the influence of electromagnetic radiation on neuroelectric potentials
A80-16575

MAINE, R. B.
Development of a Space Shuttle plant growth unit
[ASME PAPER 79-ENAS-19] A80-15243

MAISCH, E.
Spacelab environment investigation by mass spectrometer
[BMFT-FB-W-78-02] N80-13770

MAKSIMOV, A. L.
Prediction of the physical work capacity of persons at mountain altitudes
A80-14165

MALACHOWSKI, M. J.
Effects of ionizing radiation on the light sensing elements of the retina
[LBL-5683] N80-13767

MAMISASHVILI, V. A.
Active responses of the internal carotid artery to stretching
A80-17285

MANGSETH, G. R.
Plasma volume during stress in man - Osmolality and red cell volume
A80-13506

MARGOLIN, L.
Microwaves - Effect on thermoregulatory behavior in rats
A80-13590

MARKO, A.
Design of a microprocessor based cardiotachometer
[AD-A073105] N80-12731

MAROTTE, H.
The application of indirect oxymetry in the criticism of the dilution standards of oxygen regulators
A80-15636

MARSHALL, R. D.
Development of the electrochemically regenerable carbon dioxide absorber for portable life support system application
[ASME PAPER 79-ENAS-33] A80-15257
EDC - A regenerable CO2 removal subsystem for an enhanced capability orbiter
[ASME PAPER 79-ENAS-34] A80-15258

MARU, N.
Effects of cold exposure on circadian rhythm of body temperature in rats and rabbits
A80-13374

MASHKOVA, V. N.
Operator eye-movement reaction during tracking of discrete stimuli with random time and space distribution
A80-16474

MASON, R. M.
Guiding the development of a controlled ecological life support system
[NASA-CR-162452] N80-12735

MASSOUDI, H.
Electromagnetic absorption in multilayered cylindrical models of man
A80-13216

MCCAULEY, M. E.
Reliability, validity and application of an improved scale for assessment of motion sickness severity
[AD-A069130] N80-13766

MCHEDLISHVILI, G. I.
Active responses of the internal carotid artery to stretching
A80-17285

MEISSNER, H. P.
Recycling plant, human and animal wastes to plant nutrients in a closed ecological system
[ASME PAPER 79-ENAS-29] A80-15253

METGES, P.
The place of computerized axial tomography /CAT/ in the examination of flight crews
A80-15629

METGES, P. J.
The physiopathology of vertebral pain in helicopter pilots
A80-15633

MICHAELSON, S. M.
Microwaves - Effect on thermoregulatory behavior in rats
A80-13590
Effects of hypophysectomy and dexamethasone on rat adrenal response to microwaves
A80-16457

MIDOLO, L. L.
The use of a positive displacement air cycle machine in a closed-loop environmental control system
[ASME PAPER 79-ENAS-6] A80-15231

MIENTUS, J.
Anti-suffocation valve Bendix type no. 3267010-0101
[AD-A068927] N80-13772

MILES, D. S.
Maximal work capacity of women during acute hypoxia
A80-16456

MINATO, K.
Parameter estimation of radiocardiogram using a minicomputer
A80-14798

MODELL, M.
Closed-ecology life support systems /CELSS/ for long-duration, manned missions
[ASME PAPER 79-ENAS-27] A80-15251
Recycling plant, human and animal wastes to plant nutrients in a closed ecological system
[ASME PAPER 79-ENAS-29] A80-15253

MOISEENKO, N. V.
Effect of human exposure to a nitrogen-oxygen environment at 5-12 kgf/sq cm on certain indices of the higher nervous activity
A80-14258

MORGAN, P. W.
A preliminary research plan for development of a photosynthetic link in a closed ecological life support system
[NASA-CR-160399] N80-13758

N

NADEL, E. R.
Thermogenic control during exercise in a cold environment
A80-13507

NASTOIU, I.
Investigation of certain electrophysiological and biochemical parameters in hypoxia testing at a simulated altitude of 5500 m
A80-15634

NEKRASOVA, V. N.
Mathematical model of respiratory rhythm generation
A80-16602

NIKITIN, G. I.
Amplitude-phase discriminator with two-CRT oscillograph display
A80-16471

O

OKHOTSIMSKII, D. E.
Integrated walking robot simulation and modelling
A80-14801

OLCOTT, T. M.
Development of a Space Shuttle plant growth unit
[ASME PAPER 79-ENAS-19] A80-15243

ORMOTSADZE, L. G.
Active responses of the internal carotid artery to stretching
A80-17285

OSADA, H.
Effects of cold exposure on circadian rhythm of body temperature in rats and rabbits
A80-13374

OSTASHKOV, K. V.
Current problems of hypothermy
A80-14259

OU, L. C.
Adrenocortical function in rats chronically exposed to high altitude
A80-16453

P

PANESSA-WARREN, B. J.
Determining biological fine structure by differential absorption of soft X-ray
[BNL-26282] N80-13760

PENNINGTON, J. E.
Single pilot scanning behavior in simulated instrument flight
[NASA-TM-80178] N80-12732

PEPPER, R. L.
Reliability, validity and application of an improved scale for assessment of motion sickness severity
[AD-A069130] N80-13766

PHILLIPS, J. M.
Controlled-environment agricultural systems as food sources for large space habitats
[ASME PAPER 79-ENAS-30] A80-15254

PINTILIE, I.
Investigation of certain electrophysiological and biochemical parameters in hypoxia testing at a simulated altitude of 5500 m
A80-15634

PIROGOV, V. P.
In vivo investigation of the elastohysteresis properties of the aorta and its branches
A80-17288

PLANEL, H.
Biological investigations carried out in balloons
A80-13451

PLATONOV, A. K.
Integrated walking robot simulation and modelling
A80-14801

POIRIER, J. L.
The physiopathology of vertebral pain in helicopter pilots
A80-15633

POLLOCK, T. A.
Use of phytotrons in assessing environmental requirements for plants in space habitats
[ASME PAPER 79-ENAS-28] A80-15252

PONNAMPERUMA, C.
Amino acids in the Yamato carbonaceous chrondrite from Antarctica
A80-13548

POPESCU, A. T. C.
Investigation of certain electrophysiological and biochemical parameters in hypoxia testing at a simulated altitude of 5500 m
A80-15634

PORRET, G.
The place of computerized axial tomography /CAT/ in the examination of flight crews
A80-15629

POTOR, G.
Design of a microprocessor based cardiotachometer
[AD-A073105] N80-12731

PRINCE, F. P.
Human muscle fiber types in power lifters, distance runners and untrained subjects: A histochemical and ultrastructural study
N80-12727

PRUITT, J. R.
Resuscitation from hypothermia: A literature review
[AD-A069093] N80-13764

Q

QUATTRONE, P. D.
Bosch - An alternate CO2 reduction technology
[ASME PAPER 79-ENAS-32] A80-15256
Development of the electrochemically regenerable carbon dioxide absorber for portable life support system application
[ASME PAPER 79-ENAS-33] A80-15257

QUEIROZ, E.
The place of computerized axial tomography /CAT/ in the examination of flight crews
A80-15629

R

RAPER, C. D., JR.
Use of phytotrons in assessing environmental requirements for plants in space habitats
[ASME PAPER 79-ENAS-28] A80-15252

RATINO, D.
Design of a microprocessor based cardiotachometer
[AD-A073105] N80-12731

RAY, C. D.
Design and development of a trace contaminant removal canister for Spacelab
[ASME PAPER 79-ENAS-16] A80-15241

REGAN, D.
Binocular and monocular stimuli for motion in depth - Changing-disparity and changing-size feed the same motion-in-depth stage
A80-17059

REYBURN, J. A.
Maximal work capacity of women during acute hypoxia
A80-16456

REYNOLDS, D. B.
Modeling studies of the pressure-flow relationship of the central airways
N80-13763

RIABCHENKO, N. I.
Radiation and DNA
A80-14097

RILEY, P.
Development and description of a device for static strength measurement in the armed forces examination and entrance station
[AD-A068684] N80-13765

ROBERTSON, D. G.
Difference between end-tidal and arterial P/CO2/ in exercise
A80-13505

RODAHL, K.
Seasonal variation in work performance and heart rate response to exercise - A study of 1,835 middle-aged men
A80-13274

ROTHBAUER, G.
On the problem of spring loaded resistance to simple and complex positioning of a control stick
[FB-40] N80-13778
On the interaction between system and task parameters through continuous manual control
[FB-42] N80-13780

ROWE, R. D.
Echocardiographic recognition of atrioventricular valve stenosis associated with endocardial cushion defect - Pathologic and surgical correlates
A80-15998

RUBENCHIK, L. I.
Search for microorganisms in space
A80-16459

RUMMEL, J. A.
Experiments for dedicated life science missions
[AAS PAPER 79-251] A80-16431

S

SAFONOV, V. A.
Mathematical model of respiratory rhythm generation
A80-16602

SAHM, K. F.
Apparatus for measurement of tissue compliance
[BMFT-FB-W-78-05] N80-13768

SAITO, I.
Relationship between recovery and hypothermia induced by centrifugation in rats
A80-13372
Effects of long-term repetitive exposure to centrifugation of 2G on developing rat
A80-13373

SAKAGUCHI, H.
Effects of cold exposure on circadian rhythm of body temperature in rats and rabbits
A80-13374

SACCO, M.
Development and description of a device for static strength measurement in the armed forces examination and entrance station
[AD-A068684] N80-13765

SCHILLING, T. L.
Experiments for dedicated life science missions
[AAS PAPER 79-251] A80-16431

SCHMIDT, E. V.
Medical applications of aerospace technology
A80-14793

SCHUBERT, F. H.
EDC - A regenerable CO2 removal subsystem for an enhanced capability orbiter
[ASME PAPER 79-ENAS-34] A80-15258

SCHWARTZ, A. W.
Uracil in carbonaceous meteorites
A80-16068

SEIGNEURIC, A.
The importance of continuous electrocardiogram recording in conduction disorders in flight crews
A80-15635

SELZER, A.
Unreliability of exercise-induced R wave changes as indexes of coronary artery disease
A80-15996

SHAFER, IU. G.
Radiation dose rate of a biological object from cosmic rays in the stratosphere and at the height of artificial earth satellites
A80-17100

SHARIPOVA, V. R.
Evaluation of heat convection and flow front influence on electrophoresis of biological substances in space flight conditions
[IAF PAPER 79-ST-17] A80-17067

SHARPER, C.
Design of a microprocessor based cardiotachometer
[AD-A073105] N80-12731

SHIMOYAMA, A.
Amino acids in the Yamato carbonaceous chrondrite from Antarctica
A80-13548

SHNEIDER, A. IU.
Integrated walking robot simulation and modelling
A80-14801

SIAS, F. R.
Resuscitation from hypothermia: A literature review
[AD-A069093] N80-13764

SIDORENKO, T. C.
Some aspects of processing physiological data
A80-16480

SIROTA, S. S.
Effect of human exposure to a nitrogen-oxygen environment at 5-12 kgf/sq cm on certain indices of the higher nervous activity
A80-14258

SKIPKA, W.
Effects and post-effects of two-hour exhausting exercise on composition and gas transport functions of blood
A80-13273

SKRIABIN, N. G.
Radiation dose rate of a biological object from cosmic rays in the stratosphere and at the height of artificial earth satellites
A80-17100

SKUDIN, V. K.
Effect of human exposure to a nitrogen-oxygen environment at 5-12 kgf/sq cm on certain indices of the higher nervous activity
A80-14258

SMIRNOV, V. P.
Calculation of the surface on which the corneal flash is located with application to the development of a system for recording eye movement
A80-13859

SMITH, E. L., III
Humans deprived of normal binocular vision have binocular interactions tuned to size and orientation
A80-13864

SOBOLEV, V. I.
Catecholamines and chemical thermoregulation during cold acclimation
A80-14260

SOKOLOV, E. N.
Artificial sensory organs: Problems of modeling sensory systems
A80-16461

SOLEILHAVOUP, J. P.
Biological investigations carried out in balloons
A80-13451

SOSIN, I. I.
Radiation dose rate of a biological object from cosmic rays in the stratosphere and at the height of artificial earth satellites
A80-17100

SPURGEON, J. C.
A procedure for electronically monitoring animal response parameters using the rotating wheel
A80-13322

SPURLOCK, J. M.
Closed-ecology life support systems /CELSS/ for long-duration, manned missions
[ASME PAPER 79-ENAS-27] A80-15251
Evaluation and comparison of alternative designs for water/solid-waste processing systems for spacecraft
[NASA-CR-162492] N80-12739

SRIBNIK, F.
Development of an improved Sabatier reactor
[ASME PAPER 79-ENAS-36] A80-15260

STEININGER, K.
Innovations in transportation engineering and human factors
A80-13186

STERN, S.
Microwaves - Effect on thermoregulatory behavior in rats
A80-13590

STERNIK, S. J.
A procedure for electronically monitoring animal response parameters using the rotating wheel
A80-13322

STEWARD, F. C.
Problems and potentialities of cultured plant cells in retrospect and prospect
A80-15225

STOKS, P. G.
Uracil in carbonaceous meteorites
A80-16068

STONESIFER, J. C.
The Life Sciences Flight Experiments Program - An update
[AAS PAPER 79-250] A80-16430

SVIRIDOV, E. P.
Error dynamics of operator recognition of visual images
A80-16464
Human operator eye-lid movement reaction during intense visual tasks involving the detection and tracking of visual signals
A80-16470

T

TEIXEIRA, K. I. S.
The place of computerized axial tomography /CAT/ in the examination of flight crews
A80-15629

TENNEY, S. M.
Adrenocortical function in rats chronically exposed to high altitude
A80-16453

THOMAS, J. F.
Use of phytotrons in assessing environmental requirements for plants in space habitats
[ASME PAPER 79-ENAS-28] A80-15252

THOMAS, M. U.
Some models of human error for man-machine system evaluation
[AD-A072838] N80-12740

TIBES, U.
Effects and post-effects of two-hour exhausting exercise on composition and gas transport functions of blood
A80-13273

TRUSLER, G. A.
Echocardiographic recognition of atrioventricular valve stenosis associated with endocardial cushion defect - Pathologic and surgical correlates
A80-15998

U

UHL, G. S.
Analysis of exercise-induced R wave amplitude changes in detection of coronary artery disease in asymptomatic men with left bundle branch block
A80-15997

V

VAITKIAVICHIUS, G. G.
Artificial sensory organs: Problems of modeling sensory systems
A80-16461

VICENS, J.
The physiopathology of vertebral pain in helicopter pilots
A80-15633

VIEILLEFOND, H.
The application of indirect oxymetry in the criticism of the dilution standards of oxygen regulators
A80-15636

VOGT, J. J.
Influence of air velocity and heat acclimation on human skin wettedness and sweating efficiency
A80-16454

VOLKOV, N. A.
In vivo investigation of the elastohysteresis properties of the aorta and its branches
A80-17288

VOLKOV, V. G.
Psychophysical studies of human-operator activity and instrumentation for these studies
A80-16463

Pursuit-tracking simulator with adaptive pseudorandom program of marker trajectory
A80-16466

Operator eye-movement reaction during tracking of discrete stimuli with random time and space distribution
A80-16474

VOSSIUS, G.
Interdependence between the saccadic and the continuous eye movement control systems
A80-14797

VYKUKAL, H. C.
High-pressure protective systems technology
[ASME PAPER 79-ENAS-15] A80-15240

W

WAGNER, J. A.
Maximal work capacity of women during acute hypoxia
A80-16456

WAGNER, P. A.
Development of a Space Shuttle plant growth unit
[ASME PAPER 79-ENAS-19] A80-15243

WAGNER, S.
Unreliability of exercise-induced R wave changes as indexes of coronary artery disease
A80-15996

WARREN, J. B.
Determining biological fine structure by differential absorption of soft X-ray
[BNL-26282] N80-13760

WEBBON, B. W.
High-pressure protective systems technology
[ASME PAPER 79-ENAS-15] A80-15240

WEISS, B.
Microwaves - Effect on thermoregulatory behavior in rats
A80-13590

WENDEROTH, P.
The importance of pattern information for the resolution of depth-ambiguous apparent motion
A80-13999

WHITE, D. G.
The importance of pattern information for the resolution of depth-ambiguous apparent motion
A80-13999

WIKER, S. F.
Reliability, validity and application of an improved scale for assessment of motion sickness severity
[AD-A069130] N80-13766

WILDE, R. C.
/Hard Hat/ EVA, personal equipment to support large scale construction in space
[ASME PAPER 79-ENAS-43] A80-15266

WILLIAMS, C. M.
Echocardiographic recognition of atrioventricular valve stenosis associated with endocardial cushion defect - Pathologic and surgical correlates
A80-15998

WIRTHS, G.
Environmental systems for aquatic animal studies in the Shuttle era
[ASME PAPER 79-ENAS-45] A80-15268

WOLTHUIS, R. A.
T-waves in the exercise ECG - Their location and occurrence
A80-13263

WOODS, R. R.
Development of the electrochemically regenerable carbon dioxide absorber for portable life support system application
[ASME PAPER 79-ENAS-33] A80-15257

WRIGHT, J.
Development and description of a device for static strength measurement in the armed forces examination and entrance station
[AD-A068684] N80-13765

Y

YANAI, K.
Amino acids in the Yamato carbonaceous chrondrite from Antarctica
A80-13548

YANG, P. Y.
EDC - A regenerable CO2 removal subsystem for an enhanced capability orbiter
[ASME PAPER 79-ENAS-34] A80-15258

YONEKURA, Y.
Parameter estimation of radiocardiogram using a minicomputer
A80-14798

YUEN, G. U.
Quantification of monocarboxylic acids in the Murchison carbonaceous meteorite
A80-13549

YURUGI, R.
Effects of cold exposure on circadian rhythm of body temperature in rats and rabbits
A80-13374

Z

ZALTSMAN, G. L.
Foundation of hyperbaric physiology
A80-13526

ZHERNAVKOV, V. F.
Determination of psychophysiological reaction norms of a pilot during work
A80-16472

Method for generalizing operator performance factor evaluation in multidimensional tracking problems
A80-16473

ZHURAVLEV, IU. IU.
In vivo investigation of the elastohysteresis properties of the aorta and its branches
A80-17288

ZUBETS, P. A.
Determination of psychophysiological reaction norms of a pilot during work
A80-16472

1. Report No. NASA-SP-7011 (204)	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle AEROSPACE MEDICINE AND BIOLOGY A Continuing Bibliography (Supplement 204)		5. Report Date March 1980
		6. Performing Organization Code
7. Author(s)		8. Performing Organization Report No.
		10. Work Unit No.
9. Performing Organization Name and Address National Aeronautics and Space Administration Washington, D. C. 20546		11. Contract or Grant No.
		13. Type of Report and Period Covered
12. Sponsoring Agency Name and Address		14. Sponsoring Agency Code
15. Supplementary Notes		
16. Abstract		
17. Key Words (Suggested by Author(s)) Aerospace Medicine Bibliographies Biological Effects	18. Distribution Statement Unclassified - Unlimited	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 54 22. Price* $7.00 HC

16. Abstract

This bibliography lists 140 reports, articles, and other documents introduced into the NASA scientific and technical information system in February 1980.

*For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1980

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to eleven special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley
COLORADO
University of Colorado, Boulder
DISTRICT OF COLUMBIA
Library of Congress
GEORGIA
Georgia Institute of Technology, Atlanta
ILLINOIS
The John Crerar Library, Chicago
MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge
MISSOURI
Linda Hall Library, Kansas City
NEW YORK
Columbia University, New York
OKLAHOMA
University of Oklahoma, Bizzell Library
PENNSYLVANIA
Carnegie Library of Pittsburgh
WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library
COLORADO
Denver Public Library
CONNECTICUT
Hartford Public Library
MARYLAND
Enoch Pratt Free Library, Baltimore
MASSACHUSETTS
Boston Public Library
MICHIGAN
Detroit Public Library
MINNESOTA
Minneapolis Public Library
MISSOURI
Kansas City Public Library
St. Louis Public Library
NEW JERSEY
Trenton Public Library
NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library
OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library
TENNESSEE
Memphis Public Library
TEXAS
Dallas Public Library
Fort Worth Public Library
WASHINGTON
Seattle Public Library
WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019.

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy of microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESA - Information Retrieval Service, European Space Agency, 8-10 rue Mario Nikis, 75738 Paris CEDEX 15, France.

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

U.S.MAIL

NASA

POSTMASTER: If Undeliverable (Section 158
Postal Manual) Do Not Return

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP-7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP-7037	AERONAUTICAL ENGINEERING Engineering, design, and operation of aircraft and aircraft components	Monthly
NASA SP-7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP-7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP-7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP-7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Washington, D.C. 20546

7011 (205)

NASA

Aerospace Medicine and Biology
A Continuing Bibliography with Indexes

NASA SP-7011 (205)
April 1980

NEWARK PUBL'C LIBRARY

MAY 23 1980

U. S. GOVT. PUBS
DEPOSITORY 376

National Aeronautics and
Space Administration

Aerospace Medicine & Biolog
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi
ine & Biology Aerospace Medi
ce Medicine & Biology Aerosp
Aerospace Medicine & Biology
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi

NASA SP-7011 (205)
Aerospace Medicine and Biology
A Continuing Bibliography with Indexes
Pages 43-71
April 1980

NAS 1.21:

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series)	N80-14017 – N80-16022
IAA (A-10000 Series)	A80-17361 – A80-21040

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by Informatics Information Systems Company.

NASA SP-7011(205)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 205)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in March 1980 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*

NASA Scientific and Technical Information Branch 1980
National Aeronautics and Space Administration
Washington, DC

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This Supplement is available from the National Technical Information Service (NTIS), Springfield, Virginia 22161, at the price $7.00 domestic; $14.00 foreign.

INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 212 reports, articles and other documents announced during March 1980 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1980 Supplements.

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A80-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies of accessions are available at $7.00 per document up to a maximum of 40 pages. The charge for each additional page is $0.25. Microfiche(1) of documents announced in *IAA* are available at the rate of $3.00 per microfiche on demand, and at the rate of $1.25 per microfiche for standing orders for all *IAA* microfiche. The price for the *IAA* microfiche by category is available at the rate of $1.50 per microfiche plus a $1.00 service charge per category per issue. Microfiche of all the current AIAA Meeting Papers are available on a standing order basis at the rate of $1.50 per microfiche.

Minimum air-mail postage to foreign countries is $1.00 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

STAR ENTRIES (N80-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page vii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the * symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard $3.50 price, for those documents identified by a # symbol.)

---

(1) A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts*. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: Fachinformationszentrum, Karlsruhe. Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM).

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: U.S. Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free.

Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is $65.00 domestic; $130.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics
and Astronautics
Technical Information Service
555 West 57th Street, 12th Floor
New York, New York 10019

British Library Lending Division,
Boston Spa, Wetherby, Yorkshire,
England

Commissioner of Patents and
Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service
ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Scientific and Technical Information
Facility
P.O. Box 8757
B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Branch (NST-41)
Washington, D.C. 20546

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, California 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey
1033 General Services Administration
Building
Washington, D.C. 20242

U.S. Geological Survey
601 E. Cedar Avenue
Flagstaff, Arizona 86002

U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

U.S. Geological Survey
Bldg. 25, Denver Federal Center
Denver, Colorado 80225

Fachinformationszentrum Energie, Physik,
Mathematik GMBH
7514 Eggenstein Leopoldshafen
Federal Republic of Germany

NTIS PRICE SCHEDULES

Schedule A
STANDARD PAPER COPY PRICE SCHEDULE

(Effective January 1, 1980)

Price Code	Page Range	North American Price	Foreign Price
A01	Microfiche	$ 3.50	$ 5.25
A02	001-025	5.00	10.00
A03	026-050	6.00	12.00
A04	051-075	7.00	14.00
A05	076-100	8.00	16.00
A06	101-125	9.00	18.00
A07	126-150	10.00	20.00
A08	151-175	11.00	22.00
A09	176-200	12.00	24.00
A10	201-225	13.00	26.00
A11	226-250	14.00	28.00
A12	251-275	15.00	30.00
A13	276-300	16.00	32.00
A14	301-325	17.00	34.00
A15	326-350	18.00	36.00
A16	351-375	19.00	38.00
A17	376-400	20.00	40.00
A18	401-425	21.00	42.00
A19	426-450	22.00	44.00
A20	451-475	23.00	46.00
A21	476-500	24.00	48.00
A22	501-525	25.00	50.00
A23	526-550	26.00	52.00
A24	551-575	27.00	54.00
A25	576-600	28.00	56.00
A99	601-up	-- 1/	-- 2/

1/ Add $1.00 for each additional 25 page increment or portion thereof for 601 pages up

2/ Add $2.00 for each additional 25 page increment or portion thereof for 601 pages and more

Schedule E
EXCEPTION PRICE SCHEDULE
Paper Copy & Microfiche

Price Code	North American Price	Foreign Price
E01	$ 5.50	$ 11.50
E02	6.50	13.50
E03	8.50	17.50
E04	10.50	21.50
E05	12.50	25.50
E06	14.50	29.50
E07	16.50	33.50
E08	18.50	37.50
E09	20.50	41.50
E10	22.50	45.50
E11	24.50	49.50
E12	27.50	55.50
E13	30.50	61.50
E14	33.50	67.50
E15	36.50	73.50
E16	39.50	79.50
E17	42.50	85.50
E18	45.50	91.50
E19	50.50	100.50
E20	60.50	121.50
E99 - Write for quote		
N01	28.00	40.00

TABLE OF CONTENTS

Page

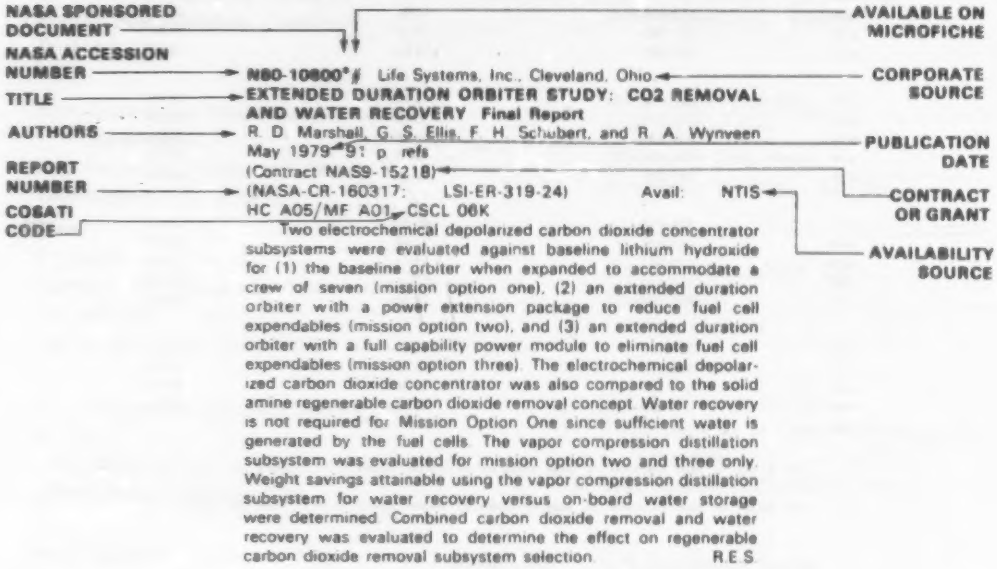
IAA ENTRIES (A80-10000) 43

STAR ENTRIES (N80-10000) 53

Subject Index I-1

Personal Author Index I-21

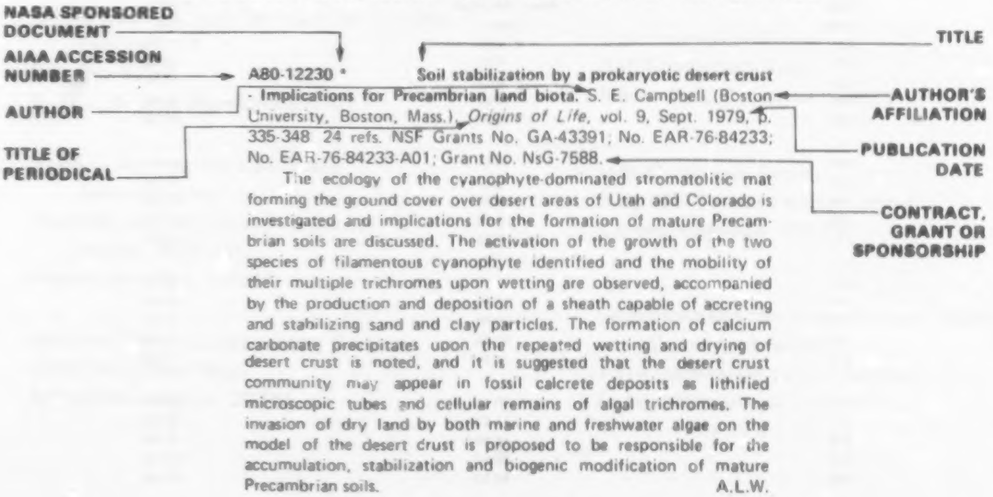
TYPICAL CITATION AND ABSTRACT FROM *STAR*


NASA SPONSORED DOCUMENT
NASA ACCESSION NUMBER
TITLE
AUTHORS
REPORT NUMBER
COSATI CODE
AVAILABLE ON MICROFICHE
CORPORATE SOURCE
PUBLICATION DATE
CONTRACT OR GRANT
AVAILABILITY SOURCE

N80-10800*# Life Systems, Inc., Cleveland, Ohio
EXTENDED DURATION ORBITER STUDY: CO2 REMOVAL AND WATER RECOVERY Final Report
R. D. Marshall, G. S. Ellis, F. H. Schubert, and R. A. Wynveen
May 1979 91 p refs
(Contract NAS9-15218)
(NASA-CR-160317; LSI-ER-319-24) Avail: NTIS
HC A05/MF A01 CSCL 06K

Two electrochemical depolarized carbon dioxide concentrator subsystems were evaluated against baseline lithium hydroxide for (1) the baseline orbiter when expanded to accommodate a crew of seven (mission option one), (2) an extended duration orbiter with a power extension package to reduce fuel cell expendables (mission option two), and (3) an extended duration orbiter with a full capability power module to eliminate fuel cell expendables (mission option three). The electrochemical depolarized carbon dioxide concentrator was also compared to the solid amine regenerable carbon dioxide removal concept. Water recovery is not required for Mission Option One since sufficient water is generated by the fuel cells. The vapor compression distillation subsystem was evaluated for mission option two and three only. Weight savings attainable using the vapor compression distillation subsystem for water recovery versus on-board water storage were determined. Combined carbon dioxide removal and water recovery was evaluated to determine the effect on regenerable carbon dioxide removal subsystem selection. R.E.S.

TYPICAL CITATION AND ABSTRACT FROM *IAA*


NASA SPONSORED DOCUMENT
AIAA ACCESSION NUMBER
AUTHOR
TITLE OF PERIODICAL
TITLE
AUTHOR'S AFFILIATION
PUBLICATION DATE
CONTRACT, GRANT OR SPONSORSHIP

A80-12230 * **Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota.** S. E. Campbell (Boston University, Boston, Mass.), *Origins of Life*, vol. 9, Sept. 1979, p. 335-348. 24 refs. NSF Grants No. GA-43391; No. EAR-76-84233; No. EAR-76-84233-A01; Grant No. NsG-7588.

The ecology of the cyanophyte-dominated stromatolitic mat forming the ground cover over desert areas of Utah and Colorado is investigated and implications for the formation of mature Precambrian soils are discussed. The activation of the growth of the two species of filamentous cyanophyte identified and the mobility of their multiple trichromes upon wetting are observed, accompanied by the production and deposition of a sheath capable of accreting and stabilizing sand and clay particles. The formation of calcium carbonate precipitates upon the repeated wetting and drying of desert crust is noted, and it is suggested that the desert crust community may appear in fossil calcrete deposits as lithified microscopic tubes and cellular remains of algal trichromes. The invasion of dry land by both marine and freshwater algae on the model of the desert crust is proposed to be responsible for the accumulation, stabilization and biogenic modification of mature Precambrian soils. A.L.W.

AEROSPACE MEDICINE AND BIOLOGY *A Continuing Bibliography (Suppl. 205)*

APRIL 1980

IAA ENTRIES

A80-17686 * Proton movements in response to a light-driven electrogenic pump for sodium ions in Halobacterium halobium membranes. R. V. Greene (Cornell University, Ithaca, N.Y.) and J. K. Lanyi (NASA, Ames Research Center, Moffett Field, Calif.). *Journal of Biological Chemistry,* vol. 254, Nov. 10, 1979, p. 10986-10994. 35 refs. NSF Grant No. 76-09718; Grant No. NIH-GM-23225A.

A80-17711 Visual cortical neurons - Are bars or gratings the optimal stimuli. D. G. Albrecht, R. L. De Valois, and L. G. Thorell (California, University, Berkeley, Calif.). *Science,* vol. 207, Jan. 4, 1980, p. 88-90. 15 refs. NSF Grant No. BNS-74-02621; Grants No. NIH-MH-10878; No. PHS-EY-00014.

The responses of single cells in the striate cortex of the macaque monkey and the cat are examined to determine the characteristics of their visual cortical neurons. To assess whether (1) bar and edge detectors or (2) cells selective for certain spatial frequencies are more accurate in terms of the functional description, the selectivity and the responsivity-sensitivity of these neurons to bars of various widths and gratings of various spatial frequencies, were measured. All of the cells recorded from, were considerably more selective along the dimension of spatial-frequency than along the dimension of bar width. Further, most were more responsive and sensitive to the grating of optimal frequency than to the bar of optimal width.
C.F.W.

A80-17726 Evaluation of human strain during interrupted exposure to vibration (Beurteilung der Beanspruchung des Menschen bei unterbrochener Schwingungsexposition). W. Scheibe and W. Rohmert (Darmstadt, Technische Hochschule, Darmstadt, West Germany). *European Journal of Applied Physiology,* vol. 42, no. 4, 1979, p. 209-225. 36 refs. In German.

An investigation of the psychophysical reactions to stochastic vibrations transmitted in vertical direction to a man in a sitting position in simulated experiments under laboratory conditions is presented. Indicators of bottleneck situations in functional systems of the organism and strain measurements allow evaluation of the recreation efficiency of interruptions in exposure time. The special meaning of the distribution and the frequency rate of interruptions can be illustrated by the time variance of the strain processes of selected muscles. A significant correlation results between the degree of muscle fatigue and the period of uninterrupted exposure so that numerous interruptions of vibration exposure should be considered as a useful guideline for design in ergonomics.
A.T.

A80-17727 Quantitative study of free amino acids in human eccrine sweat excreted from the forearms of healthy trained and untrained men during exercise. N. Liappis (Children's Hospital, Bonn, West Germany), S.-D. Kelderbacher, K. Kesseler (Bonn, Universität, Bonn, West Germany), and P. Bantzer (Gesellschaft für Mathematik und Datenverarbeitung mbH, Bonn, West Germany). *European Journal of Applied Physiology,* vol. 42, no. 4, 1979, p. 227-234. 21 refs. Research supported by the Deutsche Forschungsgemeinschaft.

A80-17728 Body temperature and heart rate relationships during submaximal bicycle ergometer exercises. M. Tanaka, M. A. Volle, G. R. Brisson, and M. Dion (Québec, Université, Trois-Rivières, Canada). *European Journal of Applied Physiology,* vol. 42, no. 4, 1979, p. 263-270. 21 refs.

A80-17741 * Review of cell aging in Drosophila and mouse. J. Miquel (NASA, Ames Research Center, Biomedical Research Div., Moffett Field, Calif.), A. C. Economos (San Jose State University, San Jose, Calif.), K. G. Bensch (Stanford University, Stanford, Calif.), H. Atlan (Paris VI, Université, Paris, France), and J. E. Johnson, Jr. (National Institutes of Health, National Institute on Aging, Baltimore, Md.). *Age,* vol. 2, July 1979, p. 78-88. 70 refs.

A80-17986 # Study of fungal phenotypes after exposure to space flight parameters (Izuchenie fenotipov gribov posle kosmicheskogo poleta). P. A. Volz. *Kosmicheskie Issledovaniia,* vol. 17, Nov.-Dec. 1979, p. 920-926. 21 refs. In Russian.

A80-18081 # Physiological regulation of oxygen transport to muscles /from results of mathematical analysis of experimental data/ (O fiziologicheskoi reguliatsii transporta kisloroda v myshtsakh /po rezul'tatam matematicheskogo analiza eksperimental'nykh dannykh/). E. G. Liabakh (Akademia Nauk SSSR, Institut Fiziologii, Leningrad, USSR) and K. P. Ivanov (Akademiia Nauk Ukrainskoi SSR, Institut Kibernetiki, Kiev, Ukrainian SSR). *Akademiia Nauk SSSR, Doklady,* vol. 248, no. 2, 1979, p. 488-491. 7 refs. In Russian.

Progress in mathematics and computer technology has markedly increased the possibility of analyzing oxygen-diffusion processes in muscles. The paper outlines a mathematical analysis pertaining to the regulation of oxygen supply to the muscles of warm-blooded animals, based on in vivo measurements of basic morphological parameters of micro-circulation. Attention is given to calculating the oxygen saturation of a muscle at rest and during muscular work under conditions of combined work and increased number of operating capillaries or under conditions of accelerated capillary blood flow. The calculations are performed using a three-dimensional model of oxygen diffusion in muscles.
S.D.

A80-18082 # Temperature compensation of the metabolism of serotonin in the brain of hibernating mammals (Temperaturnaia kompensatsiia metabolizma serotonina v mozge zimospiashchikh). N. K. Popova, N. N. Voitenko, and A. D. Slonim (Akademiia Nauk SSSR, Institut Tsitologii i Genetiki, Novosibirsk, USSR). *Akademiia Nauk SSSR, Doklady,* vol. 248, no. 2, 1979, p. 492-494. 11 refs. In Russian.

Results are presented for a study of the temperature dependence of oxidative deamination of serotonin in the brain of red-cheeked marmots at the initial stage of hibernation, during hibernation, and after awakening. The experiments were conducted on males of the Citellus erythrogenys Brandt strain. It is likely that in hibernating mammals with decreased body temperature, the mechanisms responsible for the temperature compensation of metabolism are to a certain extent similar to those for poikilothermic animals. S.D.

A80-18250 # **A new engineering approach to motion cueing technology.** H. Jaslow (Gould, Inc., Melville, N.Y.). *American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 18th, Pasadena, Calif., Jan. 14-16, 1980, Paper 80-0047.* 8 p. 10 refs.

A new and unique approach to motion simulation is presented which provides a simple, yet powerful, engineering tool. From a study of the physical mechanisms of sensory receptors, perceived sensation of motion can be quantified. With this quantification, a method is presented to evaluate and specify requirements for motion platforms. Calculations are made of real cue regimes vs. aircraft maneuvers and simulator excursion limits. (Author)

A80-18643 # **Static acoustic impedance profiles in auditory diagnosis.** P. W. Whaley (USAF, Institute of Technology, Wright-Patterson AFB, Ohio) and L. D. Zirkle (Oklahoma State University, Stillwater, Okla.). *American Society of Mechanical Engineers, Winter Annual Meeting, New York, N.Y., Dec. 2-7, 1979, Paper 79-WA/Bio-1.* 13 p. 6 refs. Members, $1.50; nonmembers, $3.00. NIH-supported research.

A study was carried out to determine the value in auditory diagnosis of static acoustic impedance (absence of middle ear muscle activity) plotted versus frequency. This is different from conventional impedance audiometry in that the inductance can be measured. An entirely new device (patents currently being pursued) was used to gather these data, not possible to obtain with conventional devices. Clinical data was obtained on both normal and pathological human subjects. The resulting data indicate that pathological conditions result in changes in the shape of the impedance profile which are characteristic of the particular disorder and well outside the range associated with normal ears. The authors feel that considerably more information can be detected from such an impedance profile based on their experience with frequency response properties of dynamic systems. More extensive data will be required to provide a definitive analysis of the value of this technique in diagnosis. (Author)

A80-18839 **The effect of character size on the legibility of numeric displays during vertical whole-body vibration.** C. H. Lewis and M. J. Griffin (Southampton, University, Southampton, England). *Journal of Sound and Vibration,* vol. 67, Dec. 22, 1979, p. 562-565. 5 refs. Research supported by the Ministry of Defence (Procurement Executive).

A80-18975 **Left ventricular relaxation and filling pattern in different forms of left ventricular hypertrophy - An echocardiographic study.** P. Hanrath, D. G. Mathey, R. Siegert, and W. Bleifeld (University Hospital, Hamburg, West Germany). *American Journal of Cardiology,* vol. 45, Jan. 1980, p. 15-23. 23 refs. Research supported by the Gesellschaft fur Strahlen- und Umweltforschung mbH.

A80-19023 **Proficiency maintenance and assessment in an instrument flight simulator.** D. O. Weitzman, M. L. Fineberg, P. A. Gade (U.S. Army, Research Institute, Alexandria, Va.), and G. L. Compton (U.S. Army, Fort Campbell, Ky.). *Human Factors,* vol. 21, Dec. 1979, p. 701-710. 10 refs. Army-supported research.

Transfer effects have been studied to evaluate the suitability of a high fidelity flight simulator (Device 2B24) for maintaining and assessing instrument proficiency among experienced Army helicopter pilots. Evidence in support of positive transfer was obtained by comparing pilots trained in the simulator with pilots trained in the aircraft (UH-1H) and with pilots trained in both. In addition, performance evaluation in the simulator accurately predicted performance in the aircraft. This study suggests that simulators of proven effectiveness can be used both to maintain and assess the proficiency of experienced pilots. (Author)

A80-19024 * **When day is done and shadows fall, we miss the airport most of all.** S. N. Roscoe (New Mexico State University, Las Cruces, N. Mex.). *Human Factors,* vol. 21, Dec. 1979, p. 721-731. 20 refs. NASA-Army-supported research.

Both the effectiveness of pilot training and the safety of flight can be influenced by the distribution of texture in the visual scene, the distance to which the eyes accommodate, and the associated shifts in the apparent size and distance of objects in central and peripheral vision. Studies reviewed and original results presented indicate that these factors are involved in various misjudgments and illusions experienced by pilots: (1) when searching for other airborne traffic or targets, (2) when making approaches to airports over water at night, (3) when breaking out of low clouds on a final approach to a landing by reference to head-up or head-down displays, and (4) when practicing simulated approaches and landings or air-to-surface weapon deliveries by reference to synthetically generated visual systems. (Author)

A80-19025 * **Mathematical concepts for modeling human behavior in complex man-machine systems.** G. Johannsen (Forschungsinstitut für Anthropotechnik, Werthhoven, West Germany) and W. B. Rouse (Illinois, University, Urbana, Ill.). *Human Factors,* vol. 21, Dec. 1979, p. 733-747. 73 refs. Grant No. NsG-2119.

Many human behavior (e.g., manual control) models have been found to be inadequate for describing processes in certain real complex man-machine systems. An attempt is made to find a way to overcome this problem by examining the range of applicability of existing mathematical models with respect to the hierarchy of human activities in real complex tasks. Automobile driving is chosen as a baseline scenario, and a hierarchy of human activities is derived by analyzing this task in general terms. A structural description leads to a block diagram and a time-sharing computer analogy. B.J.

A80-19100 # **Scientific biomedical studies during the flight of the first Bulgarian cosmonaut (Nauchnite mediko-biologichni izsledvaniia pri poleta s uchastieto na p'rviia b'lgarski kosmonaut).** K. Zlatarev. *B'lgarska Akademiia na Naukite, Spisanie,* no. 5, 1979, p. 28-32. In Bulgarian.

A80-19452 **A nonparametric model of detection of signals, observed by a human operator on a CRT screen in the presence of noise.** V. N. Budko, F. M. Klement'ev, and N. M. Novikova. *(Radiotekhnika i Elektronika,* vol. 23, Nov. 1978, p. 2439-2442.) *Radio Engineering and Electronic Physics,* vol. 23, Nov. 1978, p. 131-133. Translation.

A method is devised for taking into account the psychological factor during the operator observation of signals on a TV screen on a noise background. The method is based on the determination of the so-called 'working characteristic' which is defined as the dependence of the probability of signal detection on the intensity of the signal as the latter is observed on a noise background. The use of nonparametric criteria for such detection processes is discussed; a special feature of such detection is the fact that false-alarm probability is independent of the form of the noise distribution function. B.J.

A80-19850 * **Confidence regions of planar cardiac vectors.** S. Dubin, A. Herr, and P. Hunt (Drexel University, Philadelphia, Pa.). *Journal of Electrocardiology,* vol. 13, Jan. 1980, p. 7-10. 8 refs. Grant No. NsG-7494.

A method for plotting the confidence regions of vectorial data obtained in electrocardiology is presented. The 90%, 95% and 99% confidence regions of cardiac vectors represented in a plane are obtained in the form of an ellipse centered at coordinates corresponding to the means of a sample selected at random from a bivariate normal distribution. An example of such a plot for the frontal plane QRS mean electrical axis for 80 horses is also presented. A.L.W.

A80-20018 * **Space motion sickness.** J. L. Homick (NASA, Johnson Space Center, Medical Sciences Div., Houston, Tex.). *Acta Astronautica,* vol. 6, Oct. 1979, p. 1259-1272. 18 refs.

Research on the etiology, prediction, treatment and prevention of space motion sickness, designed to minimize the impact of this syndrome which was experienced frequently and with severity by individuals on the Skylab missions, on Space Shuttle crews is reviewed. Theories of the cause of space motion sickness currently under investigation by NASA include sensory conflict, which argues that motion sickness symptoms result from a mismatch between the total pattern of information from the spatial senses and that stored from previous experiences, and fluid shift, based upon the redistribution of bodily fluids that occurs upon continued exposure to weightlessness. Attempts are underway to correlate space motion sickness susceptibility to different provocative environments, vestibular and nonvestibular responses, and the rate of acquisition and length of retention of sensory adaptation. Space motion sickness countermeasures under investigation include various drug combinations, of which the equal combination of promethazine and ephedrine has been found to be as effective as the scopolomine and dexedrine combination, and vestibular adaptation and biofeedback training and autogenic therapy. A.L.W.

A80-20019 * **Exercise response to simulated weightlessness.** C. F. Sawin, J. A. Rummel, and M. C. Buderer (NASA, Johnson Space Center, Houston, Tex.). *Acta Astronautica,* vol. 6, Oct. 1979, p. 1273-1287. 14 refs.

Two bed rest analog studies of space flight were performed; one 14 d and the other 28 d in duration. Exercise response was studied in detail during the 28 d study and following both the 14 d and 28 d studies. This paper relates the results of these studies to physiologic changes noted during and following space flight. The most consistent change noted after both bed rest and space flight is an elevated heart rate during exercise. A second consistent finding is a postflight or postbed rest reduction in cardiac stroke volume. Cardiac output changes were variable. The inability to simulate inflight activity levels and personal exercise makes a direct comparison between bed rest and the results from specific space flights difficult. (Author)

A80-20020 * **A mathematical and experimental simulation of the hematological response to weightlessness.** S. L. Kimzey (NASA, Johnson Space Center, Houston, Tex.), J. I. Leonard (General Electric Co., Houston, Tex.), and P. C. Johnson (Baylor University, Houston, Tex.). *Acta Astronautica,* vol. 6, Oct. 1979, p. 1289-1303. 32 refs.

A mathematical model of erythropoiesis control was used to simulate the effects of bedrest and zero-g on the circulating red cell mass. The model incorporates the best current understanding of the dynamics of red cell production and destruction and the associated feedback regulation. Specifically studied were the hemodynamic responses of a 28-day bedrest study devised to simulate Skylab experience. The results support the hypothesis that red cell loss during supine bedrest is a normal physiological feedback process in response to hemoconcentration enhanced tissue oxygenation and suppression of red cell production. Model simulation suggested the possibilities that this period was marked by some combination of increased oxygen-hemoglobin affinity, small reduction in mean red cell life span, ineffective erythropoiesis, or abnormal reticulocytosis. V.P.

A80-20021 * **A study of metabolic balance in crewmembers of Skylab IV.** P. C. Rambaut, C. S. Leach, and G. D. Whedon (NASA, Johnson Space Center, Medical Sciences Div., Houston, Tex.). *Acta Astronautica,* vol. 6, Oct. 1979, p. 1313-1322. 21 refs.

A metabolic balance study was conducted on the three crewmembers of the 84-day Skylab IV earth orbital mission. Dietary intake was controlled, monitored, and kept very nearly constant for a period commencing 21 days prior to flight, throughout flight, and for a period of 18 days postflight. Within the first 30 days of flight urine calcium rose to a level approx. 100% above preflight levels and remained elevated for the remainder of the flight. Fecal calcium excretion increased more slowly but continued to accelerate throughout the flight and did not return to baseline levels during the postflight period. Urinary nitrogen increased to 25-30% above preflight levels within one month following launch and thereafter gradually subsided toward control values. The overall losses of calcium averaged approx. 200 mg per day throughout the mission while nitrogen losses averaged 590 mg. Various other indices of musculoskeletal deterioration are discussed and correlated. The parallelism between the effects of weightlessness and bed rest is reviewed. It is noted, that no evidence is yet available as to the identity of the initial biological response to the absence of gravity. (Author)

A80-20022 * **Amino aciduria in weightlessness.** C. S. Leach, P. C. Rambaut (NASA, Johnson Space Center, Houston, Tex.), and N. di Ferrante (Baylor University, Houston, Tex.). *Acta Astronautica,* vol. 6, Oct. 1979, p. 1323-1333. 30 refs.

Urinary excretion of amino acids by the 9 Skylab crewmen was studied as an indicator of the metabolic effects caused by exposure to the space flight environment. Intake was consistent in quality and quantity throughout the 28, 59 and 84-day flights for each of the crewmen and complete collections were accomplished. The results indicated an increased excretion in most amino acids during the first month of flight which remained elevated in the second and third months but to a lesser extent. Additional indications of change in muscle and skeletal metabolism were observed. These results point to the desirability of obtaining additional indices of alterations in protein synthetic processes in conjunction with future space flights. (Author)

A80-20023 * **Fluid volumes changes induced by spaceflight.** P. C. Johnson (Baylor University, Houston, Tex.). *Acta Astronautica,* vol. 6, Oct. 1979, p. 1335-1341. 10 refs. Contracts No. NAS9-14578; No. NAS9-14662; No. NAS9-11201.

The blood volume (BV), plasma volume (PV), and extracellular fluid volume changes produced in crewmembers during spaceflights of 11-84 days were compared to changes after 14 or 28 days of bedrest. Spaceflight and bedrest produce approximately equal BV changes but the recorded PV change after spaceflight was less. However, the diurnal change in PV may explain the smaller decreases recorded after spaceflight. The cardiovascular deconditioning caused by spaceflight and bedrest was compared using the mean heart rate response to lower body negative pressure (LBNP) testing at -50 mmHg pressure. These tests show approximately equal LBNP produced heart rate changes after bedrest and spaceflight. A countermeasure which includes 4 hr of LBNP treatment at -30 mmHg and the ingestion of one l. of saline was studied and found capable of returning the heart rate response and the PV of bedrested subjects to control (prebedrest) levels suggesting that it would be useful to the crewmembers after a spaceflight. (Author)

A80-20082 # **The effect of antiorthostatic stimuli on human operators studied using rheography data (Vliianie antiortostaticheskogo vozdeistviia na cheloveka-operatora /po dannym reografii/).** Sh. T. Avetikian and A. M. Zingerman (Akademiia Meditsinskikh Nauk SSSR, Leningrad, USSR). *Fiziologiia Cheloveka,* vol. 5, Nov.-Dec. 1979, p. 1052-1059. 17 refs. In Russian.

The blood flow characteristics of the heat and shin as well as of the arterial pressure and pulse rate of human operators were studied in order to evaluate the effect of antiorthostatic stimuli. It is shown that an antiorthostatic stimulus of -45 deg for 20 min, causing increased blood flow to the upper part of the body, increases the tonus of the brain arteries and decreases the tonus of leg arteries; these changes facilitate the redistribution of blood toward the extremeities. When there is a sufficient venous flow from the brain, compensatory responses of the cardiovascular system to the antiorthostatic stimuli are not pronounced; a reduced venous outflow is accompanied by an increase in brain-artery tonus and in arterial pressure. Operator performance is found to suffer most during a pronounced reduction of venous flow from the brain. B.J.

A80-20211 # **Relationship among the 55 Hz bioelectric rhythm of the olfactory bulb, the bulb S-rhythm, and respiration (Vzaimootnoshenie bioelektricheskogo ritma 55 Gts oboniatel'noi lukovitsy, lukovichnogo S-ritma i dykhaniia).** G. L. Vepkhvadze and D. M. Gedevanishvili (Tbilisskii Gosudarstvennyi Meditsinskii Insti-

best copy available

tut, Tiflis, Georgian SSR). *Akademiia Nauk Gruzinskoi SSR, Soobshcheniia,* vol. 95, Sept. 1979, p. 685-688. 6 refs. In Russian.

A80-20212 # **Practical criteria for analyzing the heart hemodynamics of young athletes (Prakticheskie kriterii v analize kardio-gemodinamiki u iunykh sportsmenov).** V. S. Shaginian, T. K. Zhorzholadze, V. P. Kovtun, and T. K. Kutateladze. *Akademiia Nauk Gruzinskoi SSR, Soobshcheniia,* vol. 95, Sept. 1979, p. 725-727. In Russian.

A80-20213 # **Polycardiographic research with a single-channel electrocardiograph (Polikardiograficheskoe issledovanie odnokanal'nym elektrokardiografom).** A. M. Romanko (Tbilisskii Gosudarstvennyi Meditsinskii Institut, Tiflis, Georgian SSR). *Akademiia Nauk Gruzinskoi SSR, Soobshcheniia,* vol. 95, Sept. 1979, p. 733-736. 15 refs. In Russian.

A single-channel electrocardiographic technique is described. Recorded data yield a single complex monographic curve, on which three basic parameters of heart activity are distinguished; these parameters are suitable for the phase analysis and qualitative evaluation of cardiac action. A block diagram of the setup is presented. B.J.

A80-20387 **Energy uptake in the first step of visual excitation.** A. Cooper (Glasgow, University, Glasgow, Scotland). *Nature,* vol. 282, Nov. 29, 1979, p. 531-533. 19 refs. Research supported by the Science Research Council.

The direct measurement of photon energy uptake during the formation of bathorhodopsin from bovine rhodopsin in the photochemical process of visual excitation is reported and the possible significance of the results is discussed. Photocalorimeter determinations of the energy uptake by rhodopsin illuminated at 450 or 485 nm and 77 K accompanied by the photoreversible formation of bathorhodopsin indicate that the ground state energy of bathorhodopsin is about 35 kcal (145 J, 1.50 eV) higher than that of rhodopsin. On the basis of this unexpectedly high ground-state energy for bathorhodopsin, ground- and excited-state potential energy surfaces for the photoreaction are constructed which reveal the possibility of the overlap of the potential surfaces. A possible mechanism for the response of rhodopsin to photon absorption is then proposed and it is noted that, because of energy surface overlap, at very low temperatures an energy barrier and a temperature dependence in the rate of bathorhodopsin formation from the excited state of rhodopsin may be found. A.L.W.

A80-20441 **Combined effects of broadband noise and complex waveform vibration on cognitive performance.** C. S. Harris and R. W. Shoenberger (USAF, Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio). *Aviation, Space, and Environmental Medicine,* vol. 51, Jan. 1980, p. 1-5. 18 refs. Contract No. F33615-76-C-0401.

The performance of 12 subjects was measured on a complex counting task during exposure to each of four experimental conditions for a duration of 30 min. Two levels of noise, 65 dBA and 100 dBA, were presented both with and without 0.36 rms Gz sum-of-sines vibration. Combined 100 dBA noise and vibration produced less adverse effects than the vibration combined with 65 dBA noise. This result agrees with previous studies using tracking tasks. However, two effects were demonstrated that had not been obtained previously. First, a clearcut adverse effect of vibration on the counting task was obtained. Second, an adverse effect of 100 dBA noise on the counting tasks was demonstrated. Previously, a 110 dBA noise was required to adversely affect tracking performance. (Author)

A80-20442 **Serum cholesterol levels in selected Air Force cadets compared with levels in the West Point study.** D. A. Clark, E. L. Moser, E. L. [illegible], E. L. [illegible], and F. H. [illegible], Jr. (USAF, School of Aerospace Medicine, Brooks AFB; U.S. Army Health Sciences Academy, Fort Sam Houston, Tex.). *Aviation, Space, and Environmental Medicine,* vol. 51, Jan. 1980, p. 6-10. 16 refs.

A80-20443 **Eustachian tube function in selection of airmen.** P. Groth, A. Ivarsson, A. Nettmark, and O. Tjernstrom (Malmo General Hospital, Malmo, Sweden). *Aviation, Space, and Environmental Medicine,* vol. 51, Jan. 1980, p. 11-17. 21 refs. Research supported by the Forsvarets Forskningsanstalt.

A comprehensive study of Eustachian tube function in 84 aspirants accepted for flight training was made. Using a pressure chamber, both static and dynamic pressure changes, as in ascent and descent, were applied to test the tubal pressure equilibrating capacity in the sitting position. While all 84 were otologically healthy, a wide range in the pressure equilibrating capacity was found - 20% could not equilibrate static over- and underpressures of 10 cm H2O completely, 8% could not equilibrate at all during simulated descent, 3 subjects reported acute vertigo during simulated ascent in combination with high unilateral middle ear pressure. Asymmetry between ears of single subjects in pressure equilibrating capacity was also found to a large extent. It was not possible to identify subjects with poor equilibrating capacity by simple tests like Valsalva's or Toynbee's manoeuvres. The results may indicate that today's criteria for Eustachian tube function in the selection of airmen can be made more efficient. (Author)

A80-20444 * **A sudden-stop vestibulovisual test for rapid assessment of motion sickness manifestations.** A. Graybiel (U.S. Navy, Naval Aerospace Medical Research Laboratory, Pensacola, Fla.) and J. R. Lackner (Brandeis University, Waltham; MIT, Cambridge, Mass.). *Aviation, Space, and Environmental Medicine,* vol. 51, Jan. 1980, p. 21-23. 5 refs. Contract No. NAS9-15147. NASA Order T-9140-E.

A sudden-stop vestibulovisual (SSV) test employing a rotating chair centered in a striped cylindrical enclosure is discussed. A subject, with his eyes covered, is accelerated clockwise at 15 degrees per second squared and maintained at this velocity for 30 sec. The chair is then brought to rest within 1.5 sec and remains at rest for 30 sec while physiological parameters and motion sickness symptoms are recorded. The procedure is repeated until a predetermined motion sickness endpoint (slight nausea) is reached or 20 stops have been made. The scores made by 14 subjects in 4 sessions in terms of susceptibility to motion sickness are presented, and the pattern of all scores indicates rates of acquisition and decay of adaptation effects. It is concluded that at sea or in flight training good retention of adaptation is more important than is a rapid rate of acquiring adaptation, but in Spacelab, where early missions will be brief, rapid acquisition is all-important. L.M.

A80-20445 **Effect of 1 alpha-hydroxy-cholecalciferol and varying phosphorous content in the diet on calcium phosphorous metabolism in hypokinetic rats.** A. S. Ushakov, V. B. Spirichev, M. S. Belakovskii, N. V. Blazheevich, and A. L. Pozdniakov (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR). *Aviation, Space, and Environmental Medicine,* vol. 51, Jan. 1980, p. 24-28. 12 refs.

A80-20446 **Effect of hypogravity on human lymphocyte activation.** A. Cogoli, M. Valluchi-Morf, M. Mueller (Zurich, Eidgenossische Technische Hochschule, Zurich, Switzerland), and W. Briegleb (Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt, Institut fur Flugmedizin, Bonn, West Germany). *Aviation, Space, and Environmental Medicine,* vol. 51, Jan. 1980, p. 29-34. 22 refs. Swiss National Science Foundation Grant No. 3,109,077.

Cultures of human lymphocytes were exposed to the mitogen concanavalin A in a low-g environment generated by a fast rotating clinostat. DNA-synthesis was determined by the incorporation of (H-3)-thymidine as the parameter for activation, cell ultrastructure was analyzed by electron microscopy, and cell movements were recorded by a cinecamera. The results were compared with 1-g controls. The cells cultured at low g show: (1) a depression of activation by 50%, (2) the appearance of 'mitochondria-rich' cells, and (3) the enhanced formation of pseudopods and uropods. Investigations in vitro at low and high g and [illegible] on the effect of spaceflights on lymphocytes from cosmonauts and astronauts suggest that hypogravity depresses, whereas hypergravity enhances, lymphocyte activation by mitogens. (Author)

A80-20447 * Hypergravity and estrogen effects on avian anterior pituitary growth hormone and prolactin levels. R. P. Fiorindo and J. A. Negulesco (Ohio State University, Columbus, Ohio). *Aviation, Space, and Environmental Medicine,* vol. 51, Jan. 1980, p. 35-40. 26 refs. Research supported by the Ohio State University; Contract No. NAS2-6634.

Developing female chicks with fractured right radii were maintained for 14 d at either earth gravity (1 g) or a hypergravity state (2 g). The birds at 1 g were divided into groups which received daily injections of (1) saline, (2) 200 micrograms estrone, and (3) 400 micrograms estrone for 14 d. The 2-g birds were divided into three similarly treated groups. All 2-g birds showed significantly lower body weights than did 1-g birds. Anterior pituitary (AP) glands were excised and analyzed for growth hormone and prolactin content by analytical electrophoresis. The 1-g chicks receiving either dose of daily estrogen showed increased AP growth hormone levels, whereas hypergravity alone did not affect growth hormone content. Chicks exposed to daily estrogen and hypergravity displayed reduced growth hormone levels. AP prolactin levels were slightly increased by the lower daily estrogen dose in 1-g birds, but markedly reduced in birds exposed only to hypergravity. Doubly-treated chicks displayed normal prolactin levels. Reduced growth in 2-g birds might be due, in part, to reduced AP levels of prolactin and/or growth hormone. (Author)

A80-20448 Development of 'sports anemia' in physically fit men after daily sustained submaximal exercise. M. W. Radomski, B. H. Sabiston (Defence and Civil Institute of Environmental Medicine, Downsview, Ontario Canada), and P. Isoard (Service de Santé des Armées, Centre de Recherches, Lyons, France). *(Aerospace Medical Association, Annual Meeting, 50th, Washington, D.C., May 14-17, 1979.) Aviation, Space, and Environmental Medicine,* vol. 51, Jan. 1980, p. 41-45. 25 refs.

Hematological changes were studied in physically fit young soldiers who marched 35 km/d for 6 d, working at 35 percent of their maximal oxygen consumption. Four days of marching produced decreases in numbers of erythrocytes (RBC) and in hematocrit (Hct). This 'sports anemia' persisted beyond day 6 into the post-march period and was accompanied by decreases in hemoglobin (Hb), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), and mean corpuscular volume (MCV). The latter decrease was attributed to a preferential destruction of large RBC. The post-march period was characterized by an early (2 d) recovery of RBC numbers, Hct, and MCV, and a persistent (greater than 4 d) decrease in Hb, MCH, and MCHC. This pattern, characteristic of hypochromic macrocytosis, possibly reflects a premature release of young RBC from the bone marrow. Clearly, 'sports anemia,' previously reported to occur with intensive physical exercise, can also result from sustained and repetitive submaximal exercise. (Author)

A80-20449 Psychophysiological monitoring of operator's emotional stress in aviation and astronautics. P. V. Simonov, M. V. Frolov, and E. A. Ivanov (Academy of Sciences, Institute of Higher Nervous Activity and Neurophysiology, Moscow, USSR). *Aviation, Space, and Environmental Medicine,* vol. 51, Jan. 1980, p. 46-49. 6 refs.

Skill performance of an aerospace operator is greatly influenced by the level of emotional stress. The paper reviews methods of objective monitoring of emotional stress based on analysis of changes in the characteristics of physiological functions. Indirect methods like analysis of physiological and electrophysiological signals from the body surface, including the pneumogram, ECG, EEG, GSR and various speech parameters are preferred. To eliminate the shortcomings of physiological monitoring and performance testing, a combined method is recommended permitting one to diminish the size of the required electrophysiological signal and to shorten the frequency of testing. Special attention is given to estimation of the changes in heart rate and T-peak amplitude and spectral and intonational characteristics of the human voice. The experiment conducted on a mock-up of an aircraft at the Vnukovo airport is described. L.M.

A80-20450 Bone remodeling in centrifuged rats - Histomorphometric study after an 18-day run. C. Nogues and M. Peuchmaur (Laboratoire Central de Biologie Aéronautique, Paris, France). *Aviation, Space, and Environmental Medicine,* vol. 51, Jan. 1980, p. 50-55. 17 refs.

A histomorphometric and histodynamic study of bone tissue was conducted in rats exposed to 2 G centrifugation for a period of 18 d. Shortening of the femurs was observed, associated with alterations of the growth cartilage in centrifuged animals. The morphometric analysis demonstrates a reduction in bone volume without increase in the activity of osteoblasts. The fluorescent fixation during the dynamic study shows a reduced appositional rate. This result seems to reflect the numerous factors which contribute to the experimental centrifugation test: the osteoporosis is cortisone induced; it is a response to the aggression and probably conceals the remodeling due to higher stress loads. (Author)

A80-20451 Heat stress exposure of aerial spray pilots. B. Gribetz, E. D. Richter, M. Krasna, and M. Gordon (Jerusalem, Hebrew University; Ministry of Transport, Jerusalem, Israel). *Aviation, Space, and Environmental Medicine,* vol. 51, Jan. 1980, p. 56-60. 13 refs.

A80-20452 Motion sickness. I - A theory. II - A clinical study based on surgery of cerebral hemisphere lesions. III - A clinical study based on surgery of posterior fossa tumors. R. C. Schneider and E. C. Crosby (University Hospital, Ann Arbor, Mich.). *Aviation, Space, and Environmental Medicine,* vol. 51, Jan. 1980, p. 61-85. 99 refs.

A theory is suggested on 'motion sickness' reported by 15 percent of American astronauts and 17 percent of Russian cosmonauts and described as 'dizziness, nausea, vomiting, flashes of light, formed hallucinations or illusions of inversion of image in space or disorientation in space'. Two types of motion sickness are defined. Both have manifestations of nausea, vomiting, headache and dizziness, but there are symptoms of the motion sickness as related to peripheral organs, the inner ear and the eye, as contrasted to 'motion sickness in space' which has additional symptoms of hallucinations and illusions and is related to the temporoparieto-occipital cortex of the brain. Vascular insufficiency to this area by spasm of the vessel may be responsible for this symptomatology. The theory is supported by clinical studies based on brain surgery. The study suggests that it might be profitable to test a space applicant not only in a centrifugal or horizontal plane but also in vertical or other planes with the sudden application of restraint at different rates of speed using CT scanning. V.L.

A80-20500 # Perspectives of the utilization of hyperbaric oxygenation in aviation medicine (Perspektivy ispol'zovaniia giperbaricheskoi oksigenatsii v praktike aviatsionnoi meditsiny). I. N. Cherniakov, V. I. [illegible], and P. Ia. [illegible]. *Voenno-Meditsinskii Zhurnal,* Nov. 1979, p. 52-54. In Russian.

A80-20680 # A mathematical model of the disruption of mirror symmetry in prebiological evolution (Matematicheskaia model' narusheniia zerkal'noi simmetrii v predbiologicheskoi evoliutsii). L. L. Morozov and V. E. [illegible] ([illegible], Moscow, USSR). *Akademiia Nauk SSSR, Doklady,* vol. 242, no. 5, 1978, p. [illegible]. In Russian.

The paper develops a [illegible] model that [illegible] the [illegible] of optical asymmetry in [illegible] systems to

the prebiological evolution of such systems. It is shown that the formation and evolution of open phase-specialized systems under conditions of interaction with the environment and stochasticity of reproduction processes created conditions for the disruption of mirror symmetry and the 'perfection' of optical asymmetry. The proposed model agrees well with Oparin's theories of abiogenesis.
B.J.

A80-20681 # **Topographic characteristics of post-synaptic actions of primary vestibular fibers on the vestibulospinal neurons of Deiters nucleus (Topograficheskie osobennosti postsinapticheskikh vliianii pervichnykh vestibuliarnykh volokon na vestibulo-spinal'nye neirony iadra Deitersa).** V. A. Sarkisian and V. V. Fanardzhian (Akademiia Nauk Armianskoi SSR, Institut Fiziologii, Yerevan, Armenian SSR). *Fiziologicheskii Zhurnal SSSR*, vol. 65, Oct. 1979, p. 1441-1447. 17 refs. In Russian.

A80-20682 # **Deiters-nucleus potentials evoked by stimulation of the neural elements of bones and musculo-cutaneous nerves in animals with the cerebrum and cerebellum removed (Vyzvannye potentsialy iadra Deitersa pri stimuliatsii nervnykh elementov kostei, kozhnykh i myshechnykh nervov u detserebrirovannykh i tserebellektomirovannykh zhivotnykh).** V. P. Orlov (Ministerstvo Zdravookhraneniia Latviiskoi SSR, Nauchno-Issledovatel'skii Institut Eksperimental'noi i Klinicheskoi Meditsiny, Riga, Latvian SSR). *Fiziologicheskii Zhurnal SSSR*, vol. 65, Oct. 1979, p. 1487-1491. 18 refs. In Russian.

Cats were used to record evoked potentials in the stimulation of the neural elements of the bone marrow in front- and hind-leg bones and musculo-cutaneous nerves in the Deiters nucleus. The data indicate that information from the neural elements of the bones can reach the Deiters nucleus via spinovestibular channels bypassing the cerebellum.
V.P.

A80-20683 # **Effect of hypoxia on the contractile activity of smooth muscle cells in the thoracic duct (Vliianie gipoksii iva sokratitel'nuiu aktivnost' gladkomyshechnykh kletok grudnogo limfaticheskogo protoka).** N. A. Gladysheva (Leningradskii Sanitarno-Gigienicheskii Meditsinskii Institut, Leningrad, USSR). *Fiziologicheskii Zhurnal SSSR*, vol. 65, Oct. 1979, p. 1520-1526. 13 refs. In Russian.

A80-20684 # **Hormonal regulation of calcium and phosphorus homeostasis during physical activity (Gormonal'naia reguliatsiia gomeostaza kal'tsiia i fosfora pri fizicheskoi nagruzke).** G. G. Tsybizov (Tartuskii Gosudarstvennyi Universitet, Tartu, Estonian SSR). *Fiziologicheskii Zhurnal SSSR*, vol. 65, Oct. 1979, p. 1539-1543. 13 refs. In Russian.

A80-20855 ***Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, University of Pittsburgh, Pittsburgh, Pa., April 25-27, 1979. Part 1 - Biomedical.*** *Conference sponsored by the University of Pittsburgh. Edited by W. G. Vogt and M. H. Mickle. Pittsburgh, Pa., Instrument Society of America, 1979. 308 p. Price of five parts, $125.*

The papers deal with the mathematical modeling of biomedical mechanisms and phenomena. Among the topics covered are: the mathematical modeling of intracranial pressure dynamics; computer models for freezing and thawing in biological systems; modeling for therapeutic design; pattern recognition and information processing in biological problems; modeling and estimation in biological systems; spatial vision; information modeling of biological structures; and modeling and estimation in biomedical systems. V.P.

A80-20856 **The informational structure of DNA, RNA, and amino acid sequences.** D. W. Kopp, G. W. Moser, and J. A. Skraly (Pittsburgh, University, Pittsburgh, Pa.). In: Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, Pittsburgh, Pa., April 25-27, 1979. Part 1. Pittsburgh, Pa., Instrument Society of America, 1979, p. 139-150. 25 refs.

In the study described, the differences between the informational structure variables for DNA, RNA, and polypeptides were noted, and information variables which significantly discriminated between sources were identified. Using only structure information variables in a discriminant analysis technique, 48 of the 53 mRNA sequences investigated could be properly identified as to DNA, RNA, or protein source. A new powerful approach to the investigation of the informational structure of nucleic acids and polypeptides is proposed.
V.P.

A80-20857 **Information processes in the evolution of protein synthesis.** G. W. Moser, D. W. Kopp, and J. A. Skraly (Pittsburgh, University, Pittsburgh, Pa.). In: Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, Pittsburgh, Pa., April 25-27, 1979. Part 1. Pittsburgh, Pa., Instrument Society of America, 1979, p. 151-159. 16 refs.

The role of DNA base probabilities and their relationship with information structure was investigated. An interesting result is that thymine and guanine base probabilities have a principal influence on DNA sequence information. DNA information content is not related to the length of the sequence, but the informational content of RNA and amino acid sequences is. The variety of triplets in RNA sequences and the variety of kind of amino acids in a polypeptide chain were related to the sequence information or order of bases in DNA molecules. A discussion of these results in the light of current evolutionary theory provides a basis for the understanding of the control of protein synthesis.
V.P.

A80-20858 **Spatial filtering and mechanisms of perception.** A. P. Ginsburg (USAF, Aviation Vision Laboratory, Wright-Patterson AFB, Ohio). In: Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, Pittsburgh, Pa., April 25-27, 1979. Part 1. Pittsburgh, Pa., Instrument Society of America, 1979, p. 185-192. 11 refs.

Attempts have been made to distinguish between visual mechanisms as being space domain feature detectors or transform domain spatial frequency detectors. It is shown that these descriptions may be considered equivalent in terms of producing similar filtered images. Fourier-like transformation, however, appears to be a more accurate description of the filtering process in the case of biological data.
V.P.

A80-20859 **Nonlinear interactions in binocular vision.** H. R. Wilson (Chicago, University, Chicago, Ill.). In: Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, Pittsburgh, Pa., April 25-27, 1979. Part 1. Pittsburgh, Pa., Instrument Society of America, 1979, p. 209-213. 13 refs.

The existence of hysteresis effects in binocular vision is well documented. In addition, it has been shown that binocular hysteresis may occur even when eye movements are not a factor, thus pointing to the existence of neural hysteresis (presumably at the cortical level). The theory of differential equations provides a convenient framework for modeling this neural hysteresis. One approach to the study of nonlinear dynamic phenomena is through the application of Volterra or Wiener kernel expansions; it has been successfully applied to a number of physiological and psychophysical phenomena. However, there is an important class of nonlinear phenomena which cannot be understood within this framework-cooperative phenomena involving hysteresis. In the present paper, a simple cooperative effect in human binocular vision is described, and a physiologically plausible mathematical model for analyzing it is proposed. V.P.

A80-20860 **Interpreting nonlinear systems - The third order kernel of the eye movement control system.** S. Klein (California Institute of Technology, Pasadena; Claremont College, Claremont, Calif.). In: Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, Pittsburgh, Pa., April 25-27, 1979. Part 1. Pittsburgh, Pa., Instrument Society of America, 1979, p. 215-222. 15 refs.

White noise stimuli are useful for analyzing nonlinear systems. A technique has been developed which improves the temporal resolution of the measured response. The role of the third order Wiener kernel is examined in an application to the eye movement control system. Unusual aspects of that system are explored. (Author)

A80-20861 **Theoretical problems in modeling color grating detection.** R. F. Quick, Jr. (Carnegie-Mellon University, Pittsburgh, Pa.). In: Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, Pittsburgh, Pa., April 25-27, 1979. Part 1. Pittsburgh, Pa., Instrument Society of America, 1979, p. 249-252. 10 refs.

The spatial properties of single and double opponent neurons in vision are discussed in relation to their possible effects on chromatic contrast detection by human observers. From measured line-spread data it is argued that double-opponent mechanisms are responsible for some contrast detection results. Sinewave sensitivity curves, on the other hand, give evidence that other mechanisms, possibly single-opponent, are also active at low spatial frequencies. (Author)

A80-20899 **Real-time simulation of FLIR and LLLTV Systems for aircrew training.** W. L. Foley (USAF, Advanced Systems Div., Wright-Patterson AFB, Ohio). In: Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, Pittsburgh, Pa., April 25-27, 1979. Part 5. Pittsburgh, Pa., Instrument Society of America, 1979, p. 1737-1746.

The paper deals with simulation of Forward Looking Infrared (FLIR) and Low Light Level TV (LLLTV) Systems for application to training aircrews in performing full-scale mission simulation. Attention is given to simulating of the thermal or visual signatures typical for a total scenario consisting of the sensor, atmosphere, and ground environment that consider time of day, season of year, etc. V.T.

A80-21017 **Occupational exposure to radio-frequency electromagnetic fields.** K. H. Mild (Umea Hospital, Umea, Sweden). *IEEE, Proceedings*, vol. 68, Jan. 1980, p. 12-17. 23 refs.

The paper considers occupational exposure to radio-frequency (RF) electromagnetic (EM) fields in industrial processes in near-field situations where electric and magnetic field strengths are monitored to assess the health hazard. Plastic materials are joined by an RF machine whose electrodes are not shielded and which may produce high level RF fields in the immediate vicinity, exceeding the ANSI standard. A physiotherapist may be exposed to high E and H fields using RF shortwave therapy; the maintenance personnel in FM/TV broadcast towers are subject to intense RF fields, and induction heating equipment used for forging, annealing and brazing can expose operators' hands to magnetic fields. A.T.

A80-21018 **Electromagnetic radiation from selected telecommunications systems.** R. C. Petersen (Bell Telephone Laboratories, Inc., Murray Hill, N.J.). *IEEE, Proceedings*, vol. 68, Jan. 1980, p. 21-24.

The paper describes the instrumentation and measurement techniques used in a study of electromagnetic (EM) energy in radio transmission systems, and summarizes results obtained for high frequency (HF) radio, tropospheric scatter, earth-satellite, and microwave radio relay systems. Power density and electric field measurements were made at selected facilities, including antenna tower locations for point-to-point microwave radio equipment. It was found that the maximum electric field strengths associated with HF radio systems in areas accessible to radio personnel was less than [illegible] V/m. The maximum power densities associated with tropospheric scatter systems, satellite communication earth stations and point-to-point microwave radio systems were less than [illegible] microwatt/sq cm; in some cases microwave radio rooms in high building floors showed maximum levels due to VHF and UHF transmitters of a few tens of microwatt/sq cm. A.T.

A80-21019 **State of the knowledge for electromagnetic absorbed dose in man and animals.** O. P. Gandhi (Utah, University, Salt Lake City, Utah). *IEEE, Proceedings*, vol. 68, Jan. 1980, p. 24-32. 32 refs.

The paper gives the EM absorbed dose for man and animals at various frequencies for the plane wave irradiation condition for different orientations of the body relative to incident fields. Also included are the results for the whole-body absorption for conditions of electrical contact with ground and in the presence of reflecting surfaces of high conductivity and multiple animals. The data are given for the distribution of power deposition in man models for the resonance conditions of highest whole-body electromagnetic absorption. The highlights of the results obtained with proportionately scaled saline- and biological-phantom-filled models of man have been confirmed by experiments with small laboratory animals, from 25-g mice to 2250-g rabbits. (Author)

A80-21020 **Electromagnetic dosimetry for models of humans and animals - A review of theoretical and numerical techniques.** C. H. Durney (Utah, University, Salt Lake City, Utah). *IEEE, Proceedings*, vol. 68, Jan. 1980, p. 33-40. 46 refs.

The paper reviews techniques of electromagnetic dosimetry for human and animal models. Numerical techniques, analytical cylindrical models, and geometrical optics methods are described, noting the useful frequency range of each method; analytical techniques included analysis of planar and spherical models, long-wavelength analysis of spheroids and ellipsoids and solutions of the wave equation in spheroidal coordinates. Numerical techniques involved the moment method and the extended boundary condition method to calculate the specific absorption rate in biological models. It is concluded that advancements were made through a combination of techniques that include analytical methods in which Maxwell's equations are solved, and numerical techniques in which large systems of simultaneous equations are solved by matrix inversion or iteration. A.T.

A80-21021 **Microwave biological effects - An overview.** S. M. Michaelson (Rochester, University, Rochester, N.Y.). *IEEE, Proceedings*, vol. 68, Jan. 1980, p. 40-49. 99 refs. Contract No. EY-76-C-02-3490.

The paper presents a review of microwave (MW) biological effects. Principles of biologic experiments are outlined stressing that their reliability depends on proper selection of animal models and extrapolation of data from animals to man, and on correct scaling of results from various species; the cellular-chromosome-genetic effects, the gonads, and neuroendocrine effects are considered, noting that the latter have been interpretated as the result of direct MW interactions with the central nervous system. The behavioral effects, cardiovascular reactions, and hematopoietic results have been covered, along with effects on immunity, and auditory and ocular responses. It is concluded that although there is considerable agreement on the biological effects and potential hazards of MW, there are questions as to the definition of hazard and whether all effects are harmful. A.T.

A80-21022 **Microwave cataractogenesis.** S. F. Cleary (Virginia Commonwealth University, Richmond, Va.). *IEEE, Proceedings*, vol. 68, Jan. 1980, p. 49-55. 52 refs.

A review of the biological effects of electromagnetic radiation and investigations of microwave cataractogenesis is presented. Studies suggest involvement of thermal damage. Time-intensity cataract thresholds for acute exposures of rabbits indicate dose reciprocity, and the induction of lens opacification following repeated exposure at intensities below the threshold for single-dose exposure suggests a cumulative component of lens damage and the existence of repair mechanisms. Cataract induction has been reported in humans exposed to microwave radiation, while acute lens opacification appears to involve thermally induced lens damage at intensities of 100 microwatt/sq cm. A.T.

A80-21023 **Microwave irradiation and the blood-brain barrier.** D. R. Justesen (U.S. Veterans Administration Medical Center; Kansas, University, Kansas City, Kan.). *IEEE, Proceedings* vol. 68, Jan. 1980, p. 60-67. 55 refs. Research supported by the U.S. Veterans Administration; U.S. Food and Drug Administration Grant No. FD-00650.

The paper examines microwave irradiation and the blood-brain barrier. The mammalian blood-brain barrier (BBB) is believed to participate in regulating the brain fluid environment, and reports of the altered BBB function in small animals after exposure to weak microwave fields show that the tight junctions of the BBB capillaries are loosened by microwaves only at high field strengths that elevate brain temperature. Anatomical data reveal that the tight junctions remain intact, but that enhanced blood-to-brain vesicular transport of normally excluded tracer molecules occurs reversibly in small animals exposed to moderate field strength waves. It is concluded that brief exposure to microwave fields impairs the cardiovascular function, but the effect of long-term exposure is not known. A.T.

A80-21024 **The microwave auditory phenomenon.** J. C. Lin (Wayne State University, Detroit, Mich.). *IEEE, Proceedings*, vol. 68, Jan. 1980, p. 67-73. 41 refs. Navy-NSF-supported research.

The paper examines electrophysiological activity produced by exposing the brains of laboratory animals to rectangular pulses of microwave energy. These results suggest that a microwave auditory phenomenon is evoked by a mechanism similar to conventional sound reception, and that the primary interaction site is peripheral to the cochlea. It is shown that the peak pressure due to thermal expansion is greater than the radiation pressure or electrostriction, and that the induced sound frequency is only a function of the size and acoustic property of the brain. Several suggestions were made for future research in microwave auditory effect and its health implications. A.T.

A80-21025 **Advances in microwave-induced neuroendocrine effects - The concept of stress.** S.-T. Lu, S. M. Michaelson (Rochester, University, Rochester, N.Y.), and W. G. Lotz (U.S. Navy, Naval Aerospace Medical Research Laboratory, Pensacola, Fla.). *IEEE, Proceedings*, vol. 68, Jan. 1980, p. 73-77. 46 refs. Navy-supported research.

The paper examines progress in studies of microwave-induced neuroendocrine effects with respect to the current concepts of neuroendocrine control mechanisms. Recent evidence indicates that neuroendocrine effects are induced by microwave exposure with a threshold intensity required for the onset of the response, with the level of the threshold varying on the specific endocrine parameter. The response of the endocrine systems appears to be a nonspecific stress reaction in the case of adreno-cortical and growth hormone changes, but it is a metabolically specific response to increased energy input in the case of pituitary-thyroid changes. A.T.

A80-21026 # **Epidemiologic studies of microwave effects.** C. Silverman (U.S. Public Health Services; U.S. Food and Drug Administration, Rockville, Md.). *IEEE, Proceedings*, vol. 68, Jan. 1980, p. 78-84. 31 refs.

This is a selective review of human epidemiologic studies and related information concerning biologic and health effects of microwave radiation. Following a description of the objectives and methods of epidemiology, the approach to microwave effects is considered and two recent but not yet published studies are described, namely, a study of U.S. naval personnel occupationally exposed to radar, and a study of American Embassy personnel in Moscow. Investigations of several reported or suspected adverse effects are assessed: ocular effects, nervous and behavioral effects, congenital anomalies, and cancer. Suggestions are offered for further epidemiologic research. (Author)

A80-21027 # **Soviet and Eastern European research on biological effects of microwave radiation.** D. I. McRee (National Institutes of Health, National Institute of Environmental Health Sciences, Research Triangle Park, N.C.). *IEEE, Proceedings*, vol. 68, Jan. 1980, p. 84-91. 33 refs.

A review of Soviet and Eastern European research on biological effects of microwave radiation is presented. The literature reports changes in almost all biological systems at exposure power densities less than 10 mW/sq cm, and since 1976 more data has been published on long-term microwave exposures at power density levels below 10 mW/sq cm. Effects on humans, metabolic effects, central nervous system investigations, and neuroendocrine effects are discussed, along with cardiovascular, blood, immunology, reproductive, and cell and virus manifestations. It is concluded that the overview of the Soviet and Eastern European literature indicates a large number of bioeffects at exposures below 10 mW/sq cm, with a significant number of biological changes reported below 1 mW/sq cm. A.T.

A80-21028 **Study of effects of long-term low-level rf exposure on rats - A plan.** A. W. Guy, C.-K. Chou, R. B. Johnson, and L. L. Kunz (Washington, University, Seattle, Wash.). *IEEE, Proceedings*, vol. 68, Jan. 1980, p. 92-97. 18 refs. U.S. Rehabilitation Services Administration Grant No. 16-P-56818; Contract No. F33615-78-C-0631.

The study is designed to simulate the chronic exposure of man to 450-MHz radio-frequency (rf) radiation at an incident power density of 1 mW/sq cm. This paper presents a plan for conducting a lifetime exposure study involving two phases of work. The first phase, up to March 1980, is being spent in preparation for the chronic study. During the second phase, 200 rats, 100 experimental and 100 control, will be exposed 22 h/day over their lifetime to pulse-modulated 2450-MHz rf fields at an incident power density less than 500 microwatts/sq cm. The state of health of each animal will be assessed periodically throughout the exposure period until the death of the animal. Blood chemistry parameters, mortality rates, histopathology, body weight, and water and food consumption will be the biological endpoints of this study. The pulse-modulated fields consist of 16 pulse groups/sec (25 pulses/group) with a pulse duration of 10 microsec and a period of 500 microsec. (Author)

A80-21029 # **Biological effects of electric and magnetic fields associated with ELF communications systems.** J. D. Grissett (U.S. Navy, Naval Aerospace Medical Research Laboratory, Pensacola, Fla.). *IEEE, Proceedings*, vol. 68, Jan. 1980, p. 98-104. 29 refs.

The paper presents an evaluation of the biological effects of electric and magnetic fields associated with the extremely low frequency (ELF) submarine communication system. The design of the ELF system is described noting that the magnetic fields at the earth's surface above the system antenna would average 0.02 mT and the electric field gradient would be 0.07 V/m. It was found that ELF fields are not likely to present a genetic hazard, and should have no effect on fertility and cell growth. Studies of serum triglyceride levels in humans showed no effects from ELF fields, but no conclusive data could be found regarding their effect on circadian rhythms and electrosensitive fish. It was concluded that while the possibility of a physiological perturbation from ELF fields exists, there was no experimental or theoretical basis to assume a hazard at exposure levels of 0.02 mT and 0.07 V/m. A.T.

A80-21030 **RF-field interactions with biological systems - Electrical properties and biophysical mechanisms.** H. P. Schwan and K. R. Foster (Pennsylvania, University, Philadelphia, Pa.). *IEEE, Proceedings*, vol. 68, Jan. 1980, p. 104-113. 71 refs. Contract No. N00014-79-C-0392.

Electrical properties of tissues, macromolecular solutions, and cell membranes are summarized at frequencies from the extra low frequency (ELF) to microwave range. Previously presented dielectric data are supplemented by new results and a more detailed discussion of the physical mechanisms for the observed temperature coefficients of the dielectric properties. The dielectric data are discussed in terms of the interaction mechanisms which give rise to observed relaxational effects. Possible mechanisms for nonthermal weak interactions between radio-frequency (RF) energy and tissues are discussed and evaluated. (Author)

A80-21031 **Cellular effects: Millimeter waves and Raman spectra - Report of a panel discussion.** D. L. Jaggard and J. L. Lords (Utah, University, Salt Lake City, Utah). *IEEE, Proceedings,* vol. 68, Jan. 1980, p. 114-119. 12 refs.

On June 22, 1979, a panel discussion was held at the Bio-electromagnetics Symposium in Seattle, Wa. In this report, the statements of the panel members are summarized and several common suggestions are commented on. Written abstracts which correspond to the oral presentations of most of the panel members are also included. (Author)

A80-21032 # **Frequency and power windowing in tissue interactions with weak electromagnetic fields.** W. R. Adey (U.S. Veterans Administration Hospital; Loma Linda University, Loma Linda, Calif.). *IEEE, Proceedings,* vol. 68, Jan. 1980, p. 119-125. 47 refs. Research supported by the U.S. Department of Energy; Grant No. PHS-1-R01-678-01; Contracts No. N00014-76-C-0421; No. DE-A101-79ET29078.

The paper examines the frequency and power windowing in tissue interactions with weak electromagnetic fields. Nonionizing electromagnetic (EM) fields raising temperature orders of magnitude less than 0.1 C may result in major physiological changes not attributable to raised temperature per se, and have produced chemical, physiological, and behavioral changes only within windows in frequency and incident energy. Two different intensity windows have been observed, one for ELF tissue gradients about 10 to the -7th power V/cm, and one for amplitude modulated RF and microwave gradients about 0.1 V/cm. Coupling to living cells requires amplifying mechanisms based on nonequilibrium processes; these cooperative processes are important in immune and hormonal responses, and in nerve cell excitation. Polyanionic proteinaceous material on cell membrane surfaces appear to be the site of detection of these weak molecular and neuroelectric stimuli. A.T.

A80-21033 **Steady magnetic fields in noninvasive electromagnetic flowmetry.** S. X. Salles-Cunha (Wisconsin, Medical College, Milwaukee, Wis.), J. H. Battocletti, and A. Sances, Jr. (Wisconsin, Medical College, Milwaukee; U.S. Veterans Administration Medical Center, Wood, Wis.). *IEEE, Proceedings,* vol. 68, Jan. 1980, p. 149-155. 26 refs. Research supported by the U.S. Veterans Administration Medical Center; Grant No. NIH-NO1-HI-2216.

Transcutaneous electromagnetic flowmetry measures, noninvasively, the induced voltage generated by the flow of blood through a region immersed in a magnetic field. Steady magnetic fields of less than 0.5 T have been used to measure pulsatile popliteal, brachial, and bilateral common carotid blood flow in normal subjects, in patients with arteriovascular disease, and in subjects with arteriovenous fistula surgically created for hemodialysis. In these studies, field magnitude and time of exposure were below the limits suggested by the two exposure guidelines available. Flow rate was calculated from the measured voltages and geometrical and electrical parameters using equations developed for three-media (body segment-vessel-blood) cylindrical models, based on electromagnetic theory. The 68 measurements reported here are in the expected range. (Author)

A80-21038 # **The effect of certain extremal factors on the human auditory function (Vozdeistvie nekotorykh ekstremal'nykh faktorov na slukhovuiu funktsiiu cheloveka).** V. V. Diskalenko. *Voenno-Meditsinskii Zhurnal,* Oct. 1979, p. 46-49. In Russian.

The paper summarizes data on the effects of certain extremal factors, including nervous-emotional stress, prolonged hypokinesia, and vestibular-optokinetic stimuli, on the auditory function of healthy people. These factors are typical for operators of military equipment and usually act together on the organism. The responses of the auditory system to such factors were studied from tonal audiograms, auditory discomfort levels, sensitivity to ultrasound, and data on auditory masking. Data indicate definite functional changes in the auditory system under the influence of the extremal factors. B.J.

A80-21039 # **The effect of aircraft noise on the functional state of human operators (Vliianie aviatsionnogo shuma na funktsional'noe sostoianie organizma operatorov).** V. I. Zorile, V. S. Kuznetsov, and G. I. Tarasenko. *Voenno-Meditsinskii Zhurnal,* Oct. 1979, p. 49-51. In Russian.

Noise intensity tests at 100, 110, and 120 dB were conducted on eight volunteers aged 25 to 40. The functions studied were auditory sensitivity threshold, heart rate, respiratory minute volume, operator task performance involving two-dimensional compensatory tracking, and a reserve ability to accept and process additional information that demands active redirection of attention. Results indicate that intense aircraft noise tends to produce changes in functional state and to reduce the psychophysiological reserve capabilities of the operator. B.J.

A80-21040 # **The effect of age and vitamin provision of pilots on their night vision characteristics (Vliianie vozrasta i vitaminnoi obespechennosti organizma letchika na pokazateli nochnogo zreniia).** V. V. Koblianskii. *Voenno-Meditsinskii Zhurnal,* Oct. 1979, p. 62, 63. In Russian.

blank page

STAR ENTRIES

N80-14669 California Univ., San Diego.
KINEMATIC ANALYSIS OF OSMOTIC PROCESSES UNDER NON-EQUILIBRIUM CONDITIONS Ph.D. Thesis
Huacuz Villamar 1979 126 p
Avail: Univ. Microfilms Order No. 7926696

The general conditions for osmotic flow are derived theoretically. It is shown that when a binary mixture is separated from one of its components by means of a barrier permeable only to that same component, a necessary and sufficient condition for the balance of linear momentum in the system is the flow of mass into the mixture, across the semipermeable barrier. The equations for osmotic equilibrium under different sets of forces are derived from the general equation of motion for the osmotic system. It is concluded that the presence of a semipermeable membrane is a sufficient condition for the net motion of the binary mixture from its original equilibrium position, but it is not necessary since the membrane could be substituted by any other 'external' force acting selectively on one of the components of the mixture. It is also concluded that osmotic flow in a binary mixture is a necessary and sufficient condition to balance the linear momentum of the system. The results are applied to a series of membranes of different permeabilities and are used to explain the process of water transport in living organisms. Dissert. Abstr.

N80-14670# Materials Research Labs., Melbourne (Australia).
MICROBIAL COLONIZATION OF MATERIALS AT INNISFAIL, QUEENSLAND
F. John Upsher Aug. 1979 26 p refs Original contains color illustrations
(MRL-TN-428; AR-001-836) Avail: NTIS HC A03/MF A01

Materials were exposed under a glass canopy to investigate microbial colonization. Two series of exposures were made; one starting in the cool dry winter, the other in the hot-wet season. Growth of microorganisms was slow, particularly of algae which were not apparent until 30 weeks; tardiness was attributed to the samples being protected from rain so that the organisms were dependent upon atmospheric moisture and dew. An increase in the amount of growth was apparent after any week in which the mean relative humidity exceeded 87% or when 80% was exceeded for more than 125 hours. Cotton and wood provided the earliest growth and also supported the greatest amount and variety of fungi. Heavier growths were observed on acrylic paint and poly(vinyl chloride) after prolonged exposure. Cladosporium was the dominant fungal genus, being present on almost every occasion any fungus was detected. R.E.S.

N80-14671*# National Aeronautics and Space Administration, Washington, D. C.
MICROMORPHOLOGY OF NEUROHYPOPHYSIS OF RATS UNDER EXPERIMENTAL CONDITIONS
E. R. Meitner and E. Proksova Dec. 1979 7 p refs Transl. into ENGLISH from Biologia (Bratislava), v. 25, no. 12, 1970 p 857-860 Transl. by SCITRAN, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75947) Avail: NTIS HC A02/MF A01 CSCL 06C

The changes of the quantity of neurosecretory substance in neurohypophysis of rats under various experimental conditions are investigated. Comparing to the norm the quantity of neurosecretion after a long stay in the dark was larger. In animals subjected to immobilization stress the picture of neurohypophysis remained unchanged. It changed only in correlation with the administered water. Results indicate that the immobilization stress, in contradistinction to dolorose stress, has no substantial influence upon the quantity of neurosecretion in neurohypophysis. R.C.T.

N80-14672*# National Aeronautics and Space Administration, Washington, D. C.
RNA CONTENT IN MOTOR AND SENSORY NEURONS AND SURROUNDING NEUROGLIA OF MOUSE SPINAL CORD UNDER CONDITIONS OF HYPODYNAMIA AND FOLLOWING NORMALIZATION
V. A. Brumberg and L. Z. Pevzner Dec. 1979 15 p refs Transl. into ENGLISH from Tsitologiya (USSR), v. 10, no. 11, 1968 p 1452-1459 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Academy of Sci. (Leningrad)
(Contract NASw-3199)
(NASA-TM-75983) Avail: NTIS HC A02/MF A01 CSCL 06C

Male white mice were subjected to two and three week hypodynamia and then decapitated. Cytoplasmic RNA content per cell was measured by means of ultraviolet cytospectrometry. Changes in RNA content are shown, and the dynamics of the reparative processes of cells are discussed. R.C.T.

N80-14673*# National Aeronautics and Space Administration, Washington, D. C.
THE EFFECTS OF HYPODYNAMIA AND HYPOKINESIA ON THE ARTERIAL BED OF PELVIC LIMB MUSCLES IN THE RABBIT
N. E. Sokolov Dec. 1979 9 p refs Transl. into ENGLISH from Arkh. Anat., Gistol. Embriol. (USSR), v. 62, no. 4, 1972 p 48-52 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Pavlov First Leningrad Medical Inst.
(Contract NASw-3199)
(NASA-TM-75984) Avail: NTIS HC A02/MF A01 CSCL 06C

The effects of hypodynamia on the arterial bed in the muscles and adjacent structures in limbs of rabbits were subject to investigation. Anatomical methods of study showed that hypodynamia produced morphological changes in the intraorganic arterial system in the muscles, fascia, and adipose tissue of the immobilized limb. These changes proved stable and were retained for six months. Author

N80-14674*# National Aeronautics and Space Administration, Washington, D. C.
EFFECT OF RHYTHMIC PHOTOSTIMULATION ON MONKEYS WITH HYPERKINESIS OF POST-ENCEPHALITIC GENESIS
I. V. Danilov (USSR Academy of Medical Sciences) and N. N. Kudrayatseva (USSR Academy of Medical Sciences) Dec. 1979 12 p refs Transl. into ENGLISH from Fiziol. Zh. SSSR, (USSR), v. 68, no. 4, 1972 p 511-516 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75986) Avail: NTIS HC A02/MF A01 CSCL 06C

In hyperkinetic monkeys a response opposite to that of healthy monkeys was observed during rhythmic photostimulation (frequency 3, 9, 18, 20, and 25/sec), i.e., the hyperkinesis disappeared. The significance of rhythmic excitatory cycles for interconnections between different brain structures is discussed. Author

N80-14675*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.
A CONTROLLED RATE FREEZE/THAW SYSTEM FOR CRYOPRESERVATION OF BIOLOGICAL MATERIALS
V. J. Anselmo and R. G. Harrison 1 Jun. 1979 182 p Prepared for Union Carbide Co.
(Contract NAS7-100)
(NASA-CR-162531; JPL-Pub-79-91) Avail: NTIS HC A09/MF A01 CSCL 06B

A system which allows programmable temperature-time control for a 5 cc sample volume of an arbitrary biological material was constructed. Steady state and dynamic temperature control was obtained by supplying heat to the sample volume through resistive elements constructed as an integral part of the sample container. For cooling purposes, this container was totally immersed into a cold heat sink. Sample volume thermodynamic property data were obtained by measurements of heater power and heat flux through the container walls. Using a mixture of dry ice and alcohol at -79 C, sample volume was controlled from +40 C to -60 C at rates from steady state to + or - 65 C/min. Steady state temperature precision was better than 0.2 C while the dynamic capability depends on the temperature rate of change as well as the thermal mass of the sample and the container. R.C.T.

N80-14676*# National Aeronautics and Space Administration. Langley Research Center, Hampton, Va.
INVESTIGATION OF EFFECTS OF TEMPERATURE, SALINITY, AND ELECTRODE DESIGN ON THE PERFORMANCE OF AN ELECTROCHEMICAL COLIFORM DETECTOR
David C. Grana Nov. 1979 54 p refs
(Contract EPA-IAG-D7-0053)
(NASA-TM-80130; EPA-600/4-79-075) Avail: NTIS HC A04/MF A01 CSCL 06B

The results of two research programs to determine the optimum detector design for measuring fecal coliforms in saline waters for operational systems are presented. One program was concerned with the effects of temperature and salinity on endpoint response time, and the other, the interaction between electrode configurations and the test organisms. Test results show that the endpoint response time is related to salinity and seawater temperature; however, these results can be minimized by the correct choice of growth media. Electrode configurations were developed from stainless steel, Parlodion-coated stainless steel, and platinum that circumvented problems associated with the commercial redox electrodes. M.G.

N80-14677# European Space Agency, Paris (France).
BIOLOGY AND MEDICINE IN SPACE: RESEARCH OPPORTUNITIES OFFERED BY SPACELAB. AN INVITATION TO EUROPEAN INVESTIGATORS
Hilding Bjurstedt, ed. Aug. 1979 56 p refs
(ESA-BR-01) Avail: NTIS HC A04/MF A01; ESA, Paris FF 50

The results and experience gained from experiments in space, the current position, and the research opportunities envisaged for the future are reviewed by biologists and medical scientists for the purpose of encouraging investigators to propose experiments, and to disseminate information to the life sciences community. The main subjects covered are: Spacelab, areas of research opportunity, human physiology, cell and developmental biology, plant biology, radiobiology, exobiology and bioengineering. Author (ESA)

N80-14678# Advisory Group for Aerospace Research and Development, Paris (France).
RECENT ADVANCES IN AERONAUTICAL AND SPACE MEDICINE
Raymond H. Murray, ed. (Mich. State Univ., East Lansing) Sep. 1979 80 p refs In ENGLISH and FRENCH Presented at the Aerospace Med. Panel's Spec. Meeting, Brussels, 22-26 Jan. 1979
(AGARD-CP-265; ISBN-92-835-0250-7) Avail: NTIS HC A05/MF A01

The selection and life support of aircrews and spacecrews, including the European payload specialists for shuttle/Spacelab missions are discussed. Physiological factors in space operations are examined, as well as the medical and physiological problems addressed during the development and operation of commercial supersonic vehicles.

N80-14679# Advisory Group for Aerospace Research and Development, Paris (France).
PROBLEMS RELATED TO MEDICAL CRITERIA FOR THE SELECTION OF MILITARY NAVIGATION PERSONNEL [PROBLEMES RELATIFS AUX CRITERES MEDICAUX DE SELECTION DU PERSONNEL NAVIGANT MILITAIRE]
E. Evrard *In its* Recent Advan. in Aeron. and Space Med. Sep. 1979 22 p refs In FRENCH

Avail: NTIS HC A05/MF A01

Visual, auditory and vestibular, and psychological or psychiatric criteria for personnel selection are considered. Specific problems discussed relate to (1) special possible criteria for determining precociousness and the immediate problem of the specialization of operational personnel; (2) a possible raising of the standards for aviators destined to pilot new generation fighter aircraft; and (3) female navigational personnel. The standardization of visual and auditory criteria is recommended as well as additional research on the problems considered in order to reduce the rate of elimination during the pilot training course. Transl. by A.R.H.

N80-14680# Royal Air Force Inst. of Aviation Medicine, Farnborough (England).
AN ADVANCED OXYGEN SYSTEM FOR FUTURE COMBAT AIRCRAFT
J. Ernsting *In* AGARD Recent Advan. in Aeron. and Space Med. Sep. 1979 17 p refs

Avail: NTIS HC A05/MF A01

The operational and physiological requirements for an advanced oxygen system for future high performance combat aircraft are considered and reviewed. It is concluded that such an oxygen system should employ a molecular sieve on board oxygen generation system, pressure premix for dilution of the oxygen by air and a twin demand regulator package. The principles of operation of such a system are considered and a design is proposed. Author

N80-14681# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Bonn (West Germany). Inst. fuer Flugmedizin.
THE EUROPEAN APPROACH TO THE SELECTION AND TRAINING OF SL PAYLOAD SPECIALISTS
K. E. Klein and J. R. Hordinsky *In* AGARD Recent Advan. in Aeron. and Space Med. Sep. 1979 12 p refs

Avail: NTIS HC A05/MF A01

The completed selection of European payload specialists (PS) for the first Spacelab mission (SL-1) is described. Future developments in European selection programs are projected. The immediate training requirements for the SL-1 PS are described. The integration of such varied training categories as biomedical and physical with the more general SL experiment training is reviewed. The usefulness of mission simulations is also discussed. Author

N80-14682*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
PHYSIOLOGICAL FACTORS IN SPACE OPERATIONS. EMPHASIS ON SPACE SHUTTLE
Sam L. Pool, Paul C. Rambaut, and Jerry L. Homick *In* AGARD Recent Advan. in Aeron. and Space Med. Sep. 1979 12 p refs
Avail: NTIS HC A05/MF A01 CSCL 06P

Problems such as space motion sickness, redistribution of body fluids, and cardiovascular deconditioning are of concern in short-duration space shuttle flights. The expanded participation of nonastronaut crewmembers or payload specialists in these flights increases the life scientists' interest in the space shuttle flights. Problems such as loss of skeletal mass, decreased red blood cell production, and numerous endocrine changes are of more concern on long-duration flights. The Life Sciences Program is therefore concerned with a wide variety of problems that range from the applied to the basic. The common thread is biology; the context is space. Several physiological factors associated with space shuttle operations are summarized including space motion sickness, cardiovascular deconditioning, bone and muscle loss, hematology, fluid and electrolyte changes, reentry g-forces, radiation safety, noise, atmosphere, extravehicular activity, toxicology, nutrition, biowaste, and health maintenance. Author

N80-14683# Medical de l'Aeronautique Civile, Paris (France).
SUPERSONIC AERIAL TRANSPORT: MEDICAL AND PHYSIOLOGICAL ASPECTS [LE TRANSPORT AERIEN SUPERSONIQUE ASPECTS MEDICO-PHYSIOLOGIQUES]

Jean Raboutet *In* AGARD Recent Advan. in Aeron. and Space Med. Sep. 1979 7 p In FRENCH

Avail: NTIS HC A05/MF A01

From 1964 to 1974, two medical subgroups, one French and one British, researched the medical and physiological problems presented by supersonic air transportation. All the problems were addressed by committees of specialists that included physicians, physicists, chemists, and engineers. Thus, the loss of pressurization, ozone, ionizing radiation, noise, visual problems, and air conditioning were the objects of profound study. Very satisfying solutions were found. In certain cases, notably ozone and cosmic radiation, it could be proved that it was a matter of false problems, and that supersonic flight at 17,000 meters offered no danger. As the consequence of all the favorable results obtained, the Concorde could easily obtain the authorization necessary for flight.
Transl. by A.R.H.

N80-14684* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
INTRA-OCULAR PRESSURE NORMALIZATION TECHNIQUE AND EQUIPMENT Patent
Edward F. Baehr, inventor (to NASA) Issued 12 Jun. 1979 5 p Filed 31 Aug. 1977 Supersedes N77-30736 (15 - 21, p 2839)
(NASA-Case-LEW-12955-1; US-Patent-4,157,718;
US-Patent-Appl-SN-829318; US-Patent-Class-128-276) Avail: US Patent and Trademark Office CSCL 06B

A method and apparatus is described for safely reducing abnormally high intraocular pressure in an eye during a predetermined time interval. This allows maintenance of normal intraocular pressure during glaucoma surgery. A pressure regulator of the spring-biassed diaphragm type is provided with additional bias by a column of liquid. The hypodermic needle can be safely inserted into the anterior chamber of the eye. Liquid is then bled out of the column to reduce the bias on the diaphragm of the pressure regulator and, consequently, the output pressure of the regulator. This lowering pressure of the regulator also occurs in the eye by means of a small second bleed path provided between the pressure regulator and the hypodermic needle.
Official Gazette of the U.S. Patent and Trademark Office

N80-14685 Kansas State Univ., Manhattan.
MODELING OF BLOOD FLOW IN VESSELS OF THE MICROCIRCULATION Ph.D. Thesis
Pattarapan Prasassarakich 1979 178 p
Avail: Univ. Microfilms Order No. 7926572

A mathematical model of blood flow in rigid straight cylindrical and tapered tubes was developed. The similarity between blood flow in small vessels with oil water flow in glass tubes was investigated. A concentric annular flow (CAF) model with a cell free plasma layer surrounding a continuous core of cells was proposed to describe blood flow in small tubes < 400 micrometers. The resulting pressure flow behavior calculated from this model agrees very well with experimental results. The plasma layer was found to be a constant; independent of shear stress, tube diameter, and feed hematocrit. Results also indicate that the CAF model qualitatively predicts the Fahraeus effect and quantitatively predicts the Fahraeus-Lindqvist effect.
Dissert. Abstr.

N80-14686 California Univ., Riverside.
THE INTERACTION OF OZONE WITH THE HUMAN ERYTHROCYTE Ph.D. Thesis
Alan Edward Koontz 1979 246 p
Avail: Univ. Microfilms Order no. 7924289

In order to examine the biochemical events of oxidant injury which lead to edema, the human red blood cell studied after exposure in vitro to high concentrations (45 nMoles or O3/10 to the 6th power cells maximum) of oxone for short periods. Changes in outdated cells, pre-incubated with adenosine to restore ATP levels, in outdated cells not pre-incubated, and in resealed ghosts produced from the outdated cells are described. The sensitivity of certain membrane sites such as glyceraldehyde-3-phosphate dehygrogenase and the ouabain binding site evidences the reactivity of oxone with a relatively small number of membrane components, which may be responsible for the generation of a permeability change, cation pump inhibition, or membrane structural modification in the absence of gross internal oxidation, leading to edematous conditions in red cells and other tissues exposed to oxidants.
Dissert. Abstr.

N80-14687* National Aeronautics and Space Administration. Pasadena Office, Calif.
DIALYSIS SYSTEM Patent
William A. Mueller, inventor (to NASA) (JPL) Issued 13 Jun. 1978 6 p Filed 28 Feb. 1977 Sponsored by NASA
(NASA-Case-NPO-14101-1; US-Patent-4,094,775;
US-Patent-Appl-SN-772434; US-Patent-Class-210-22;
US-Patent-Class-210-321B) Avail: US Patent and Trademark Office

The improved hemodialysis system utilizes a second polymeric membrane having dialyzate in contact with one surface and a urea decomposition solution in contact with the other surface. The membrane selectively passes urea from the dialyzate into the decomposition solution, while preventing passage of positively charged metal ions from the dialyzate into the solution and ammonium ions from the solution into the dialyzate.
Official Gazette of the U.S. Patent and Trademark Office

N80-14688*# National Aeronautics and Space Administration, Washington, D. C.
EFFECT OF PROLONGED HYPOKINESIA ON TISSUE BLOOD FLOW
Z. P. Levites and V. F. Fedotova Dec. 1979 7 p refs Transl. into ENGLISH from Eksp. Khir. Anesteziol. (USSR) no. 3, May/Jun 1974 p 79-80 Transl by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76005) Avail: NTIS HC A02/MF A01 CSCL 06P

The influence of hypokinesia on the blood flow in the tissues of rabbits was studied. Motor activity of animals was restricted during 90 days and blood flow recorded through resorption rate of NaI-131. Perfusion of tissues under the influence of hypokinesia was found to be reduced.
Author

N80-14689*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.
SYNTHESIS AND BIOLOGICAL SCREENING BY NOVEL HYBRID FLUOROCARBON HYDROCARBON COMPOUNDS FOR USE AS ARTIFICIAL BLOOD SUBSTITUTES Second Annual Report, Jul. 1977 - Jul. 1978
J. Moacanin, K. Scherer, A. Toronto (Utah Biological Test Lab., Salt Lake City), D. Lawson, T. Terranova, A. Yavrouian, L. Astle (Utah Biological Test Lab., Salt Lake City), S. Harvey (Utah Biological Test Lab., Salt Lake City), and D. H. Kaaelble (Rockwell Intern., Thousand Oaks, Calif.) 15 Oct. 1979 276 p refs
Sponsored in part by NIH
(Contract NAS7-100)
(NASA-CR-162537; JPL-Pub-79-36) Avail: NTIS HC A13/MF A01 CSCL 06A

A series of hybrid fluorochemicals of general structure R(1)R(2)R(3)CR(4) was prepared where the R(i)'s (i = 1,2,3) is a saturated fluoroalkyl group of formula C sub N F sub 2n + 1, and R(4) is an alkyl group C sub n H sub 2n + 1 or a related moiety containing amino, ether, or ester functions but no CF bonds. Compounds of this class containing approximately eight to twenty carbons total have physical properties suitable for use as the oxygen carrying phase of fluorochemical emulsion artificial blood. The chemical synthesis, and physical and biological testing of pure single isomers of the proposed artificial blood candidate compounds are included. Significant results are given.
R.C.T.

N80-14690# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.
DERIVATION OF PRESBYCUSIS AND NOISE INDUCED PERMANENT THRESHOLD SHIFT (NIPTS) TO BE USED

FOR THE BASIS OF A STANDARD ON THE EFFECTS OF NOISE ON HEARING

Daniel L. Johnson Sep. 1978 53 p refs Sponsored in part by EPA
(AF Proj. 7231)
(AD-A071310; AMRL-TR-78-128) Avail: NTIS HC A04/MF A01 CSCL 06/19

This report provides various sets of tables that attempt to summarize much of the existing knowledge of the expected effects of noise on the hearing threshold levels of a population. Relations between noise exposure and Noise Induced Permanent Threshold Shift (NIPTS) for different audiometric frequencies are provided. Six different data sets of presbycusis (the effects of aging on hearing thresholds) are provided. Details for combining the effect of NIPTS to different presbycusis bases are provided. Three methods are suggested for presentation of hearing loss data. These are: (1) direct use of NIPTS, (2) calculation of hearing risk (the change in percent of the population whose hearing exceeds a certain value, and (3) use of a value (called units of potential compensation) that is related to the total compensation that might be paid due to hearing loss. The last method is new and was developed especially because of criticisms of the first two methods. The combined average of the frequencies of 500 Hz, 1000 Hz, 2000 Hz and 3000 Hz are analyzed in great detail and 10 tables are provided for describing the affects of noise on this frequency combination. A computer program for calculating hearing risk and units of potential compensation is provided. GRA

N80-14691# Army Research Inst. of Environmental Medicine, Natick, Mass.

THREE INSTRUMENTS FOR ASSESSMENT OF WBGT AND A COMPARISON WITH WGT (BOTSBALL)

B. Onkaram, L. A. Stroschein, and R. F. Goldman 14 Sep. 1979 28 p refs
(DA Proj 3E1-62777-A-845)
(AD-A074979; USARIEM-M-24/79) Avail: NTIS HC A03/MF A01 CSCL 06/19

Environmental heat stress, expressed as the ambient wet bulb globe temperature (WBGT), was measured using three different WBGT instruments: (a) the conventional shaded dry bulb, 15.2 cm black globe and naturally convected wet bulb thermometers; (b) a miniaturized thermometer kit; (c) a commercial WBGT instrument using thermistor sensors, and the WBGT was compared with (d) the ambient wet globe temperature (WGT) measured by a Botsball. Visual observations were made on the instruments at regular intervals and an automated data collection system was also used to obtain data from thermocouples attached to the instruments. Statistically significant differences in WBGT readings were found among the instruments; however, the difference for a given environment was usually less than 0.5 C. Readings taken by visual observations resulted in WBGT values which differed by less than 0.3 C from those calculated from the automated data collection system. By using an equation derived for the Botsball, WBGT - 1.044 WGT - 0.187 in C, it is possible to convert the Botsball thermometer dial to indicate the conventional WBGT for outdoor environments; it then becomes a simple instrument for assessing environmental heat stress at the work site. GRA

N80-14692# Anthropology Research Project, Yellow Springs, Ohio.

ANTHROPOMETRIC SIZING, FIT-TESTING AND EVALUATION OF THE MBU-12/P ORAL-NASAL OXYGEN MASK

Milton Alexander (Aerospace Med. Res. Lab.), John T. McConville, and Ilse Tebbets Wright-Patterson AFB ARML Aug. 1979 33 p refs
(Contract F33615-79-C-0511; AF Proj. 7184)
(AD-A074723; AMRL-TR-79-44) Avail: NTIS HC A03/MF A01 CSCL 06/17

This report describes the anthropometric sizing procedures used in the developement of the MBU-12/P oral-nasal oxygen mask and documents results of subsequent fit-testing and evaluation of the mask. A successor to the MBU-5/P, the MBU-12/P is designed to withstand the G and Q forces in the newer high performance aircraft as well as to provide a better fit and improved visibility. Sizing analysis and fit-testing revealed that four sizes of the MBU-12/P are sufficient to cover the USAF male flying population; the anthropometry and statistics upon which this decision was based are described in this report. Also documented here are the results of a number of ground and flight tests conducted over a period of four years which provide both objective and subjective evidence that the MBU-12/P is a well fitting mask which successfully achieves its design objectives. Subjects of all the tests were experienced aircrew whose head and face measurements were representative of a full range of the USAF flight crew population. Results of all the fit test/evaluations revealed a high degree of user acceptance and a decided preference for the MBU-12/P when compared to the older MBU-5/P. GRA

N80-14693# Armed Forces Radiobiology Research Inst., Bethesda, Md.

EARLY TRANSIENT INCAPACITATION: A REVIEW WITH CONSIDERATION OF UNDERLYING MECHANISMS

D. O. Carpenter Apr. 1979 19 p refs
(AD-A071803; AFRRI-SR-79-1) Avail: NTIS HC A02/MF A01 CSCL 06/18

Early transient incapacitation (ETI), which is a decrement in the performance of a specified task resulting from the effects of supralethal ionizing radiation exposures, has been observed in a number of animal species. Since nuclear weapons result in radiation fields sufficient to cause ETI in personnel that may be exposed, an understanding of the mechanism of this phenomenon is essential for the development of a rational plan for preventing or reversing the effect. This report is a review of the behavioral experiments concerning ETI and presents a critical analysis of available experimental information as to the cause of the phenomenon. It appears that the primary cause of ETI in experimental animals is probably faintness resulting from a fall in cerebral blood flow due to the direct action of histamine on blood vessel smooth muscle cells. GRA

N80-14694# Naval Postgraduate School, Monterey, Calif.

A CONSIDERATION OF FACTORS CONTRIBUTING TO STRENGTH DIFFERENCES IN MEN AND WOMEN M.S. Thesis

Theodore M. Printy Jun. 1979 80 p refs
(AD-A072671) Avail: NTIS HC A05/MF A01

The expansion of opportunities for women in today's military has increased the importance of understanding how and why men and women differ in strength, stamina, and work capacity. The present effort discusses how the different physiological/anatomical characteristics of the sexes form a basis for physical strength differences. Other factors, such as age, stature, weight, cultural influences, biomechanics, and training contribute to the significant differences in physical strength capabilities which are demonstrated both as to scope and degree. With an understanding of the strength capabilities of men and women and a comprehensive understanding of job requirements, the effective and efficient utilization of both sexes may be achieved. GRA

N80-14695# Ohio State Univ., Columbus. Dept. of Engineering Mechanics.

MEASUREMENT OF RESISTIVE TORQUES IN MAJOR HUMAN JOINTS Final Report, 1 Apr. 1976 - 30 Sep. 1978

Ali Erkan Engin Wright-Patterson AFB AMRL Apr. 1979 156 p refs
(Contracts F33615-76-C-0505; DOT-HS-6-01331; AF Proj. 2312)
(AD-A071170; AMRL-TR-79-4) Avail: NTIS HC A08/MF A01 CSCL 06/16

The major articulating joints considered are the shoulder, knee, hip, elbow and ankle. Due to drastic postmortem changes of the biomechanical response of the body tissues, the research is conducted with some obvious limitations on live human subjects. The major components of the specially designed and built experimental apparatus are a subject restraint system, a global force applicator (GFA), and an exoskeletal device (ESD). The ESD is used in monitoring the kinematics of the motion between the fixed and the moving body segments and the forces are applied to the moving body segment by means of the GFA. Design of both the ESD and GFA are similar, each containing eight high precision potentiometers. The experimental apparatus and the associated theoretical concepts are utilized to achieve at least three major tasks. These tasks are the quantitative determination of (a) the voluntary range of motion (b) the resistive force and moments and (c) the resistive torques for the rotational motion of the body segments about their long bone axes. Although the majority of the results presented are on the passive resistive force, moment and torques for the major articulating joints of three subjects, some results on the magnitudes of the active resistive muscle force, moment and torque vectors are also presented for the same subjects. GRA

N80-14696# Illinois Univ. at the Medical Center, Chicago. School of Public Health.
HEALTH EFFECTS OF AEROSOLS EMITTED FROM AN ACTIVATED SLUDGE PLANT
B. Carnow, R. Northrop, R. Wadden, S. Rosenbert, and J. Holden May 1979 232 p refs
(Grant EPA-R-805003)
(PB-299583/5; EPA-600/1-79-019) Avail: NTIS HC A11/MF A01 CSCL 06F

The health of persons residing near sewage treatment plants was studied to determine whether or not the health of persons exposed to aerosols emitted by a sewage treatment plant is significantly different from persons living in lesser exposed areas around the plant site. GRA

N80-14697*# National Aeronautics and Space Administration. Langley Research Center, Hampton, Va.
PRELIMINARY INVESTIGATION OF PILOT SCANNING TECHNIQUES OF DIAL POINTING INSTRUMENTS
Randall L. Harris, Sr. Nov. 1979 22 p refs
(NASA-TM-80079) Avail: NTIS HC A02/MF A01 CSCL 05H

Two pilots' methods of looking at instruments with needle pointers in a fixed base helicopter simulation were observed. A total of 45 runs were analyzed for each pilot. The data indicated that two apparently different techniques were being used; one looking at the needle point, the other looking at a fixed spot on the instrument and reading the needle direction parafoveally. The latter technique is found to be somewhat faster with both pilots accomplishing the flying task. M.G.

N80-14698# Decisions and Designs, Inc., McLean, Va.
VALIDATION AND ERROR IN MULTIPLICATIVE UTILITY FUNCTIONS Research Report, Oct. 1977 - Dec. 1978
F. Hutton Barron Dec. 1978 52 p refs Prepared in cooperation with Univ. of Southern California
(Contract N00014-76-C-0074)
(AD-A073362; USC-001922-2-T; SSRI-RR-78-2) Avail: NTIS HC A04/MF A01 CSCL 05/10

In this report an approach to the concept of error in utility assessment is proposed. Three components of error are considered and each component is related to four separate elicitation methods-all in the context of a general multiplicative multiattribute utility model. The methods are Keeney-Raiffa (1976) procedure, SMART (Edwards, 1977), a social judgment theory (SJT) based regression model (Hammond, Stewart, Brehmer and Steinmann, 1975) and a new method called Holistic Orthogonal Parameter Estimation or HOPE (Barron and Person, 1978). If a general multiplicative model can be assumed to be an appropriate representation of the decision maker's basic preference structure, error can occur in the direct estimation of the scaling constants and univariate utility functions for decomposition methods (Keeney-Raiffa and SMART), or in the holistic assessments for holistic methods (SJT and HOPE). Individual estimates may be merely noisy or may be fundamentally incorrect. Furthermore, the utility model may be incorrectly specified; for example, an additive model, rather than a multiplicative model, may be used. The four assessment methods are considered in conjunction with errors of each kind. Author (GRA)

N80-14699# University of Southern California, Los Angeles. Social Science Research Inst.
A CRITERION VALIDATION OF MULTIATTRIBUTE UTILITY ANALYSIS AND OF A GROUP COMMUNICATION STRATEGY Research Report, Oct. 1977 - Dec. 1978
Lee C. Eils, III and Richard S. John Dec. 1978 53 p refs
Prepared for Decisions and Designs, Inc., McLean, Va.
(Contract N00014-76-C-0074)
(AD-A073364; USC-001922-4-T; SSRI-RR-78-4) Avail: NTIS HC A04/MF A01 CSCL 05/10

This study investigates the use of an external criterion for validating additive utility assessments under certainty. Utilities were elicited from twenty-four groups via consensus judgment for ten hypothetical applicants for bank credit cards. The research design completely crossed two factors relevant to group utility assessment: (1) using a decomposition (MAUA) procedure or not, and (2) using a formal group communication strategy or not. The quality of each group's utility judgments was defined to be the Pearson produce-moment correlation between the group's judged utilities and utilities output from a configural (nonlinear) model used by Security Pacific National Bank in evaluating applicants for Master Charge. Group satisfaction measures were also obtained. The decomposition methodology and the group communication strategy both aided groups in making assessments that are more consistent with those of the bank model, which is based on a systematic collection and interpretation of a large amount of relevant data. Simplified procedures for obtaining weight parameters in the multi-attribute utility analysis yielded better overall utilities than more complicated ratio-estimation techniques. GRA

N80-14700# Decisions and Designs, Inc., McLean, Va.
IMPORTANCE WEIGHT ASSESSMENT FOR ADDITIVE, RISKLESS PREFERENCE FUNCTIONS: A REVIEW Research Report, Oct. 1977 - Dec. 1978
Richard S. John and Ward Edwards Dec. 1978 72 p refs
Prepared in cooperation with Univ. of Southern California
(Contract N00014-76-C-0074)
(AD-A073365; USC-001922-5-T; SSRI-RR-78-5) Avail: NTIS HC A04/MF A01 CSCL 05/10

One of the more useful tools in decision analysis is the riskless, additive multiattribute utility (MAU) model. The most difficult task in the application of MAU models is that of estimating the importance weight parameters. Two general approaches to the weight estimation problem are extensively reviewed in the present paper: direct subjective estimation and indirect holistic estimation. Various methods for directly assessing importance weights are catalogued, including ranking, fractionation, subjective-estimate methods, and paired-comparison procedures, and their relationship to one another is discussed. The so-called indirect holistic methods, including unbiased and biased regression analyses, the ANOVA and fractional ANOVA paradigms, and the indifference techniques of pricing out and trading off to the most important dimension, are all explained with particular emphasis on their common relationship to the general linear model. Author (GRA)

N80-14701# Decisions and Designs, Inc., McLean, Va.
ARE IMPORTANT WEIGHTS SENSITIVE TO THE RANGE OF ALTERNATIVES IN MULTIATTRIBUTE UTILITY MEASUREMENT Research Report, Oct. 1977 - Dec. 1978
William F. Gabrielli, Jr. and Detlof VonWinterfeldt Dec. 1978 47 p refs Prepared in cooperation with Univ. of Southern California
(Contract N00014-76-C-0074)
(AD-A073366; USC-001922-6-T; SSRI-RR-78-6) Avail: NTIS HC A03/MF A01 CSCL 05/10

Scaling factors in multiattribute utility measurement can either be assessed directly as importance weights or indirectly by indifference judgments. Critics of the importance weight interpretation of scaling factors argue that importance weights are not sensitive to ranges of alternatives and thus cannot be used to match standardized single attribute utility functions. To examine the range sensitivity of importance weight judgments two experiments were designed. In the first experiment college students gave relative importance weight judgments for a number of attributes when evaluating apartments and liquified natural gas plant locations. After the initial importance weight assessments

the range of alternatives in one attribute was changed and subjects reassessed their weights. Although subjects were explicitly instructed to take ranges into account when making these judgments, they were unable to adjust their weights appropriately. To magnify possible range effects a second experiment examined a very simple two attribute car evaluation problem. Subjects were asked directly if weights should change after the range in one attribute was doubled. Most subjects indicated that there should be no change. The results of these experiments suggest that subjects have plausible ranges in mind when assessing importance weights and that they are unwilling to change weights after relatively spurious changes in the alternative set.
Author (GRA)

N80-14702# Decisions and Designs, Inc., McLean, Va.
SUBJECTIVE VERSUS STATISTICAL IMPORTANCE WEIGHTS. A CRITERION VALIDATION Research Report, Oct. 1977 - Dec. 1978
Richard S. John and Ward Edwards Dec. 1978 52 p refs
Prepared jointly with Univ. of Southern Calif., Los Angeles
(Contract N00014-76-C-0074)
(AD-A073367; SSRI-RR-78-7; USC-001922-7-T) Avail: NTIS HC A04/MF A01 CSCL 05/10

The present paper proposes a research paradigm for comparing weight estimates to empirically derived 'true' weights, thus obtaining a measure of the criterion validity of different weight estimation techniques. Subjects are first taught a multi-attribute utility (MAU) model via multiple-cue probability learning (MCPL) and outcome feedback. Then, various assessments of the importance weight parameters for the model attributes are obtained. Composites formed from these weights are subsequently compared to composites formed from optimal statistical weights derived from outcome feedback. Data are reported from 17 subjects who were taught one of three 'diamond worth' MAU models in 100 feedback trials. The models all involved four attributes (cut, color, clarity, and carat weight), and varied in the 'environmental correlations' among the dimensions (either (1) all uncorrelated, (2) one large positive correlation, or (3) two large negative correlations). The results of the present study are discussed from both an applied and theoretical perspective. To the decision analyst in the field, the present results give support to the belief that the parameter estimates obtained from clients define a 'true' normative preference function. Theoretically, the findings of this study are strong evidence that people are aware of their own cognitive processes.
GRA

N80-14703# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.
EFFECT OF PERIPHERALLY PRESENTED VISUAL SIGNALS ON PILOT PERFORMANCE DURING FLIGHT SIMULATION Final Technical Report, Oct. 1977 - Sep. 1978
John M. Bermudez, Jock C. H. Schwank, Thomas M. Longridge, Thomas M. McCloy, and Bruce A. Smith Jun. 1979 21 p refs
(AF Proj. 7184)
(AD-A073604; AMRL-TR-78-120) Avail: NTIS HC A02/MF A01 CSCL 05/5

Recent theoretical developments have stimulated interest in the development and testing of peripheral vision displays which could be used to monitor the control of aircraft attitude. This study investigated the ability of pilots to attend to peripherally presented attitude information via LED displays while simultaneously engaging in foveal processing of an instrument array during a complex maneuver in flight simulator. Twenty-four pilots were divided into two groups of twelve. One group performed vertical S maneuvers using an LED display that indicated an out-of-tolerance condition in compass heading (steady LED). The second group used an LED that provided both out-of-tolerance information and rate-of-error information (strobe LED). All pilots were pre-trained to criterion. Both groups performed under each of three display conditions: Normal (standard round compass dial), Redundant (dial and LED), and Peripheral (LEDs-only). There were no statistically significant differences between the steady LED display and the strobing LED display. Overall, the results suggest that peripheral displays are at least as effective as compass dials for monitoring purposes, and such displays might prove useful as adjunct training aids with the potential for improving safety.
Author (GRA)

N80-14704# Army Military Personnel Center, Alexandria, Va.
A STUDY IN PROCEDURAL MANIPULATION OF LOCUS OF CONTROL M.S. Thesis - North Carolina Central Univ. Final Report
Vernon Webster Hatley 13 Apr. 1979 72 p refs
(AD-A068658) Avail: NTIS HC A04/MF A01 CSCL 05/10

Specific locus of control change techniques were developed, examined and tested on one hundred twenty-eight (128) matched students in a general psychology class at North Carolina Central University during the spring semester of 1979. This study investigated the possibility of changing locus of control orientation in college students. Additionally, pretest locus of control scores of students who dropped the course were compared with those completing it. The experimental design was a two by four (2 x 4) matched group design. Presumed change in pretest-posttest locus of control scores as measured by Rotter's Internal External Locus of Control Scale and pretest locus of control scores of students who dropped the course were the dependent variables. Results revealed that locus of control scores in the experimental group shifted significantly (p less than .05) in the internal direction while those in the control condition moved toward an external orientation. Externals in the experimental group contributed significantly (p less than 0.5) to the overall change. Internals were found to move toward externality. The findings confirmed the contention that locus of control orientation can be influenced toward internality. Recommendations are offered for use of locus of control intervention techniques in academic settings.
Author (GRA)

N80-14705# Johns Hopkins Univ., Baltimore, Md. Div. of Behavioral Biology.
EXTENDED ANALYSIS OF SMALL GROUP PERFORMANCE AND THE EFFECTS OF CONTINGENCY MANAGEMENT IN A PROGRAMMED ENVIRONMENT
H. H. Emurian and J. V. Brady 16 Apr. 1979 30 p refs
(Contract N00014-77-C-0498; NR Proj. 170-855)
(AD-A068665; TR-4) Avail: NTIS HC A03/MF A01 CSCL 05/10

Volunteer subjects have participated in a series of experimental group missions involving continuous residence for varying periods in the programmed environment. The methodology involved in these ongoing studies extends the applications of performance programming technologies detailed in prior publications. The experiments focus upon an explicit analysis of the conditions under which interrelationships between participants and experimenters influence performance effectiveness. To assess potential interrelationships between physiological status and performance effectiveness and productivity, four measures were obtained while subjects concurrently operated the performance battery: (1) heart rate, (2) frontalis EMG, (3) skin temperature, and (4) skin conductance. Urine free cortisol levels were also determined from analyses of total urine volume which was collected throughout the mission. A strong overall relationship was observed between individual productivity and mean daily urine free cortisol. These observations together suggest that the stress of sustained high productivity along with prolonged performance accuracy on a demanding task may render an individual vulnerable to disruptive emotional reactions such as those provoked by the avoidance phase of the study.
Author (GRA)

N80-14706# Maryland Univ., College Park. Dept. of Psychology.
ABILITY, INVOLVEMENT AND CLIMATE AS MULTIPLE AND INTERACTIVE PREDICTORS OF PERFORMANCE
R. Gene Hoffman Apr. 1979 41 p refs
(Contract N00014-75-C-0884; RR0420402)
(AD-A068891; RR-21) Avail: NTIS HC A03/MF A01 CSCL 05/10

Student ability, involvement in the class, and classroom climate created by the instructor activities were examined as multiple and interactive predictors of course performance for 915 students in 74 sections of a mathematics course. Climate was defined in two ways: (1) as individual perceptions and (2) as shared perceptions. Two parallel analyses were conducted using the two definitions of climate. Each analysis resulted in ability, involvement and climate contributing unique variance in the prediction of student examination performance on a common exam. Climate dimensions contributing to performance were coordination of class activities, instructor skill, and the extent of critical demands (a negative relationship). The most significant difference between the two analyses was the appearance of a significant ability X coordination interaction in the analysis using shared climate perceptions. This difference was interpreted to be the result of a confounding of the interaction in the individual perceptions of coordination. The relationship between the interaction and predictive accuracy was explored. GRA

N80-14707# Maryland Univ., College Park. Dept. of Physics.

WORK PERFORMANCE AS A FUNCTION OF THE INTERACTION OF ABILITY, WORK VALUES, AND THE PERCEIVED WORK ENVIRONMENT

Robert Lee Hannon Apr. 1979 165 p refs
(Contract N00014-75-C-0884; RR0420402)
(AD-A068893; RR-22) Avail: NTIS HC A08/MF A01 CSCL 05/10

Literature pertaining to the prediction of performance from ability, motivation and their interaction was reviewed. Three personal traits (achievement motivation, locus of control, and bureaucratic values) are examined as possible antecedents of work motivation and performance. A model of work motivation that depends on the strength of the personal traits interacting with their environmental compatibility was developed. An empirical study on 417 police officers was conducted to test hypotheses generated from the models. Measures of the personal traits were developed and administered along with a questionnaire used to ascertain perceptions of the work environment. Supervisor's ratings of performance were collected as well as demographic and ability measures. Moderated multiple regression analyses found strong evidence for the performance-related validity of the work motivation model. Neither ability nor the ability-motivation interaction showed any relationship to performance. GRA

N80-14708# Maryland Univ., College Park. Dept. of Psychology.

METHODOLOGICAL AND CONCEPTUAL ISSUES IN UNDERSTANDING ABILITY-PERFORMANCE RELATIONSHIPS Final Report

Benjamin Schneider Apr. 1979 36 p refs
(Contract N00014-75-C-0884; RR0420402)
(AD-A068894; RR-25) Avail: NTIS HC A03/MF A01 CSCL 05/10

This final report presents summaries of a series of technical reports concerned with individual non-ability and contextual variables as contributions to ability-performance relationships and the prediction of work performance. Theoretical papers and laboratory and field research efforts are summarized. It was concluded that situational variables conceptualized and operationalized in a number of different ways contribute additively, but not interactively, to the prediction of performance. Also included in this report is a list of publications accomplished under this contract. GRA

N80-14709# Arizona State Univ., Tempe. Dept. of Educational Technology.

RULE LEARNING AND SYSTEMATIC INSTRUCTION IN PILOT TRAINING Final Report, 1 Oct. 1977 - 31 Dec. 1978

Vernon S. Gerlach Mar. 1979 30 p
(Grant AF-AFOSR-2900-76; AF Proj. 2313)
(AD-A068906; TD-3; AFOSR-79-0609TR) Avail: NTIS HC A03/MF A01 CSCL 05/9

Four related lines of endeavor were pursued. Central to these activities was the research on algorithmized instruction as a form of rule learning and its effect on the acquisition of complex human behaviors. This theme was implemented in studies on the role of performance objectives in instructional systems design, on the role of self-evaluation and its relationship to performance measurement, on the use of computer models in defining algorithms involving rule-using behavior, and an observation regarding the use of the Pearson product-moment correlation in performance measurement. GRA

N80-14710# Maryland Univ., College Park. Dept. of Psychology.

RATING ERRORS OF INCONSISTENCY AS A FUNCTION OF DIMENSIONALITY OF BEHAVIORAL ANCHORS

Bruce L. Katcher and C. J. Bartlett May 1979 25 p
(Contract N00014-75-C-0884; RR0420402)
(AD-A068922; RR-24) Avail: NTIS HC A02/MF A01

The present study focuses upon rating errors of inconsistency in multidimensional behavior-specific rating scales used for purposes of performance appraisal. The hypothesis that rating scales which are more nearly unidimensional will result in a fewer rating errors of inconsistency was tested using a Mixed Standard Rating Scale developed for police supervisory personnel. Two measures of unidimensionality were used. The correlations between the indices of unidimensionality and rating inconsistency across ten rating dimensions were significant and in the predicted direction, confirming the hypothesis. The implications of the results for behaviorally anchored rating scales are discussed. GRA

N80-14711# Computer Sciences Corp., Huntsville, Ala.

A MIND/BRAIN/MATTER MODEL CONSISTENT WITH QUANTUM PHYSICS AND UFO PHENOMENA

T. E. Bearden 1979 41 p
(AD-A068988) Avail: NTIS HC A03/MF A01 CSCL 05/10

The author introduces a speculative model of mind and matter and their interaction that is consistent with the experimental basis of physics, and which offers mechanisms for paranormal phenomena of all types, including UFO phenomena. Certain conclusions are reached by a new fourth law of logic, which is briefly described and summarized. A new photon interaction model of quantized observable change is also presented. A solution to the problem of the nature of mind is generated, using the author's fourth law of logic, and a seven-dimensional hyperspatial physical model of a living biosystem is developed. Using this basic model, an infinite-dimensional cotemporal hyperspatial model of the physical universe complete with all its life forms is constructed. Levels of unconsciousness-including the collective human species unconscious--emerge naturally as types of crosstalk between hyperframes. By the author's formula, the psychokinetic power of a mind level increases exponentially as the number of biosystem stages involved. At the level of the collective human species unconscious, the psychokinesis is sufficient to materialize symbolic tulpoids (thought forms), given a sufficient stress stimulus in large groups. Using the cold war as the major stress stimulus on mankind since World War II, the author shows that most major UFO waves in the literature precisely fit the model. GRA

N80-14712# Ohio State Univ. Research Foundation, Columbus.

PROCESS MODEL OF HOW THE HUMAN OPERATOR TRACKS DISCONTINUOUS INPUTS Final Report, 1 Jul. 1977 - 30 Sep. 1978

Richard J. Jagacinski, Walter W. Johnson, E. James Hartzell, Sharon Ward, and Kaile Bishop Dec. 1978 32 p refs
(Grant AF-AFOSR-3288-77; AF Proj. 2312)
(AD-A069001; OSURF-760640/784688; AFOSR-79-0607TR) Avail: NTIS HC A03/MF A01 CSCL 05/10

Two basic research projects were pursued. In conjunction with personnel at the 6570th Aerospace Medical Research Laboratory, Human Operator Effectiveness Branch, experiments determined that the time to acquire stationary targets with position and velocity control systems was a linear function of an Index of Difficulty measure. This measure is a logarithmic function of initial target displacement and target width. The linear relationship with capture time represents an extension of Fitts' Law, known to hold for discrete movements performed with a physical stylus. The slope of the linear relationship between capture time and the Index of Difficulty was considerably steeper for the velocity control system and was slightly steeper for greater initial target uncertainty. The second project investigated the capture of moving targets with three different control systems: (1) two independent position controls, PP, (2) two independent velocity controls, VV, and (3) one position and one velocity control, PV. The PV system yielded significantly faster capture times than the PP system. However, due to the development of two different control strategies with the VV system the difference between the VV and the other systems was not statistically significant. Further research is recommended to clarify this latter result. GRA

N80-14713# Rochester Univ., N. Y. Center for Visual Science.
A FACILITATION EFFECT IN ORIENTATION DISCRIMINATION
John Lott Brown and Iris M. Kortela 1976 29 p refs
(Contracts N00014-76-C-0189; NEI-ROI-EY-00680)
(AD-A072726; TR-76-2) Avail: NTIS HC A03/MF A01 CSCL 06/16

The minimal stimulus for orientation discrimination consists of two spots of light which define the orientation of an imaginary line. Luminance thresholds for discrimination of orientation were measured with two 5 min test spots, separated by 10, 20, 30 or 40 min of arc, located approximately 2 deg from the fovea. Test flashes were of 2 msec duration and varied in temporal relation from simultaneity to nearly 0.5 sec asynchrony. When measurements were made by an ascending method of limits with both test flashes increasing together, luminance thresholds for orientation discrimination were close to light detection thresholds and were uninfluenced by the temporal relation. When one of the flashes was presented by a constant luminance 0.6 log unit above detection threshold and the luminance of the other was the dependent variable, the luminance threshold for discrimination of orientation of the two spots varied with their temporal and spatial relations. For 30 min separation it was approximately 0.4 log unit below light detection threshold when the variable luminance spot preceded the fixed luminance spot by about 140 msecs for each of two observers. Results with haploscopic presentation suggest that the effect may represent facilitation at the cortex. GRA

N80-14714 Dutch Air Line Pilots Association, Amstelveen.
SLEEP AND BODY RHYTHM DISTURBANCE IN LONG-RANGE AVIATION. THE PROBLEM AND A SEARCH FOR RELIEF
Frank H. Hawkins Sep. 1978 98 p refs
Copyright. Avail: Issuing Activity

The effect of sleep disturbance and deprivation and body rhythm disruption in long-range aviation and on the performance of flight crews was investigated. The theory of sleep and body rhythms is presented and discussed. Human performance and sleep is also discussed. Current relief efforts are described along with possible alternative ways for relief. Some of the alternatives are autogenic training, progressive relaxation, auto-hypnosis, yoga, meditation, and biofeedback. The study concludes that for safety, social, and economic reasons, it would be advisable to research more fully the sleep problem in aviation. R.E.S.

N80-14715*# National Aeronautics and Space Administration, Washington, D. C.
TECHNOLOGIES FOR THE HANDICAPPED AND THE AGED
Trudy E. Bell Jul. 1979 48 p
(NASA-TM-80842) Avail: NTIS HC A03/MF A01 CSCL 05H

Examples of the technology transferred from advanced aerospace research projects to the needs of the handicapped and the elderly are presented. The booklet is divided into six sections, concentrating on technology respectively applied to the heart, limbs, senses, diagnostic tools, treatment and overall lifestyle. Within each section, the projects are organized roughly in chronological order, from those already completed and in the marketplace to those on the engineer's drawing board or still a concept in a physician's mind. R.E.S.

N80-14716*# National Aeronautics and Space Administration, Washington, D. C.
SIMULATION OF PHYSIOLOGICAL SYSTEMS IN ORDER TO EVALUATE AND PREDICT THE HUMAN CONDITION IN A SPACE FLIGHT
V. V. Verigo Dec. 1979 26 p refs Transl. into ENGLISH of conf paper from Inst. of Med. and Biol. Problems, Min. of Health USSR Moscow, 1979 p 1-23 Presented at the 10th Conf. of the Joint Soviet-Am. Working Group on Space Biol. and Med., Houston, Tex., Oct. 1979
(Contract NASw-3198)
(NASA-TM-76016) Avail: NTIS HC A03/MF A01 CSCL 06S

Simulation models were used to study theoretical problems of space biology and medicine. The reaction and adaptation of the main physiological systems to the complex effects of space flight were investigated. Mathematical models were discussed in terms of their significance in the selection of the structure and design of biological life support systems. R.C.T.

N80-14717*# National Aeronautics and Space Administration, Washington, D. C.
BIOLOGICAL SYSTEMS FOR HUMAN LIFE SUPPORT: REVIEW OF THE RESEARCH IN THE USSR
Ye. Ya. Shepelev Dec. 1979 26 p refs Transl. into ENGLISH from Obzor. Issled. v SSSR, Inst. of Med. and Biol. Problems, Ministry of Health (Moscow), 1979 p 1-24 Presented at the 19th Conf. of the Joint Soviet-Am. Working Group on Space Biol. and Med., Houston, Tex., Oct. 1979 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76018) Avail: NTIS HC A03/MF A01 CSCL 06K

Various models of biological human life support systems are surveyed. Biological structures, dimensions, and functional parameters of man-chlorella-microorganism models are described. Significant observations and the results obtained from these models are reported. R.C.T.

N80-14718*# Life Systems, Inc., Cleveland, Ohio.
REGENERATIVE CO2 REMOVAL FOR PLSS APPLICATION Final Report
D. B. Heppner, R. R. Woods, and F. H. Schubert Oct. 1979 64 p refs
(Contract NAS9-15218)
(NASA-CR-160419; LSI-TR-319-31-6) Avail: NTIS HC A04/MF A01 CSCL 06K

Various concepts for the design of the nonelectrochemical absorber were defined and evaluated. A preliminary design based on the use of hollow fiber membranes was developed. Small scale bench testing demonstrated the carbon dioxide removal capability and provided design data for scale-up to the one person level. A full scale conceptual design of the absorbent regeneration hardware using six electrochemical cells was also completed. The design was supported by single cell testing and showed that a full scale regeneration system, operating continuously over 24 hours, can regenerate the absorbent from one extravehicular activity mission. The single cell regeneration hardware was operated for over 800 hours. R.E.S.

N80-14719# Systems Technology, Inc., Hawthorne, Calif.
MODELING BIODYNAMIC EFFECTS OF VIBRATION, FIFTH YEAR Final Scientific Report
Henry R. Jex and Raymond E. Magdaleno Aug. 1979 73 p refs
(Contract F44620-73-C-0075; AF Proj. 2312)
(AD-A073819; STI-1037-5; AFOSR-79-0960TR) Avail: NTIS HC A04/MF A01 CSCL 05/5

The biomechanical feedthrough of vertical and/or fore-aft vibration from a seat, to (and through) various parts of the torso, limbs, hands, and head, to a spring-restrained control stick has been modeled over a 5-year effort using prior Air Force and other data bases. This final report summarizes the project results and provides a User's Guide to BIODYN-78, an interactive, remote-access, digital computer program for exercising the model. The model involves 77 postural and physiological parameters to define a broad range of seating/control/display arrangements from supine to erect. An internal routine automatically trims the Torso/Head/Limb system at the desired angles and computes linearized equations of motion, which are solved for their eigenvalues and resulting transfer functions using highly refined computing routines. In distinction from most past models, this model represents several degrees-of-freedom simultaneously, e.g., vertical and fore/aft shoulder motion, angular head-bobbing, constrained elbow motion, stick-grip-interface force, muscle forces, and stick angular motion, among many others. GRA

N80-14720# Advanced Research Resources Organization, Washington, D.C.

METHODS FOR EVALUATING THE PHYSICAL AND EFFORT REQUIREMENTS OF NAVY TASKS: METABOLIC, PERFORMANCE, AND PHYSICAL ABILITY CORRELATES OF PERCEIVED EFFORT Technical Report, 1 May 1978 - 30 Apr. 1979

Joyce C. Hogan, George D. Ogden, Deborah L. Gebhardt, and Edwin A. Fleishman Apr. 1979 73 p refs
(Contract N00014-78-C-0430)
(AD-A072497; ARRO-3034-R79-3) Avail: NTIS HC A04/MF A01 CSCL 06/16

Two studies examined the reliability and validity of an index of perceived physical effort for assessing the metabolic and ergonomic costs of task performance. In each study, tasks whose actual performance costs were either available from work physiology literature or were calculated mathematically were rated by subjects who had no work cost information on physical effort required in the task. In the first study, subjects (N=50) completed pencil and paper ratings of tasks whose metabolic costs were known using physical ability dimensions and the index of perceived physical effort. Results indicated high correlations between metabolic costs and ratings of physical effort as well as ratings of various strength and stamina factors. In the second study, subjects (N=20) performed 24 diverse manual materials handling tasks whose ergonomic costs were calculated and rated each completed task on the index of physical effort. Results indicated a substantial relationship between actual ft-lbs. of work and ratings of physical effort. Implications of the results are discussed in terms of the inherent psychometric properties of the index and its applied utility for determining criterion performance standards and job-related training. GRA

N80-14721# Anthropology Research Project, Yellow Springs, Ohio.

DESIGN CRITERIA FOR CHARACTERIZING INDIVIDUALS IN THE EXTREME UPPER AND LOWER BODY SIZE RANGES

Kathleen Robinette and Thomas Churchill Wright-Patterson AFB, Ohio AMRL Jun. 1979 92 p refs
(Contract F33615-78-C-0508; AF Proj. 7184)
(AD-A072353; AMRL-TR-79-33) Avail: NTIS HC A05/MF A01 CSCL 06/14

Designers commonly attempt to represent a range of human body sizes by using human manikins, three-dimensional forms, computer simulations, and various other models. These analogues are developed from a limited number of body size groupings, often utilizing 5th, 50th, or 95th percentile values. There are serious limitations to this percentile approach, exemplified by the fact that at the ends of the distribution, percentile values are not additive. Focusing on the ends of the distribution, where limitations are most intense, this report pinpoints and illustrates problems associated with the use of percentile values, and describes two alternative approaches: subgroup and regression values. Either of these altneratives offers significant improvement over the percentile approach and can be used to characterize any portion of the body size distribution. Regression equations for predicting dimensions from weight and stature and from weight and sitting height are provided to aid designers in computing dimensional body size data needed for cockpit and other work station layouts. GRA

N80-14722# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.

TIME SIMULATION OF AN AIR SURVEILLANCE TASK WITH VARYING AMOUNTS OF RADAR INFORMATION

William H. Pearson Jun. 1972 28 p refs
(AD-A074866; AMRL-TR-72-74) Avail: NTIS HC A03/MF A01 CSCL 17/7

Subjects observed a computer display unit simulating radar noise and radar trails of 150 and 500 mph aircraft, one per minute on the average, over a 1000 mile square area. Radar information was stored, cycle by cycle, up to a limit of 3,5,7 and 9 twenty second cycles and then presented sequentially rapidly enough to give an illusion of movement in the trails. Subjects detected the presence of aircraft and controlled computer processing by lightpen and keyboard actions. Time-to-detect increased with radar information for 500 mph tracks but not for 150 mph tracks. Probability of detection increased with radar information for 150 mph trails but not for 500 mph trails. These results were interpreted as showing the disruptive effect of (1) simulated radar noise confounded with the amount of radar information because of information storing and (2) the interference of the easier-to-find 500 mph aircraft with the 150 mph aircraft. GRA

N80-14723# Michigan Univ., Ann Arbor. Highway Safety Research Inst.

MOTOR VEHICLE MANUFACTURERS ASSOCIATION (MVMA) TWO-DIMENSIONAL CRASH VICTIM SIMULATION TUTORIAL SYSTEM: SELF-STUDY GUIDE Final Report

Bruce M. Bowman, D. Hurley Robbins, and Robert O. Bennett 28 Jun. 1979 423 p Sponsored in part by Motor Vehicle Manufacturers Assoc.
(PB-299256/8; UMICH-HSRI-79-7-1) Avail: NTIS HC A18/MF A01 CSCL 13F

A mathematical model used for predicting occupant dynamics in a crash environment is described. A self study guide divided into thirteen segments is presented. The data requirements of a set of related model features are included in each segment. Text, illustrations, and example problems are given. R.C.T.

N80-14724# Michigan Univ., Ann Arbor. Highway Safety Research Inst.

MOTOR VEHICLE MANUFACTURERS ASSOCIATION (MVMA) TWO-DIMENSIONAL CRASH VICTIM SIMULATION TUTORIAL SYSTEM: AUDIO-VISUAL PROGRAM Final Report

Bruce M. Bowman, D. Hurley Robbins, and Robert O. Bennett 28 Jun. 1979 303 p Prepared jointly with Motor Vehicle Manuf. Assoc. of the US
(PB-299257/6; UMICH-HSRI-79-7-2) Avail: NTIS HC A14/MF A01 CSCL 13F

A mathematical model used for predicting occupant dynamics in a crash environment is described. An audio visual program divided into thirteen segments is presented. The data requirements of a set of related model features are included in each segment. The narration text and figures used for the 35 mm slides is given. R.C.T.

N80-14725# Michigan Univ., Ann Arbor. Highway Safety Research Inst.

MVMA TWO-DIMENSIONAL CRASH VICTIM SIMULATION, VERSION 4, VOLUME 1 Final Report

Bruce M. Bowman, Robert O. Bennett, and D. Hurley Robbins 29 Jun. 1979 233 p refs Prepared jointly with Motor Vehicle Manuf. Assoc. of the US
(PB-299305/3; UMICH-HSRI-79-5-1-Vol-1) Avail: NTIS HC A11/MF A01; Also available in set of 3 reports HC E13, PB-299304-SET CSCL 13P

The coordinate systems describing occupant position are defined and the formulation of the equations of motion using Lagrangian techniques is detailed. The addition of forces to the equations of motion is described in general, supplemented by specific analyses for vehicle-occupant contact, gravity, joints, and restraint systems. R.C.T.

N80-14726# Michigan Univ., Ann Arbor. Highway Safety Research Inst.

MVMA TWO-DIMENSIONAL CRASH VICTIM SIMULATION, VERSION 4, VOLUME 2 Final Report

Bruce M. Bowman, Robert O. Bennett, and D. Hurley Robbins 29 Jun. 1979 294 p refs Prepared jointly with Motor Vehicle Manuf. Assoc. of the US

(PB-299306/1; UMICH-HSRI-79-5-2-Vol-2) Avail: NTIS HC A13/MF A01; Also available in set of 3 reports HC E13, PB-299304-SET CSCL 13F

The data required to operate the MVMA two dimensional model and program output generated using simple data sets are described. Specifications for the input data cards together with a detailed description of input data quantities are presented. Normal output options and certain normal output quantities are described. Input and output is given for two sample exercises of the computer model. GRA

N80-14727# Michigan Univ., Ann Arbor. Highway Safety Research Inst.

MVMA TWO-DIMENSIONAL CRASH VICTIM SIMULATION, VERSION 4, VOLUME 3 Final Report

Bruce M. Bowman, Robert O. Bennett, D. Hurley Robbins, and Judith M. Becker 29 Jun. 1979 338 p refs Prepared jointly with Motor Vehicle Manuf. Assoc. of the US

(PB-299307/9; UMICH-HSRI-79-5-3-Vol-3) Avail: NTIS HC A15/MF A01. Also available in set of 3 reports HC E13, PB-299304-SET CSCL 13F

The organization of the computer program into live processors and their interactions is presented. Description of program organization and flow, packing techniques, binary output formats, and auxiliary program output is presented for each of the five processors. Design information concerning certain special output subprocessors is provided. Conversion of the computer program for use of various computer systems is discussed. GRA

N80-14728# Advisory Group for Aerospace Research and Development, Paris (France).

MAINTENANCE OF AIR OPERATIONS WHILE UNDER ATTACK WITH CHEMICAL AGENTS

J. Ernsting, ed. (RAF Inst. of Aviation Med., Farnborough, U.K.) Sep. 1979 51 p Presented at the Aerospace Med. Panel's Specialists' Meeting, Brussels, 22-26 Jan. 1979

(AGARD-CP-264-Suppl; ISBN-92-835-0251-5) Avail: NTIS HC A04/MF A01

The capability of NATO Forces to maintain air operations while under attack with chemical agents depends on effective personal and collective protection for the aircrew and ground personnel while allowing them to perform adequately their operational duties. Topics cover the effects and detection of chemical warfare agents as well as protection against them.

N80-14729# Aberdeen Proving Ground, Md. Biomedical Lab.

THE EFFECTS OF ACUTE AND CHRONIC LOW DOSE EXPOSURE TO ANTICHOLINESTERASES

F. C. Cadigan and M. Chipman *In* AGARD Maintenance of Air Operations While Under Attack with Chem. Agents Sep. 1979 3 p refs

Avail: NTIS HC A04/MF A01

Acute sublethal and chronic subclinical exposures to toxic anticholinesterases may result in long term neurobehavioral deficits. The deficits most likely to occur include: slowed reaction times, erratic mood swings, sleep disturbances, and impaired visual memory. Individuals who operate high performance equipment and are acutely exposed should be kept off the job until examinations of brain function are normal. Author

N80-14730# School of Aerospace Medicine, Brooks AFB, Tex.

CONSIDERATION OF PYRIDOSTIGMINE AS A PROPHYLACTIC AGENT FOR AIRCREW

B. Richardson *In* AGARD Maintenance of Air Operations While Under Attack with Chem. Agents Sep. 1979 2 p refs

Avail: NTIS HC A04/MF A01

The carbamate pyridostigmine shows considerable promise as a first-generation prophylatic for nerve agent poisoning. Although it is unlikely to yield all the benefits desirable, the potential utility of pyridostigmine in conjunction with appropriate therapy warrants detailed study. Author

N80-14731# Norwegian Defence Research Establishment, Kjeller. Toxicology Div.

THE EFFECT OF LOCALLY APPLIED ORGANOPHOSPHATES ON MIOSIS AND ACETYLCHOLINESTERASE ADAPTATION TO CHRONIC TREATMENT

Didrik Malthe-Sorenssen, Nils E. Soli, and Frode Fonnum *In* AGARD Maintenance of Air Operations While Under Attack with Chem. Agents Sep. 1979 5 p refs

Avail: NTIS HC A04/MF A01

Topical administration of organophosphates to the eye of guinea pigs inhibited acetylcholinesterase of different parts of the eye to a different degree. The differences reflected most likely dilution of the agent caused by diffusion into the eye. The effect of locally applied organophosphates was ascribed to an effect on the iris and ciliary muscle and not on the retina. The degree of miosis and recovery of pupillary function after soman treatment correlated better to inhibition of external acetylcholinesterase than total acetylcholinesterase. Chronic treatment with soman reduced the miotic potency of soman and reduced the recovery time of the miosis. This adaptation was dependent on other factors than cholinergic. Local treatment of miosis with topical application of oximes to the eye reduced the miosis and reactivated acetylcholinesterase in the cornea and iris. The reactivation was enhanced in the presence of benzalkonium. Author

N80-14732# Federal Armed Forces Medical Coll., Munich (West Germany). Dept. of Toxicology and Pharmacology.

THERAPY ON NERVE AGENT POISONING

Nikolaus P. Weger *In* AGARD Maintenance of Air Operations While Under Attack with Chem. Agents Sep. 1979 4 p refs

Avail: NTIS HC A04/MF A01

The therapeutic properties of various combinations of the bispyridinium salts HS-3 and HS-6 and the cholinolytics atropine and benactyzine against soman poisoning were investigated in unanesthetized male beagles. Present data demonstrate that from all antidotes tested HGG-12-Cl and HGG-42-J in doses effective for treatment of men show good therapeutic effects in beagles poisoned with soman, sarin, and Vx. Best effect has HGG-42-J in a dose of 30 micron Mol/kg(= 18.27 mg/kg). In soman poisoning no reactivation of serum cholinesterase and cholinesterase in erythrocytes was observed. Other mechanisms of therapeutic activity must be explored. A.R.H.

N80-14733# Air Force Systems Command, Wright-Patterson AFB, Ohio. Life Support System Program Office.

APPROACHES TO CW AGENT AREA DETECTION SYSTEMS FOR AIRFIELDS

Francis T. Crimmins and John J. McCambridge *In* AGARD Maintenance of Air Operations While Under Attack with Chem. Agents Sep. 1979 10 p

Avail: NTIS HC A04/MF A01

United States Air Force (USAF) efforts to develop a chemical agent area detection system for the protection of air bases are examined. Point detection techniques which might provide a limited and interim area detection capability are discussed and the A/E23D-3 Chemical Agent Automatic Alarm and its characteristics are described. The USAF requirement for an instrument which will detect toxic chemical agents before they reach the intended target along with the capabilities such a detector must possess are presented. The Air Force's present views on how such a system might operate are explored. A.R.H.

N80-14734# Air Force Systems Command, Wright-Patterson AFB, Ohio. Life Support System Program Office.

PHILOSOPHY OF PROTECTION OF US AIRCREWS AGAINST CHEMICAL WARFARE AGENTS

John J. McCambridge and D. E. Root *In* AGARD Maintenance of Air Operations While Under Attack with Chem. Agents Sep. 1979 2 p

Avail: NTIS HC A04/MF A01

In 1975, the USAF recognized the need to provide protective equipment to aircrews that would allow them to accomplish

their operational missions after having been attacked by an enemy using chemical warfare agents. This requirement was deemed to be an urgent one; thus, a two phase program was initiated. Phase one was the development and production of near term equipment which would provide the required operational capability with delivery of equipment to the field to begin within two years. Phase two consists of a longer term program to provide more complete protection with a reduced operational burden.
Author

N80-14735# Service Technique de l'Aeronautique, Paris (France).
CONCERNING INDIVIDUAL EQUIPMENT FOR FIGHTER PILOTS IN THE AIR FORCE [A PROPOS DES EQUIPEMENTS INDIVIDUELS DES PILOTES DE CHASSE DE L'ARMEE DE L'AIR]
P. H. V. Gaspa *In* AGARD Maintenance of Air Operations While Under Attack with Chem. Agents Sep. 1979 3 p In FRENCH
Avail: NTIS HC A04/MF A01

In addition to the protection provided for all the armed services by way of protective suits, gloves, foot coverings, and masks for filtering particles, aircraft pilots require equipment that must be integrated with the aircraft, with parachutes, with the oxygen supply, and with survival equipment. It must meet the particular specification to provide minimal comfort needed to maintain the potential psychophysiology of the pilots, so they can accomplish their mission (which is always delicate in three dimensional space) in the midst of toxic flight factors and enemy intervention. There must be no thermal nor respiratory constraints. The design of equipment cannot impede pilot movements, the observation of parameters useful for flight, the carrying out of certain commands, nor the tactile agility of the fingers. Transl. by A.R.H.

N80-14736# Air Force Systems Command, Wright-Patterson AFB, Ohio. Life Support System Program Office.
US AIRCREW CHEMICAL DEFENSE ASSEMBLIES
Charles H. Leone and Paul F. Fallon *In* AGARD Maintenance of Air Operations While Under Attack with Chem. Agents Sep. 1979 7 p
Avail: NTIS HC A04/MF A01

The current aircrew chemical defense ensemble which is divided into four subsets: eye/respiratory/head, body, hand and foot protection is described. The associated chemical agent and flight qualification testing is discussed for each piece of equipment. The status of follow on development efforts which concentrate on the aircrew chemical defense eye/respiratory/head protection is reviewed. A.R.H.

N80-14737# Bluecher G.m.b.H. Duesseldorf (West Germany).
FRG AIRCREW CHEMICAL DEFENCE ASSEMBLIES
Hubert vonBluecher *In* AGARD Maintenance of Air Operations While Under Attack with Chem. Agents Sep. 1979 4 p

Avail: NTIS HC A04/MF A01

Topics covered include: (1) nonbattle casualty (NBC)-protection gloves for high performance aircraft pilots; (2) SAr spherical adsorber systems; (3) the NBC-protective suit (or garment) for German propeller-aircraft pilots with emphasis on construction of the materials, life-time, and influence of water and sweat; and (4) flame-proofing for NBC-protective clothing.
A.R.H.

N80-14738# Air Force Systems Command, Wright-Patterson AFB, Ohio. Life Support System Program Office.
INTEGRATION OF PROTECTION AGAINST CHEMICAL WARFARE AGENTS WITH AIRCREW PERSONAL EQUIPMENT
John J. McCambridge and Charles H. Leone *In* AGARD Maintenance of Air Operations While Under Attack with Chem. Agents Sep. 1979 3 p

Avail: NTIS HC A04/MF A01

Protection of the aircrew member through personal equipment is a concept which assumes that such protection can not be provided in any other way. Current efforts to incorporate chemical defensive capabilities into protective equipment for the eyes, respiratory system, body, hands, and feet are described. Integration of chemical agent protection into life support systems on a superior plane would eliminate the need for providing protection through personal equipment - a shirt sleeve environment, so to speak. Such a concept would require protection of the cockpit interior at all times from the introduction of chemical agents and would require the effective filtration of influent air by the environmental control systems. A.R.H.

N80-14739# Advisory Group for Aerospace Research and Development, Paris (France).
SURVEY OF METHODS TO ASSESS WORKLOAD
Bryce O. Hartman, ed. (School of Aerospace Med.) and Richard E. McKenzie, ed. (School of Aerospace Med.) Aug. 1979 160 p refs
(AGARD-AG-246; ISBN-92-835-1332-0) Avail: NTIS HC A08/MF A01

Methods of measuring aircrew workload are reviewed. The methods reviewed include areas of systems design engineering, operations research, the behavioral sciences, aerospace medicine, physiology, biochemistry, and biotechnology in general. The measurement domains include measures of sensory threshold, measures of sensory integration, cognitive function tests, measures of motor function, vigilance, reaction time, psychophysiologic responses, and physiologic and biochemical changes.

N80-14740# Gartner (Walter B.) and Murphy (Miles R.), Menlo Park, Calif.
CONCEPTS OF WORKLOAD
Walter B. Gartner and Miles R. Murphy *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 1-2 refs

Avail: NTIS HC A08/MF A01

A summary of the attempts made to quantify the workload imposed on a pilot by a particular aircraft design or operational procedure, or to access the effects of fatigue upon system performance are discussed in regard to the more precise specification of workload and fatigue concepts and to the adequacy of assessment criteria and techniques. The principle unresolved issues in conceptualizing and measuring pilot workload and fatigue are addressed. The conception of workload is divided into three functionally related components: (1) input load, (2) operator effort, and (3) work result. A.W.H.

N80-14741# Gartner (Walter B.) and Murphy (Miles R.), Menlo Park, Calif.
CONCEPTS OF FATIGUE
Walter B. Gartner and Miles R. Murphy *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 3-5 refs

Avail: NTIS HC A08/MF A01

A survey of the concepts of pilot fatigue is reviewed. The problem in defining the concept of fatigue and dealing effectively with fatigue is discussed. Factors such as task demands or protracted effort toward fatigue are investigated. Factors such as individual differences in personality, motivation, physical fitness, and life style are considered in the investigation. A.W.H.

N80-14742# School of Aerospace Medicine, Brooks AFB, Tex. Crew Technology Div.
CONCEPTS OF STRESS
Richard E. McKenzie *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 7-9 refs

Avail: NTIS HC A08/MF A01

A survey of studies on the concept of stress from flight fatigue is presented. The physiological and psychological factors resulting from stress are examined. Relaxation as an adaptive response to stress is discussed. The use of biofeedback as an adaptive strategy for stress is studied. A.W.H.

N80-14743# Italian Air Force Medical Service H. Q., Rome.
SOME CONSIDERATIONS CONCERNING METHODS TO EVALUATE AND ASSESS WORKLOAD IN AIRCRAFT PILOTS

Gaetano Rotondo *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 11-12 refs

Avail: NTIS HC A08/MF A01

Methods for analyzing the various stressing and fatiguing factors that act on the body and psyche of aircrafts' pilots during their specific activity are examined. The variations in the urinary excretion of corticosteroids and especially catecholamine during stress and fatigue are discussed. A.W.H.

N80-14744# School of Aerospace Medicine, Brooks AFB, Tex. Crew Technology Div.

PHYSIOLOGIC ASPECTS OF WORKLOAD/FATIGUE/STRESS

Layne P. Perelli *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 13-16 refs

Avail: NTIS HC A08/MF A01

The physiological mechanisms of the aircraft pilot reacting to the effects of workload, the effects of fatigue, or the effects of stress are described. The long term physiological indicators of stress, workload and fatigue recovered from pilots and measured as urinary metabolites are examined. The cardiac activity indicators, heart rate and heart rate variability, are discussed as a tool in evaluating pilot workload. A.W.H.

N80-14745# School of Aerospace Medicine, Brooks AFB, Tex. Crew Technology Div.

SOME INSIGHTS RELATIVE TO THE MAN-MACHINE SYSTEM: AN OVERVIEW OF TEN YEARS OF RESEARCH

Richard E. McKenzie and Bryce O. Hartman *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 17-18 refs

Avail: NTIS HC A08/MF A01

The operator skills and the specific tasks involved in current operational aircraft, airborne weapons systems, and space systems are discussed in relation to pilot performance. The effects of fatigue and/or stress upon the pilot operating the systems are reviewed through past research methods. The relationship between information processing ability and aircrew performance is examined. A.W.H.

N80-14746# Virginia Polytechnic Inst. and State Univ., Blacksburg.

AIRCREW WORKLOAD ASSESSMENT TECHNIQUES

Walter W. Wierwille, Robert C. Williges, and Samuel G. Schiflett (NATC, Patuxent River, Md.) *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 19-54 refs

Avail: NTIS HC A08/MF A01

A classification scheme is presented which summarizes a survey and analysis of aircrew workload assessment techniques relevant to inflight test and evaluation considerations. Two dimensions consisting of universal operator behaviors and workload assessment methodologies were used in the classification scheme. The universal operator behaviors were classified into categories including perceptual, mediational, communication, and motor processes; whereas the workload assessment methodologies were cataloged under the general categories of subjective opinion, spare mental capacity, primary task, and physiological measures. An applicability matrix based on this classification scheme is presented which summarizes existing research on workload assessment methodologies. Procedures are described whereby this matrix is used as a guide for selecting candidate aircrew workload assessment measures for inflight evaluation. A brief overview of the various workload assessment techniques is presented along with a set of critical criteria that need to be considered in evaluating the feasibility of these measures for inflight environments. A.W.H.

N80-14747# Air Force Systems Command, Wright-Patterson AFB, Ohio. Human Engineering Div.

WORKLOAD ASSESSMENT METHODOLOGY DEVELOPMENT

Billy M. Crawford *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 55-67 refs

Avail: NTIS HC A08/MF A01

The development of a method to determine efficient crew compositions, appropriate assignments of duties and responsibilities to crew members, and effective allocations of functions and tasks among men, machines and computers is discussed. The use of the method to identify the critical periods in a task or mission during which the operator's performance is particularly prone to degradation or failure because of work overload stress is examined. Emphasis is placed on man computer interactions and information processing/decision making functions which are not adequately accounted for by conventional human performance metrics, task analysis, time and motion, and time line methods. A.W.H.

N80-14748# School of Aerospace Medicine, Brooks AFB, Tex.

QUANTITATIVE MILITARY WORKLOAD ANALYSIS

Richard A. Albanese *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 69-71 refs

Avail: NTIS HC A08/MF A01

A method of tradeoff analysis as applied to workload analysis in the military environment is discussed. It is suggested that workload studies be performed in a tradeoff setting which allows the analyst to estimate the return on investment he has earned through his proposed system modifications. The methodologies described employ mathematical modeling techniques, and it is reinforced that these techniques are an adjunct to, and not a replacement of, more traditional methods of workload analysis. K.L.

N80-14749# Army Aeromedical Research Lab., Fort Rucker, Ala.

VISUAL PERFORMANCE: A METHOD TO ASSESS WORKLOAD IN THE FLIGHT ENVIRONMENT

R. Simmons, M. Sanders, and K. Kimball *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 73-81 refs

Avail: NTIS HC A08/MF A01

A method of assessing the workload requirements imposed on the visual system is discussed. The results suggest that the theory is a valuable tool in testing and determining what the visual workload level should be for combat proficient pilots, how long pilots with varying degrees of proficiency should be expected to fly in the combat environment, and aircraft design requirements (such as stability) to reduce the onset of fatigue-induced errors. Additionally, the theory can be utilized to test and determine varying mission related workload, as well as the workload required by special equipment such as the night vision goggles, navigation equipment, and experimental flight displays. K.L.

N80-14750# Royal Aircraft Establishment, Bedford (England).

HANDLING QUALITIES, WORKLOAD AND HEART RATE

Alan H. Roscoe *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 83-91 refs

Avail: NTIS HC A08/MF A01

Examples are given of the use of heart rates to augment pilots' opinions of handling and workload during various flight trials. It is shown that this technique gives reasonably good indications of the workload generated by particular handling qualities. Raw data in the form of beat-to-beat heart rate are invaluable for revealing rapid and short duration changes in handling qualities which affect workload. K.L.

N80-14751# Office of Naval Research, Arlington, Va.

BRAIN WAVES AND THE ENHANCEMENT OF PILOT PERFORMANCE

G. H. Lawrence *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 93-102 refs

Avail: NTIS HC A08/MF A01

Aspects of brain wave research and brain-behavior relationships that are potentially useful in simulated aircraft crew stations are discussed. A pilot performance research paradigm for studying the use of brain waves is presented. K.L.

N80-14752# California Univ. at Los Angeles. Dept. of Psychology.

PUPILLOMETRIC METHODS OF WORKLOAD EVALUATION: PRESENT STATUS AND FUTURE POSSIBILITIES

Jackson Beatty *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 103-109 refs

Avail: NTIS HC A08/MF A01

The use of pupillometric measures in the evaluation of pilot workload is discussed. The innervation of the pupil is described with respect to its connections with brainstem activation systems. Modern methods for pupillometric measurement are described and a series of experiments describing pupillary response in a variety of information processing tasks is reviewed. K.L.

N80-14753# Dunlap and Associates, Inc., La Jolla, Calif.

AIRCREW PERFORMANCE RESEARCH OPPORTUNITIES USING THE AIR COMBAT MANEUVERING RANGE (ACMR)

Clyde A. Brictson and Anthony P. Ciavarelli *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 111-113 refs

(Contract N61339-77-C-0167)

Avail: NTIS HC A08/MF A01

Three years of aircrew performance measurement using the Navy's ACMR are presented as evidence of ACMR's research potential. Performance assessment methods used to evaluate pilot proficiency are described. The aircrew assessment methods are used to identify squadron performance differences, evaluate competitive exercises, and provide diagnostic training feedback to operational users. The use of continuously recorded quantitative measures from systems such as ACMR should stimulate more aircrew performance field research ideas. The availability of objective performance criteria promises to be of substantial benefit to both the operational user and the research community in such areas as pilot selection and training, fleet combat readiness, and pilot workload and stress. K.L.

N80-14754# Royal Air Force Inst. of Aviation Medicine, Farnborough (England).

SPEECH PATTERNS AND AIRCREW WORKLOAD

R. Cannings *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 115-127 refs

Avail: NTIS HC A08/MF A01

Research into the use of speech patterns for workload analysis is reviewed in terms of a simple speech production model. The applications of analysis techniques are considered. K.L.

N80-14755# National Aviation Facilities Experimental Center, Atlantic City, N. J.

AN EXPLORATORY STUDY OF PSYCHOPHYSIOLOGICAL MEASUREMENTS AS INDICATORS OF AIR TRAFFIC CONTROL SECTOR WORKLOAD

Richard E. McKenzie, Edward P. Buckley, and Kiriako Sarlanis *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 129-133 refs

Avail: NTIS HC A08/MF A01

The possibility of relating physiological measures to some aspects of the controller's task (ie. traffic density and the occurrence of aircraft conflicts) was explored. It was found that galvanic skin response changes in the subjects were more detectable using variations in measured amplitude as compared to frequency of galvanic skin response changes. K.L.

N80-14756# National Aviation Facilities Experimental Center, Atlantic City, N. J.

INDIVIDUAL AND SYSTEM PERFORMANCE INDICES FOR THE AIR TRAFFIC CONTROL SYSTEM

Edward P. Buckley, William F. OConnor, and Tom Beebe *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 135-136

Avail: NTIS HC A08/MF A01

The relationships between field air traffic controller performance indices and system performance measures were examined. Performance criteria developed within the controller's home facility where he controlled live traffic, and with a specially designed microsystem with simulated traffic were used. K.L.

N80-14757# Civil Aeromedical Inst., Oklahoma City, Okla. Aviation Physiology Lab.

WORKLOAD AND STRESS IN AIR TRAFFIC CONTROLLERS

Carl E. Melton *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 137-144 refs

Avail: NTIS HC A08/MF A01

Data collected at 14 air traffic control facilities regarding air traffic controller (ATCS) workload and urinary stress indicator hormone excretion is reviewed. The data show a significant relationship between objective workload measures (radio transmission time and traffic counts) and indexes of catecholamine excretion. Mean epinephrine excretion by ATCS's at six air traffic control towers, ranging from very low to very high traffic density, was significantly (R = 0.96) related to annual traffic counts at those towers. The sympatho-adrenomedullary axis that prepares the organism for fight or flight is applicable to ATCS's. The question of underload, optimum load, and overload is discussed. K.L.

N80-14758# School of Aerospace Medicine, Brooks AFB, Tex. Crew Technology Div.

ASSESSMENT CORRELATES OF WORKLOAD AND PERFORMANCE

Richard E. McKenzie *In* AGARD Surv. of Methods to Assess Workload Aug. 1979 p 145-161 refs

Avail: NTIS HC A08/MF A01

Psychological, physiological, stress, and central nervous system correlates of assessment that may help in measuring and assessing human workload and performance are reviewed. Psychophysiological monitoring of central nervous function is discussed. K.L.

N80-15778*# National Aeronautics and Space Administration, Washington, D. C.

INFLUENCE OF HYPOKINESIS ON PHYSIOLOGICAL FUNCTIONS IN FOWL

J. Nvota, D. Lamosova, D. Tesarova, V. Cierna, and P. Vyboh Dec. 1979 14 p refs Transl. into ENGLISH from Vet. Med. (Prague), v. 22, no. 7, 1977 p 425-432 Transl. by Kanner (Leo) Associates, Redwood City, Calif.

(Contract NASw-3199)

(NASA-TM-75999) Avail. NTIS HC A02/MF A01 CSCL 06B

The effects of hypokinesis and postincubation stress (which are characteristic for modern techniques of poultry cage keeping) on the endocrine functions, metabolic reactions, body weight growth and proteosynthesis in the muscle of cocks was investigated. The stress due to hypokinesis was observed in growing cocks housed in metallic cages in which they could hardly turn around. The findings obtained indicate that a 35-day hypokinesis did not exert any more significant influence both on physiological functions and body weight growth as well as on proteosynthesis in the muscle of cocks under study; however, it speeded up the protein metabolism in the muscle. The postincubation stress modified significantly the hypokinesis effect. Findings recorded in birds differed considerably from findings obtained in laboratory mammals, in which the hypokinesis induced significant changes in endocrine functions, body weight decrease and proteosynthesis disorders. A good tolerance of hypokinesis by fowl can be interpreted not only by the phylogenetic remoteness of the compared species but also by the domestication. R.E.S.

N80-15779*# National Aeronautics and Space Administration, Washington, D. C.
THE COURSE OF EXPERIMENTAL STAPHYLOCOCCUS INFECTION IN ALBINO MICE DURING ACTION OF CERTAIN FACTORS OF SPACE FLIGHT
V. Ya. Prokhorov, V. M. Shilov, and E. A. Borman Jan. 1980 8 p refs Transl. into ENGLISH from Zh. Mikrobiol., Epidemiol. i Immunol. (USSR), v. 47, no. 11, 1970 p 82-86 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75973) Avail: NTIS HC A02/MF A01 CSCL 06C

A study was made of the effect of certain factors of space flight, acceleration and hypokinesia, on the course of experimental staphylococcus infection in mice. Combined action of hypokinesia and acceleration caused a marked depression of the phagocytic activity of leukocytes and formation of a considerable amount of alpha toxin. Author

N80-15780*# National Aeronautics and Space Administration, Washington, D. C.
EVOKED POTENTIALS IN IMMOBILIZED CATS TO A COMBINATION OF CLICKS WITH PAINFUL ELECTROCUTANEOUS STIMULI
M. A. Gilinskiy and I. A. Korsakov Nov. 1979 18 p refs Transl. into ENGLISH from Zh. Vyssh. Nerv. Deyatel. (Moscow), v. 23, no. 4, 1973 p 855-863 Transl. by Scientific Translation Service, Box 5456, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75941) Avail: NTIS HC A02/MF A01 CSCL 06C

Averaged evoked potentials in the auditory, somatosensory, and motor cortical zones, as well as in the mesencephalic reticular formation were recorded in acute experiments on nonanesthetized, immobilized cats. Omission of the painful stimulus after a number of pairings resulted in the appearance of a delayed evoked potential, often resembling the late phases of the response to the painful stimulus. The characteristics of this response are discussed in comparison with conditioned changes of the sensory potential amplitudes. K.L.

N80-15781*# National Aeronautics and Space Administration, Washington, D. C.
ACTIVITY OF CHOLINESTERASES OF BLOOD AND HEART IN RATS OF DIFFERENT SEX AND AGE DURING MUSCULAR LOADS AND HYPOKINESIA
V. D. Rozanova and G. A. Antonova Dec. 1979 14 p refs Transl. into ENGLISH from Fiziolhk. Zh. SSSR (USSR), v. 64, no. 7, 1978 p 999-1003 Transl. by Scientific Translation Service, Box 5456, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75951) Avail: NTIS HC A02/MF A01 CSCL 06C

The activity of acetylcholinesterase (Ache) and butyrilcholinesterase (Bche) in the blood and the heart of 3 and 13 month old control male rats is considerably lower than in female rats. In 25 month old rats, no sex differences in the Ache and Bche were revealed in the heart. In 3 and 13 month old male and female rats, under conditions of muscular exercises, the Ache and Bche activity is lower, and in hypokinetic male rats -- higher than that in respective control animals. In all the rats, irrespective of sex, age, and motor conditions, Ache and Bche activity tended to decrease from the sinoatrial node to the heart apex. Author

N80-15782*# National Aeronautics and Space Administration, Washington, D. C.
RAT REACTION TO HYPOKINESIA AFTER PRIOR ADAPTATION TO HYPOXIA
Z. I. Barashova and O. I. Tarakanova Jan. 1980 13 p refs Transl. into ENGLISH from Fiziolhk. Zh. SSSR (USSR), v. 15, no. 3, 1974 p 434-439 Original language document previously announced as A74-31091 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75964) Avail: NTIS HC A02/MF A01 CSCL 06C

The effect of prior hypoxia adaptation on body tolerance to hypokinesia was investigated. Rats trained to a 50 day period of hypokinesia and hypoxia with a preliminary month of adaptation to hypoxia showed less weight loss, higher indices for red blood content, heightened reactivity of the overall organism and the central nervous system to acute hypoxia, and decreased modification of the skeletal muscles compared to rats subjected to hypokinesia alone. K.L.

N80-15783*# National Aeronautics and Space Administration, Washington, D. C.
STUDY ON THE NEURONAL CIRCUITS IMPLICATED IN POSTURAL TREMOR AND HYPOKINESIA
L. J. Poirier (Canadian Med. Res. Council), G. Bouvier (Canadian Med. Res. Council), P. Bedard (Canadian Med. Res. Council), R. Boucher (Canadian Med. Res. Council), L. Larochelle (Canadian Med. Res. Council), A. Oliver (Canadian Med. Res. Council), and P. Singh (Laval Univ.) Jan. 1980 43 p refs Transl. into ENGLISH from Rev. Neurol. (Paris), v. 120, no. 1, 1969 p 15-40 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76004) Avail: NTIS HC A03/MF A01 CSCL 06C

The effect of various tegmentary lesions at the level of the pontomesenchphalon in monkeys on motor function was observed. The importance of the monoaminergic mechanisms of the brainstem is discussed. The results also show the importance of the descending tegmentary rubral system and the rubroolivocerebellar circuit in controlling peripheral motor activity. The destruction of the sensory motor cortex proves to be a more effective way of eliminating spontaneous or harmaline induced tremor than the complete interruption of the pyramidal system on the level of the cerebral peduncle. Author

N80-15784# Argonne National Lab., Ill.
CHARGE SEPARATION IN SYNTHETIC PHOTO-REACTION CENTERS
J. J. Katz 1978 22 p refs Presented at the Workshop on Light-Induced Charge Separation at Interfaces in Biol. and Chem. Systems, West Berlin, 16 Oct. 1978
(Contract W-31-109-eng-38)
(CONF-781048-1) Avail: NTIS HC A02/MF A01

On the basis of electron paramagnetic resonance studies, there is good reason to suppose that the primary electron donor in plant and bacterial photo-reaction centers is a special pair of chlorophyll molecules. The donor-acceptor coordination interactions characteristics of chlorophyll are used to suggest a structure for the chlorophyll special pair. Chlorophyll special pairs with the suggested structure were prepared in the laboratory. These synthetic reaction centers mimic the essential features of P700 and P865 and provide a useful route to the study of electron transfer from in vivo photo-reaction centers. DOE

N80-15785# Rensselaer Polytechnic Inst., Troy, N. Y.
COMPARISON OF DIURNAL FLUCTUATIONS OF DISSOLVED INORGANIC CARBON AND ALGAL PRODUCTIVITY ESTIMATES IN AN OLIGOTROPHIC AND MESOTROPHIC FRESHWATER ENVIRONMENT
Paul A. Amodeo, Jr. and Nicholas L. Clesceri Jul. 1979 31 p refs
(Contract DI-14-34-0001-7172)
(PB-301201/0; OWRT-B-060-NY(1); W80-00002) Avail: NTIS HC A03/MF A01 CSCL 06C

Factors influencing the daily periodicity of algal carbon incorporation were investigated. Carbon, in the form of dissolved CO2, is proposed as a major limiting nutrient in both an oligotropic and mesotrophic environment. A relationship between diurnal fluctuations of dissolved inorganic and algal carbon uptake was demonstrated by use of carbon-14 as a radio-carbon tracer. A possible correlation of the above fluctuations with the excretion of organic matter by algae is proposed. Work was conducted at Gull Bay, Lake George, New York and Willsboro Bay, Lake Champlain, New York. GRA

N80-15786# Utah State Univ., Logan. Utah Water Research Lab.

WASTE STABILIZATION LAGOON MICROORGANISM REMOVAL EFFICIENCY AND EFFLUENT DISINFECTION WITH CHLORINE Final Report, Aug. 1975 - Aug. 1976
Bruce A. Johnson, Jeffrey L. Wight, David S. Bowles, James H. Reynolds, and E. Joe Middlebrooks Jul. 1979 386 p refs
(Contract EPA-68-03-2151)
(PB-300631/9; EPA-600/2-79-018) Avail: NTIS HC A17/MF A01

The project objectives are to evaluate: (1) the amenability of algae-laden lagoon effluent to chlorine disinfection; and (2) the performance of a multi-cell lagoon system in removing coliform bacteria by natural means without the need for disinfection. Results indicate that adequate disinfection was obtained with combined chlorine residual within a contact period of 60 minutes. Filtered effluent was found to exert less chlorine demand than unfiltered. Temperature, sulfide, and total chemical oxygen demand were the most important factors affecting the chlorine dose necessary to achieve a specified bacteriological quality. A mathematical model was developed for use in selecting the optimal chlorine dosages needed for achieving prescribed levels of disinfection. GRA

N80-15788*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
THE PHYSIOLOGICAL BASIS FOR SPACECRAFT ENVIRONMENTAL LIMITS
J. M. Waligora, comp. Washington Nov. 1979 229 p refs
(NASA-RP-1045; S-487) Avail: NTIS HC A11/MF A01 CSCL 06K

Limits for operational environments are discussed in terms of acceptable physiological changes. The environmental factors considered are pressure, contaminants, temperature, acceleration, noise, rf radiation, and weightlessness.

N80-15789*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
ATMOSPHERE
D. J. Horrigan *In its* The Physiol. Basis for Spacecraft Environ. Limits Nov. 1979 p 1-15 refs

Avail: NTIS HC A11/MF A01 CSCL 06K

The physiological basis of the limits established for atmospheric pressure as well as the partial pressures of oxygen, carbon dioxide, water vapor, and diluent gas are reviewed. K.L.

N80-15790*# Southwest Foundation for Research and Education, San Antonio, Tex.
CONTAMINANTS
H. L. Kaplan *In* NASA. Johnson Space Center The Physiol. Basis for Spacecraft Environ. Limits Nov. 1979 p 17-56 refs

Avail: NTIS HC A11/MF A01 CSCL 06K

Spacecraft contaminants, their sources, and their toxicological effects are summarized. The problems of identifying toxic hazards, establishing standards for their concentrations, and designing removal systems are discussed. K.L.

N80-15791*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
THERMAL ENVIRONMENT
J. M. Waligora *In its* The Physiol. Basis for Spacecraft Environ. Limits Nov. 1979 p 57-69 refs

Avail: NTIS HC A11/MF A01 CSCL 06K

The physiological effects, discomfort, and performance degradation associated with an imbalanced thermal environment are discussed. Temperature tolerance limits are set using thermoregulation models and experimental results. The effects of interacting environmental factors, individual variations, and exposure duration on tolerance limits are considered. K.L.

N80-15792*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
PHYSICAL FORCES GENERATING ACCELERATION, VIBRATION, AND IMPACT
J. M. Waligora *In its* The Physiol. Basis for Spacecraft Environ. Limits Nov. 1979 p 71-107 refs

Avail: NTIS HC A11/MF A01 CSCL 06K

The physiological effects of forces resulting in radial acceleration, sustained linear acceleration, impact, or vibration are identified. Tolerance limits are presented for these forces. K.L.

N80-15793*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
SOUND AND NOISE
J. L. Homick *In its* The Physiol. Basis for Spacecraft Environ. Limits Nov. 1979 p 109-147 refs

Avail: NTIS HC A11/MF A01 CSCL 06K

The effects of audible sound and noise, infrasound, and ultrasound on man are discussed. Those factors which have potential relevance to the space flight situation are emphasized. K.L.

N80-15794*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
RADIOFREQUENCY RADIATION
D. S. Nachtwey *In its* The Physiol. Basis for Spacecraft Environ. Limits Nov. 1979 p 149-167 refs

Avail: NTIS HC A11/MF A01 CSCL 06R

Sources, biophysical characteristics, and potential biological effects of rf radiation are described. Standards are given for exposure of spacecraft personnel to rf radiation. K.L.

N80-15795*# General Electric Co., Houston, Tex.
WEIGHTLESSNESS
D. J. Grounds *In* NASA. Johnson Space Center The Physiol. Basis for Spacecraft Environ. Limits Nov. 1979 p 169-185 refs
Avail: NTIS HC A11/MF A01 CSCL 06S

The general physiological effects of weightlessness are discussed with emphasis on the physiological effects that could limit mission durations in the absence of effective countermeasures. K.L.

N80-15796*# National Aeronautics and Space Administration, Washington, D. C.
JOINT SOVIET-AMERICAN EXPERIMENT ON HYPOKINESIA: EXPERIMENTAL RESULTS
N. N. Burovskiy Dec. 1979 320 p refs Transl. into ENGLISH of "Sovmestnyy Sovetsko-Amerikanskiy Eksperiment po Giopokinezii. Otchet. Rezul'taty Sovmestnogo Eksperiments", USSR Acad. of Sci. and Ministry of Health, Moscow, Oct. 1979 p 1-372 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76013) Avail: NTIS HC A14/MF A01 CSCL 06S

Comprehensive results are reported from the Soviet portion of a joint Soviet-American experiment involving hypokinesia. The main emphases are on chemical analyses of blood and urine, functional tests, and examination of the cardiovascular system by electrocardiography, echocardiography, and plethysmography. Author

N80-15797*# National Aeronautics and Space Administration, Washington, D. C.
RESULTS OF MEDICAL STUDIES DURING LONG-TERM MANNED FLIGHTS ON THE ORBITAL SALYUT-6 AND SOYUZ COMPLEX
A. D. Yegorov, comp. Nov. 1979 245 p refs Transl. into ENGLISH of "Rezultaty Meditsinskikh Issledovaniy vo Vremya Dlitel'nykh Pilotiruyemykh Polyetov na Orbital'nom Komplekse 'Salyut-6--Soyuz'", USSR Acad. of Sci., Inst. of Med. and Biol. Problems, Moscow, 1979 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76014) Avail: NTIS HC A11/MF A01 CSCL 06P

Results of tests made on the crews of the Salyut-6 and Soyuz complex are presented. The basic results of studies made before, during and after 96-day and 140-day flights are presented in 5 sections: characteristics of flight conditions in the orbital complex; the cardiovascular system; the motor sphere and vestibular analyzer; biochemical, hematologic and immunologic studies; and recovery measures in the readaptation period. Author

N80-15798*# National Aeronautics and Space Administration, Washington, D. C.
CHANGES OF SOME BLOOD INDICES AND MYOCARDIAL ELECTROLYTE CONTENT DURING HYPOKINESIA
B. M. Fedorov, V. P. Krotov, and Ye. N. Zhuravleva Nov. 1979 12 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), no. 6, Nov. - Dec. 1973 p 27-31 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75954) Avail: NTIS HC A02/MF A01 CSCL 06S

Using special hypokinetic cages, the volume changes of circulating blood, its hematocrit and protein content, volume ratios between extra- and intracellular liquids in the body, as well as electrolyte content in the blood and myocardium during hypokinesia were investigated experimentally in rabbits. R.E.S.

N80-15799*# National Aeronautics and Space Administration, Washington, D. C.
MECHANISM OF DISORDER OF PLASTIC PROCESSES IN TISSUE DURING PROLONGED HYPOKINESIA
G. A. Makarov Nov. 1979 11 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), no. 4, Jul. - Aug. 1974 p 41-45 Transl. by Scientific Translation Service, Box 5456, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75955) Avail: NTIS HC A02/MF A01 CSCL 06S

The subcellular structures of the myocardium, skeletal muscles, liver and kidneys of adult rats subjected to hypokinesia (in immobilization chambers) for 15, 30, and 45 days were studied. An anabolyser (retabolil) and vitamin D (a Ca metabolism regulator) were administered to two groups of rats. On the second week of hypokinesia, inhibition of synthesis processes was observed. Administration of retabolil increased protein synthesis both in the normal and hypokinesia-subjected rats; however, in the latter group, synthesis did not completely normalize, especially in the myocardium. Administration of vitamin D also stimulated protein synthesis, apparently by normalizing Ca tissue metabolism. The combined action of both preparations was the most effective in normalizing protein synthesis intensity. It was concluded that inhibition of synthesis is related to weakening of hormone synthesis induction and disorder of Ca metabolism. Author

N80-15800# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.
DAYTIME VISUAL ACUITY OF OBSERVERS THROUGH A WINDOW WITH AND WITHOUT BINOCULARS
Herschel C. Self and Steve A. Heckart Jul. 1979 23 p
(AF Proj. 7184)
(AD-A074722; AMRL-TR-79-23) Avail: NTIS HC A02/MF A01 CSCL 05/5

Visual acuity with and without hand-held M-19 7x50 binoculars was tested inside and outside the cab of a Master Surveillance Control Facility (MSCF) Tower. High, medium and low contrast 3 bar resolution test charts were used at a 400 foot distance. Except for low contrast bar patterns, where loss was not large, unaided eye visual acuity was not impaired by cab windows. With binoculars there was a statistically significant, though not large, window-caused loss of visual acuity for all contrasts. Even so, binocular visual acuity for high, medium and low contrast patterns was 5.6, 5.5, and 4.8 times, respectively, better than unaided eye acuity. Recommendations for the MSCF, based on this study, were made. A section of the report examines visual considerations in fence surveillance. GRA

N80-15801# IIT Research Inst., Chicago, Ill.
BIOLOGICAL EFFECTS OF HIGH-VOLTAGE ELECTRIC FIELDS, AN UPDATE. VOLUME 2: BIBLIOGRAPHY Final Report
Jul. 1979 268 p refs Sponsored by Elec. Power Res. Inst.
(EPRI Proj. 857-1)
(EPRI-EA-1123-Vol-2) Avail: NTIS HC A12/MF A01

Literature on the biological effects of power frequency electric fields are reviewed. The general findings of this update conclude that it is highly improbable that electric fields from transmission lines have significant biological effects on healthy individuals who encounter such fields in a normal way under ordinary conditions. However, further research is still needed in order to understand the nature and extent of any effects that could be harmful. DOE

N80-15802# California Univ., Berkeley. Lawrence Berkeley Lab.
SPECIAL SESSION ON VISION
F. S. Montalvo May 1979 13 p refs Presented at the ACM/SIGGraph 1979 Conf. on Computer Grahics and Interactive Techniques, Chicago, Aug. 1978
(Contract W-7405-eng-48)
(LBL-9160; CONF-780806-5) Avail: NTIS HC A02/MF A01

Some results of the visual structuring that occurs in the human visual system were demonstrated. It is shown why some features stand out instanteously and others do not. Knowledge of the human input device and its importance in structuring the design of effective computer output devices and displays is discussed. DOE

N80-15803# Gulf South Research Inst., New Orleans, La.
TOXIC POLYPEPTIDES AND UREMIA Final Progress Report, 1 Jun. 1978 - 31 May 1979
K. Ehrlich, E. Klein, F. F. Holland, Jr., and T. Turnham 2 Jul. 1979 47 p refs
(Contract N01-AM-8-2205)
(PB-301063/4; AK-1-8-2205F-79) Avail: NTIS HC A03/MF A01 CSCL 06C

Uremic serum ultrafiltrate was concentrated and fractionated on Bio-Gel P2 and Sephadex G15 columns. Sephadex fractions were tested for toxicity to human cells in culture. Fractions 1 and 2, containing peptide species with molecular weights greater than 700 daltons, inhibited 3H-thymidine uptake by HeLa and skin fibroblast cells more than the low molecular weight Sephadex material and an iso-osmolar control (saline). Fraction 2, containing molecules with molecular weights of angiotensin and vitamin B-12, inhibited 3H-thymidine incorporation the most (at 774 hours, the incorporation rate was only 2 percent of that of the control for one of the uremic ultrafiltrate concentrates). GRA

N80-15804# Bureau of Radiological Health, Rockville, Md. Div. of Electronic Products.
ELECTROMAGNETIC FIELDS IN BIOLOGICAL MEDIA. PART 2: THE SCAT PROGRAM, MULTILAYERED SPHERE, THEORY AND APPLICATIONS Final Report
Stanley M. Neuder Aug. 1979 30 p refs
(PB-300904/0; DHEW/PUB/FDA-79/8072;
FDA/BRH-79/114) Avail: NTIS HC A02/MF A01 CSCL 06R

The theory and applications of a computer program, SCAT, for calculating the scattering and power absorption of radiofrequency and microwave radiation by spherical lossy dielectric bodies exposed to linearly polarized plane wave fields are described. The irradiated body may be a homogeneous sphere or multilayered, spherically concentric regions of arbitrary radii. Each region can be made to simulate biological tissue by assigning the appropriate dielectric properties. Induced fields and absorbed power density within these regions may then be calculated for preselected irradiation frequencies. Several applications of the SCAT program are described and associated computer plots are presented and discussed. GRA

N80-15805# Research Triangle Inst., Durham, N. C.
BIOLOGICAL SCREENING OF COMPLEX SAMPLES FROM INDUSTRIAL/ENERGY PROCESSES Progress Report, Sep. 1978 - Jul. 1979
Aug. 1979 24 p refs

(Contract EPA-68-02-2688)
(PB-300459/5: EPA-600/8-79-021) Avail: NTIS HC A02/MF A01 CSCL 06T

A biological screening program for complex samples from industrial and energy processes is described. Program elements and their application to various complex environmental samples are summarized. Results from the application of this program show that it is effective for screening complex mixtures. The data formating procedures used to report results from a diversity of biological tests in a meaningful way are also described. GRA

N80-15806# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).
SLEEP, WAKEFULNESS AND CIRCADIAN RHYTHM
Sep. 1979 283 p refs Lectures held in London, 1-2 Oct. 1979, in Paris, 4-5 Oct. 1979, and in Toronto, 9-10 Oct. 1979
(AGARD-LS-105; ISBN-92-835-0249-3) Avail: NTIS HC A13/MF A01

Papers concerning the physiological and psychological aspects of sleep, and the adaptation of man to disturbed sleep are presented. The management of irregular rest and activity is also discussed.

N80-15807# Centre National de la Recherche Scientifique, Paris (France). Lab. de Physiologie.
CIRCADIAN AND CIRCANNUAL RHYTHMS IN HEALTHY ADULTS
Alain Reinberg *In* AGARD Sleep, Wakefulness and Circadian Rhythm Sep 1979 13 p refs

Avail: NTIS HC A13/MF A01

Physiological processes in any living organism including man are not constant as a function of time: regular and predictable variations with period, tau, of about 24 hours (circadian), about 1 year (circannual) etc. can be detected. Each rhythm can be characterized by estimating such parameters as: acrophase theta (crest time), amplitude A and mesor M (rhythm adjusted mean). The estimation of tau, theta, A and M of a set of variables under specified experimental conditions enable the visualization of an aspect of the temporal organization (or biologic time structure). Aims of chronobiology are to quantify and investigate mechanisms of biological time structures. Biological rhythms and the related temporal organization are genetic in origin. However, one or several rhythm parameters may be influenced by cyclical variations of environmental factors (synchronizers or Zeitgeber). The latter has practical implications since phase shifts of synchronizers may occur with transmeridian flights, night-working and shift-working. Chronobiology also involves the study of rhythmic changes in endocrine activities (chronoendocrinology) and in drugs effects (chronopharmacology) F.O.S.

N80-15808# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Bonn (West Germany). Inst. fuer Flugmedizin.
CIRCADIAN RHYTHMS OF HUMAN PERFORMANCE AND RESISTANCE: OPERATIONAL ASPECTS
Karl E. Klein and Hans-M. Wegmann *In* AGARD Sleep, Wakefulness and Circadian Rhythm Sep 1979 17 p refs
Also presented at the 4th Ann. Sci. Meeting of the Aerospace Med. Assoc., Bal Harbour, Fla., 13 May 1976

Avail: NTIS HC A13/MF A01

Circadian rhythmicity of mental and physical efficiency, and resistance to noxious hazards are reviewed. The interaction with internal and operational factors and implications are given for the management of human operations. The significance of the biorhythm concept for the prediction of human behavior, and the occurrence of man-related accidents are discussed. F.O.S.

N80-15809# Montefiore Hospital, New York. Dept. of Neurology.
SLEEP STAGE ORGANIZATION: NEURO ENDOCRINE RELATIONS
Elliot D. Weitzman *In* AGARD Sleep, Wakefulness and Circadian Rhythm Sep. 1979 9 p refs

Avail: NTIS HC A13/MF A01

The circadian and shorter term episodic patterns of hormone systems are discussed. These include ACTH-cortisol; growth hormone (GH); prolactin; and the gonadotrophins, luteinizing hormone (LH); and follicle stimulation hormone (FSH). F.O.S.

N80-15810# Naval Health Research Center, San Diego, Calif.
SLEEP DISTURBANCES IN HUMANS
Laverne C. Johnson *In* AGARD Sleep, Wakefulness and Circadian Rhythm Sep. 1979 16 p refs

Avail: NTIS HC A13/MF A01

Disturbed sleep results in feelings of fatigue and, usually, in impaired performance regardless of whether the disturbed sleep is due to excessive noise or a chronic sleep disorder. In addition to noise, some other environmental factors that disturb sleep are temperature, unscheduled operational demands that fragment sleep time, rotating shift-work schedules, and operational requirements that result in air travel across several time zones. While appropriate attention to sleep logistics may minimize the environmental causes of disturbed sleep, resolution of the disturbed sleep of those with sleep disorders is more difficult. The focus in sleep disorders must be on the individual. The major sleep complaint is insomnia, not enough sleep, usually due to prolonged sleep latency. A more serious medical problem, however, may be the complaint of excessive daytime sleep or hypersomnia. Most patients with complaints of hypersomnia are usually diagnosed as having narcolepsy or sleep apnea. Relative to narcolepsy, sleep apnea (episodes of respiratory arrest during sleep) has only recently received attention. In addition to a sleep problem, sleep apneic patients may have hypertension and/or cardiac arrhythmia. F.O.S.

N80-15811# Centre de Recherches du Service de Sante des Armees, Lyons (France).
VIGILANCE AND ATTENTION
M. Defayolle *In* AGARD Sleep, Wakefulness, and Circadian Rhythm Sep. 1979 13 p refs

Avail: NTIS HC A13/MF A01

The relations between vigilance and attention are considered using computer, psychological and physiological techniques. After considering the different types of available measures, the factors influencing attention are reviewed. The characteristics of signals, the environmental conditions, the individual features and the possible interactions between these factors are then studied. The various theories are reviewed and a mathematical model is proposed which integrates activation, the use of processing ability and filtering, taking into consideration the data relative to the environment and to motivation. In conclusion, different methods are proposed from ergonomical, psychological and pharmacological viewpoints. F.O.S.

N80-15812# School of Aerospace Medicine, Brooks AFB, Tex. Crew Technology Div.
BIOCHEMICAL INDICES OF STRESS: BIOCHEMICAL ASPECTS OF THE STRESS RESPONSE
Bryce O. Hartman and James P. Ellis *In* AGARD Sleep, Wakefulness and Circadian Rhythm Sep 1979 32 p refs

Avail: NTIS HC A13/MF A01

The release of hormones in response to acute flight stresses was investigated in fighter pilots. The biochemical indices discussed include: hormones, hormone precursors, hormone metabolites, nonhormone metabolites, and enzymes of hormone formation/production. Abstracts and operational applications of previously published reports are presented. F.O.S.

N80-15813# Montefiore Hospital, New York. Human Chronophysiology Lab.
BIOLOGICAL RHYTHMS OF MAN LIVING IN ISOLATION FROM TIME CUES
Elliot D. Weitzman, Charles A. Czeisler, and Martin C. MooreEde *In* AGARD Sleep, Wakefulness and Circadian Rhythm Sep 1979 9 p refs Prepared in cooperation with Harvard Med. School
Avail: NTIS HC A13/MF A01

The results are presented of prolonged measurements of sleep-waking functions in human subjects for periods of 25 to 105 calendar days in an environment free of all time cues. It was found that the biological rhythms of human beings free-run at periods greater than 24 hours, typically at approximately 25 hours. During free-running, the sleep to total time ratio remains constant, approximately .30. F.O.S.

N80-15814# Naval Health Research Center, San Diego, Calif.
SLEEP DISTURBANCE AND PERFORMANCE
Laverne C. Johnson *In* AGARD Sleep, Wakefulness and Circadian Rhythm Sep. 1979 15 p refs

Avail: NTIS HC A13/MF A01

While the type of sleep obtained does not appear to be an important factor in performance, the time of day the sleep is obtained and when the performance occurs are very important. Time-of-day effects are a more crucial factor in performance than the preceding sleep patterns. The effect of total sleep loss becomes pronounced after 48 to 60 hours, consistent performance decrement following reduced sleep or fragmented sleep was not found. Feelings of fatigue, however, are a consistent finding in all sleep-loss studies. A significant relation between sleep quality (good vs. poor sleep) and performance is not easily found. The deleterious effect of hypersomnia, especially that due to narcolepsy is discussed. F.O.S.

N80-15815# Centre National de la Recherche Scientifique, Paris (France). Lab. de Physiologie.
TOLERANCE TO SHIFT WORK: A CHRONOLOGIC APPROACH
Alain Reinberg *In* AGARD Sleep, Wakefulness and Circadian Rhythm Sep. 1979 11 p refs

Avail: NTIS HC A13/MF A01

The hypotheses was tested of possible relationships between the amplitude A of the circadian rhythm of oral temperature on the speed of adjustment during shift work, and tolerance to shift work. Study 1 involved 25 oil refinery operators. A negative correlation (r = -0.63; P less than 0.01) was found between the mean A and the acrophase shift delta O resulting from the first night-shift: the larger the A, the smaller the delta O. Study 2 involved 23 steel industry workers and 25 chemical industry workers with either good or poor tolerance to shift work. Tolerance was evaluated conventionally according to 3 types of complaints: digestive troubles, persistant fatigue, sleep alterations. Circadian A of oral temperature is larger in subjects who tolerate to shift work than in intolerant subjects. The study 3 involved 29 oil refinery operators and was designed to retest both hypothesis, their complementarity and to take different age groups into account. Good tolerance to shift work, over many years, appears to be associated with a large circadian amplitude and a slow adjustment during night-shifts (small delta O). F.O.S.

N80-15816# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Bonn (West Germany). Inst. fuer Flugmedizin.
CIRCADIAN RHYTHMS IN AIR OPERATIONS
Karl E. Klein and Hans-M. Wegmann *In* AGARD Sleep, Wakefulness and Circadian Rhythm Sep. 1979 25 p refs

Avail: NTIS HC A13/MF A01

After a brief introduction into the principles of environmental and biological timing systems, the phenomenology of post-transmeridian de- and re-synchronization of circadian rhythms is presented, its control and modification through external and internal factors described, and the consequences for human efficiency and health discussed. There are conclusions drawn as to possible relief measures, formulas and models which define the physiological processes, and predict work loads occurring in transmeridian flight operations. Finally, the incorporation of circadian rhythm aspects into Rest/Duty Regulations is described. Author

N80-15817# Centre de Recherches du Service de Sante des Armees, Lyons (France).
PSYCHOSTIMULANTS
M. Defayolle *In* AGARD Sleep, Wakefulness and Circadian Rhythm Sep. 1979 12 p refs

Avail: NTIS HC A13/MF A01

The state-of-the-art of psychostimulants is reviewed, and a brief historical and geographical survey are presented. The basic neurochemical data on vigilance are considered and the various systems of mediators involved in synaptic conduction are differentiated. The methodology of therapeutic tests on psychotropes is then discussed. The effects induced by the use of the various types of drugs: noo-analeptics, nootropes, thymo-analeptics and metabolic adjuvants are considered. These data are incorporated into a general model of vigilance including the data handling capacity and filtering concepts. The indications and contraindications in the use of psychostimulants are presented. F.O.S.

N80-15818# Royal Air Force Inst. of Aviation Medicine, Farnborough (England).
HYPNOTICS AND THE MANAGEMENT OF DISTURBED SLEEP
A. N. Nicholson, R. G. Borland, and Barbara M. Stone *In* AGARD Sleep, Wakefulness and Circadian Rhythm Sep. 1979 11 p refs
Avail: NTIS HC A13/MF A01

The effects of hypnotics on visuo-motor performance are discussed. The hypnotics studied include barbiturates, benzodiazepines, diazepam and its hyroxylated metabolites, and nordiazem. The effects of hypnotics on sleep are also discussed. F.O.S.

N80-15819# School of Aerospace Medicine, Brooks AFB, Tex. Crew Technology Div.
MANAGEMENT OF IRREGULAR REST AND ACTIVITY
Bryce O. Hartman *In* AGARD Sleep, Wakefulness and Circadian Rhythm Sep. 1979 13 p refs

Avail: NTIS HC A13/MF A01

Biomedical aspects of the irregularity of air operations are discussed in terms of the requirements of aircrews to work without regards for the clock. In practice, operational managers consider the crew limitations and develop workable compromises between these limitations and mission requirements. That variables that must be considered are listed. Data collected from airlift missions are analyzed along with tactical operations. Sleep and the work-rest cycle during missions are discussed. F.O.S.

N80-15820# Los Alamos Scientific Lab., N. Mex.
MENTAL DYNAMICS
F. H. Harlow Jul. 1979 22 p
(Contract W-7405-eng-36)
(LA-7946-MS) Avail: NTIS HC A02/MF A01

The nonphysical life activity within an organism is described mathematically by means of a basic formulation to which numerous variations and embellishments are appended as required. The fundamental principle of overall activity normalization is presented and discussed in terms of its practical and philosophical consequences. Discrimination is introduced as a necessary complement to intelligence and creativity in the structure of genius. Future directions for development are described in terms of both deterministic and stochastic analysis for the organism as an isolated unit, as a member of society, and as an interacting element of the natural universe. DOE

N80-15821*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
SOME HUMAN FACTORS ISSUES IN THE DEVELOPMENT AND EVALUATION OF COCKPIT ALERTING AND WARNING SYSTEMS

Robert J. Randle, Jr., William E. Larsen, and Douglas H. Williams Washington Jan. 1980 65 p refs
(NASA-RP-1055; A-7696) Avail: NTIS HC A04/MF A01 CSCL 05H

A set of general guidelines for evaluating a newly developed cockpit alerting and warning system in terms of human factors issues are provided. Although the discussion centers around a general methodology, it is made specifically to the issues involved in alerting systems. An overall statement of the current operational problem is presented. Human factors problems with reference to existing alerting and warning systems are described. The methodology for proceeding through system development to system test is discussed. The differences between traditional human factors laboratory evaluations and those required for evaluation of complex man-machine systems under development are emphasized. Performance evaluation in the alerting and warning subsystem using a hypothetical sample system is explained. R.C.T.

N80-15822*# National Aeronautics and Space Administration, Washington, D. C.
MODEL TASK FOR THE DYNAMICS OF AN UNDERWATER TWO-LEGGED WALKER
V. V. Beletskiy, V. V. Golubkov, and Ye. A. Stepanova Nov. 1979 49 p refs Transl. into ENGLISH of "Modelnaya Zadacha Dinamiki Podovnoy Dvunogoy Khodby", Rept. Preprint-42 Acad. of Sci. USSR, Inst. of Appl. Math., Moscow, 1979 p 1-58 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75697; Preprint-42) Avail: NTIS HC A03/MF A01 CSCL 05H

A model task of two-legged underwater walking was examined. Characteristics of the walking were established. The underwater walking device is a substantial sphere, which moves on dual-member legs. The dynamics of the device were investigated with the calculation of the buoyancy of Archimedes, and the force of hydrodynamic resistance. R.E.S.

N80-15823# Perceptronics, Inc., Woodland Hills, Calif.
MAN-MACHINE COMMUNICATION IN COMPUTER-AIDED REMOTE MANIPULATION Progress Report, 2 Feb. 1978 - 1 Feb. 1979
William H. Crooks, Efraim Shaket, Yee-Yeen Chu, and Yoram Alperovitch Mar. 1979 167 p refs
(Contract N00014-76-C-0603)
(AD-A074566; PATR-1034-79-3) Avail: NTIS HC A08/MF A01 CSCL 05/8

Automated Remote Manipulation is a prime example of a new type of man-machine interaction in which the human operator must supervise and control a complex and often adaptive man-computer system. Computerized control offers the possibilities of improved performance times and reduced operator workloads with teleoperator systems. Computers can be used at various levels of control, ranging from control augmentation, where the computer performs difficult coordinate transformations which simplify operator control requirements, through complete autonomy in which the computer performs all of the required activities with no intervention by the operator. However, with the introduction of computer-based control techniques, the communication between the operator and the teleoperator becomes an important determinant of work system performance. Rather than controlling directly every action of the manipulator, the operator of a computer-controlled manipulator plans the tasks, commands goal-directed actions, monitors task performance, and intervenes when appropriate. This report describes an analytical and experimental study to investigate the effectiveness of command language structures and the methods for providing feedback information through the use of sensors and displays. GRA

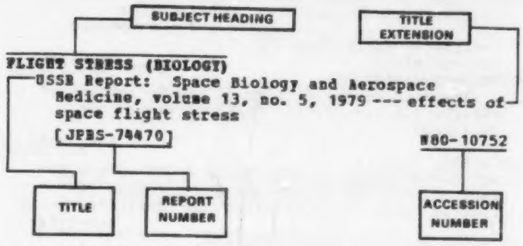
N80-15824# Massachusetts Inst. of Tech., Cambridge. Marine Industry Advisory Services.
TELEOPERATORS UNDER THE SEA
Norman Doelling 1 Jul. 1979 26 p refs
(PB-299883/9; MITSG-79-15; Opportunity-Brief-14; NOAA-79080909; Index-79-715-MOT) Avail: NTIS HC A03/MF A01 CSCL 13J

Research projects being carried out to design, develop, test and extend the capabilities of undersea vehicles are described. The projects relate primarily to untethered, unmanned vehicles, in part because such vehicles offer the greatest challenge and in - part because solution to the difficult problems associated with such systems will have useful applications in tethered and/or manned systems now being developed, built, and used. GRA

SUBJECT INDEX

AEROSPACE MEDICINE AND BIOLOGY */A Continuing Bibliography (Suppl. 205)* APRIL 1980

Typical Subject Index Listing


SUBJECT HEADING
TITLE EXTENSION
FLIGHT STRESS (BIOLOGY)
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979 --- effects of space flight stress
[JPRS-74470]
N80-10752
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABILITIES
Ability, involvement and climate as multiple and interactive predictors of performance
[AD-A068891] N80-14706
Methodological and conceptual issues in understanding ability-performance relationships
[AD-A068894] N80-14708

ABIOGENESIS
A mathematical model of the disruption of mirror symmetry in prebiological evolution
A80-20680

ABSTRACTS
Cellular effects: Millimeter waves and Raman spectra - Report of a panel discussion
A80-21031

ACCELERATION STRESSES (PHYSIOLOGY)
Physical forces generating acceleration, vibration, and impact --- physiological effects
N80-15792

ACCELERATION TOLERANCE
Bone remodeling in centrifuged rats - Histomorphometric study after an 18-day run
A80-20450
Physical forces generating acceleration, vibration, and impact --- physiological effects
N80-15792

ACCIDENT PREVENTION
Motor Vehicle Manufacturers Association (MVMA) Two-Dimensional Crash Victim Simulation tutorial system: Self-study guide
[PB-299256/8] N80-14723
Motor Vehicle Manufacturers Association (MVMA) Two-Dimensional Crash Victim Simulation tutorial system: Audio-visual program
[PB-299257/6] N80-14724
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 1
[PB-299305/3] N80-14725
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 2
[PB-299306/1] N80-14726
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 3
[PB-299307/9] N80-14727

ACETYL COMPOUNDS
The effect of locally applied organophosphates on miosis and acetylcholinesterase adaptation to chronic treatment
N80-14731

ACOUSTIC IMPEDANCE
Static acoustic impedance profiles in auditory diagnosis
[ASME PAPER 79-WA/BIO-1] A80-18643

ACTIVATED SLUDGE
Health effects of aerosols emitted from an activated sludge plant
[PB-299583/5] N80-14696

ACTIVATION (BIOLOGY)
Effect of hypogravity on human lymphocyte activation
A80-20446

ADAPTATION
Rat reaction to hypokinesia after prior adaptation to hypoxia
[NASA-TM-75964] N80-15782

AEROSOLS
Health effects of aerosols emitted from an activated sludge plant
[PB-299583/5] N80-14696

AEROSPACE ENVIRONMENTS
The course of experimental staphylococcus infection in albino mice during action of certain factors of space flight
[NASA-TM-75973] N80-15779

AEROSPACE MEDICINE
Scientific biomedical studies during the flight of the first Bulgarian cosmonaut
A80-19100
Space motion sickness
A80-20018
Exercise response to simulated weightlessness
A80-20019
A study of metabolic balance in crewmembers of Skylab IV
A80-20021
Amino aciduria in weightlessness
A80-20022
Fluid volumes changes induced by spaceflight
A80-20023
A sudden-stop vestibulovisual test for rapid assessment of motion sickness manifestations
A80-20444
Motion sickness. I - A theory. II - A clinical study based on surgery of cerebral hemisphere lesions. III - A clinical study based on surgery of posterior fossa tumors
A80-20452
Perspectives of the utilization of hyperbaric oxygenation in aviation medicine
A80-20500
Steady magnetic fields in noninvasive electromagnetic flowmetry
A80-21033
The effect of certain extremal factors on the human auditory function
A80-21038
The effect of aircraft noise on the functional state of human operators
A80-21039
The effect of age and vitamin provision of pilots on their night vision characteristics
A80-21040
Biology and medicine in space: Research opportunities offered by Spacelab. An invitation to European investigators
[ESA-BR-01] N80-14677
Recent advances in Aeronautical and Space Medicine
[AGARD-CP-265] N80-14678
Problems related to medical criteria for the selection of military navigation personnel
N80-14679
An advanced oxygen system for future combat aircraft
N80-14680

The European approach to the selection and training of SL payload specialists
N80-14681

Physiological factors in space operations. Emphasis on space shuttle
N80-14682

Supersonic aerial transport: Medical and physiological aspects --- Concorde aircraft
N80-14683

Maintenance of air operations while under attack with chemical agents --- protective clothing
[AGARD-CP-264-SUPPL] N80-14728

Consideration of pyridostigmine as a prophylactic agent for aircrew
N80-14730

Integration of protection against chemical warfare agents with aircrew personal equipment
N80-14738

The course of experimental staphylococcus infection in albino mice during action of certain factors of space flight
[NASA-TM-75973] N80-15779

Results of medical studies during long-term manned flights on the orbital Salyut-6 and Soyuz complex
[NASA-TM-76014] N80-15797

AEROSPACE TECHNOLOGY TRANSFER

Technologies for the handicapped and the aged
[NASA-TM-80842] N80-14715

AFFERENT NERVOUS SYSTEMS

Deiters-nucleus potentials evoked by stimulation of the neural elements of bones and musculo-cutaneous nerves in animals with the cerebrum and cerebellum removed
A80-20682

AGE FACTOR

The effect of age and vitamin provision of pilots on their night vision characteristics
A80-21040

AGING (BIOLOGY)

Review of cell aging in Drosophila and mouse
A80-17741

AGRICULTURAL AIRCRAFT

Heat stress exposure of aerial spray pilots
A80-20451

AIR QUALITY

Contaminants --- physiological effects of spacecraft contaminants
N80-15790

AIR TRAFFIC CONTROLLERS (PERSONNEL)

An exploratory study of psychophysiological measurements as indicators of air traffic control sector workload
N80-14755

Individual and system performance indices for the air traffic control system
N80-14756

Workload and stress in air traffic controllers
N80-14757

AIR TRANSPORTATION

Circadian rhythms in air operations
N80-15816

AIRCRAFT ACCIDENTS

Some human factors issues in the development and evaluation of cockpit alerting and warning systems
[NASA-RP-1055] N80-15821

AIRCRAFT INSTRUMENTS

Preliminary investigation of pilot scanning techniques of dial pointing instruments
[NASA-TM-80079] N80-14697

AIRCRAFT LANDING

When day is done and shadows fall, we miss the airport most of all --- visual accommodation and aircraft flight safety
A80-19024

AIRCRAFT NOISE

The effect of aircraft noise on the functional state of human operators
A80-21039

AIRCRAFT PERFORMANCE

Handling qualities, workload and heart rate
N80-14750

AIRCRAFT PILOTS

The effect of age and vitamin provision of pilots on their night vision characteristics
A80-21040

Problems related to medical criteria for the selection of military navigation personnel
N80-14679

Concerning individual equipment for fighter pilots in the Air Force
N80-14735

AIRPORTS

Approaches to CW agent area detection systems for airfields
N80-14733

ALERTNESS

Vigilance and attention
N80-15811

ALGAE

Comparison of diurnal fluctuations of dissolved inorganic carbon and algal productivity estimates in an oligotrophic and mesotrophic freshwater environment
[PB-301201/0] N80-15785

ALPHANUMERIC CHARACTERS

The effect of character size on the legibility of numeric displays during vertical whole-body vibration
A80-18839

AMINO ACIDS

Quantitative study of free amino acids in human eccrine sweat excreted from the forearms of healthy trained and untrained men during exercise
A80-17727

Amino aciduria in weightlessness
A80-20022

A mathematical model of the disruption of mirror symmetry in prebiological evolution
A80-20680

The informational structure of DNA, RNA, and amino acid sequences
A80-20856

ANEMIAS

Development of 'sports anemia' in physically fit men after daily sustained submaximal exercise
A80-20448

ANTHROPOMETRY

Anthropometric sizing, fit-testing and evaluation of the MBU-12/P oral-nasal oxygen mask
[AD-A074723] N80-14692

Design criteria for characterizing individuals in the extreme upper and lower body size ranges
[AD-A072353] N80-14721

ANTICHOLINERGICS

The effects of acute and chronic low dose exposure to anticholinesterases
N80-14729

Consideration of pyridostigmine as a prophylactic agent for aircrew
N80-14730

ANTIDOTES

Therapy on nerve agent poisoning
N80-14732

ANTISEPTICS

Waste stabilization lagoon microorganism removal efficiency and effluent disinfection with chlorine
[PB-300631/9] N80-15786

ARMED FORCES (FOREIGN)

Concerning individual equipment for fighter pilots in the Air Force
N80-14735

FRG aircrew chemical defence assemblies
N80-14737

ARMED FORCES (UNITED STATES)

Serum cholesterol levels in selected Air Force cadets compared with levels in the West Point study
A80-20442

Philosophy of protection of US aircrews against chemical warfare agents
N80-14734

US aircrew chemical defense assemblies
N80-14736

ARTERIES

The effects of hypodynamia and hypokinesia on the arterial bed of pelvic limb muscles in the rabbit
[NASA-TM-75984] N80-14673

ASTRONAUT PERFORMANCE

Psychophysiological monitoring of operator's emotional stress in aviation and astronautics
A80-20449

ATHLETES

Practical criteria for analyzing the heart hemodynamics of young athletes
A80-20212

ATTENTION
Vigilance and attention
N80-15811
AUDIOMETRY
Static acoustic impedance profiles in auditory diagnosis
[ASME PAPER 79-WA/BIO-1] A80-18643
AUDITORY PERCEPTION
The microwave auditory phenomenon
A80-21024
The effect of certain extremal factors on the human auditory function
A80-21038

B

BACKGROUND NOISE
A nonparametric model of detection of signals, observed by a human operator on a CRT screen in the presence of noise
A80-19452
BACTERIA
Proton movements in response to a light-driven electrogenic pump for sodium ions in Halobacterium halobium membranes
A80-17686
Investigation of effects of temperature, salinity, and electrode design on the performance of an electrochemical coliform detector
[NASA-TM-80130] N80-14676
Charge separation in synthetic photo-reaction centers
[CONF-781048-1] N80-15784
BED REST
Exercise response to simulated weightlessness
A80-20019
Joint Soviet-American experiment on hypokinesia: Experimental results
[NASA-TM-76013] N80-15796
BEHAVIOR
Influence of hypokinesis on physiological functions in fowl
[NASA-TM-75999] N80-15778
BIBLIOGRAPHIES
Biological effects of high-voltage electric fields, an update. Volume 2: Bibliography
[EPRI-EA-1123-VOL-2] N80-15801
BINOCULAR VISION
Nonlinear interactions in binocular vision
A80-20859
BINOCULARS
Daytime visual acuity of observers through a window with and without binoculars
[AD-A074722] N80-15800
BIOASSAY
Biological screening of complex samples from industrial/energy processes
[PB-300459/5] N80-15805
BIOASTRONAUTICS
Study of fungal phenotypes after exposure to space flight parameters
A80-17986
Space motion sickness
A80-20018
A mathematical and experimental simulation of the hematological response to weightlessness
A80-20020
A study of metabolic balance in crewmembers of Skylab IV
A80-20021
Amino aciduria in weightlessness
A80-20022
Fluid volumes changes induced by spaceflight
A80-20023
BIOCHEMISTRY
Proton movements in response to a light-driven electrogenic pump for sodium ions in Halobacterium halobium membranes
A80-17686
The interaction of ozone with the human erythrocyte --- biological effects of photochemical oxidants
N80-14686
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes
[NASA-CR-162537] N80-14689
Joint Soviet-American experiment on hypokinesia: Experimental results
[NASA-TM-76013] N80-15796
Biochemical indices of stress: Biochemical aspects of the stress response
N80-15812
Psychostimulants
N80-15817
BIOCONTROL SYSTEMS
Interpreting nonlinear systems - The third order kernel of the eye movement control system
A80-20860
BIODYNAMICS
Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, University of Pittsburgh, Pittsburgh, Pa., April 25-27, 1979. Part 1 - Biomedical
A80-20855
Measurement of resistive torques in major human joints
[AD-A071170] N80-14695
Modeling biodynamic effects of vibration, fifth year
[AD-A073819] N80-14719
Model task for the dynamics of an underwater two-legged walker
[NASA-TM-75697] N80-15822
BIOELECTRICITY
Relationship among the 55 Hz bioelectric rhythm of the olfactory bulb, the bulb S-rhythm, and respiration
A80-20211
RF-field interactions with biological systems - Electrical properties and biophysical mechanisms
A80-21030
BIOENGINEERING
Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, University of Pittsburgh, Pittsburgh, Pa., April 25-27, 1979. Part 1 - Biomedical
A80-20855
A controlled rate freeze/thaw system for cryopreservation of biological materials
[NASA-CR-162531] N80-14675
Measurement of resistive torques in major human joints
[AD-A071170] N80-14695
Technologies for the handicapped and the aged
[NASA-TM-80842] N80-14715
BIOINSTRUMENTATION
Steady magnetic fields in noninvasive electromagnetic flowmetry
A80-21033
BIOLOGICAL EFFECTS
Hypergravity and estrogen effects on avian anterior pituitary growth hormone and prolactin levels
A80-20447
State of the knowledge for electromagnetic absorbed dose in man and animals
A80-21019
Microwave biological effects - An overview
A80-21021
Microwave cataractogenesis
A80-21022
Microwave irradiation and the blood-brain barrier
A80-21023
Soviet and Eastern European research on biological effects of microwave radiation
A80-21027
Biological effects of electric and magnetic fields associated with ELF communications systems
A80-21029
Frequency and power windowing in tissue interactions with weak electromagnetic fields
A80-21032
Physiological factors in space operations. Emphasis on space shuttle
N80-14682
The interaction of ozone with the human erythrocyte --- biological effects of photochemical oxidants
N80-14686
Biological effects of high-voltage electric fields, an update. Volume 2: Bibliography
[EPRI-EA-1123-VOL-2] N80-15801
BIOLOGICAL EVOLUTION
A mathematical model of the disruption of mirror symmetry in prebiological evolution
A80-20680
BIOMEDICAL DATA
Scientific biomedical studies during the flight of the first Bulgarian cosmonaut
A80-19100

Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, University of Pittsburgh, Pittsburgh, Pa., April 25-27, 1979. Part 1 - Biomedical
A80-20855
Study on the neuronal circuits implicated in postural tremor and hypokinesia
[NASA-TM-76008] N80-15783

BIONICS
Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, University of Pittsburgh, Pittsburgh, Pa., April 25-27, 1979. Part 1 - Biomedical
A80-20855
Nonlinear interactions in binocular vision
A80-20859
Interpreting nonlinear systems - The third order kernel of the eye movement control system
A80-20860
Modeling biodynamic effects of vibration, fifth year
[AD-A073819] N80-14719
Electromagnetic fields in biological media. Part 2: The SCAT program, multilayered sphere, theory and applications
[PB-300904/0] N80-15804

BIOPHYSICS
Spatial filtering and mechanisms of perception --- in human vision
A80-20858

BIOSYNTHESIS
Information processes in the evolution of protein synthesis
A80-20857
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes
[NASA-CR-162537] N80-14689

BIOTECHNOLOGY
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes
[NASA-CR-162537] N80-14689

BIVARIATE ANALYSIS
Confidence regions of planar cardiac vectors
A80-19850

BLOOD
Dialysis system --- using ion exchange resin membranes permeable to urea molecules
[NASA-CASE-NPO-14101-1] N80-14687
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes
[NASA-CR-162537] N80-14689
Activity of cholinesterases of blood and heart in rats of different sex and age during muscular loads and hypokinesia
[NASA-TM-75951] N80-15781

BLOOD CIRCULATION
Physiological regulation of oxygen transport to muscles /from results of mathematical analysis of experimental data/
A80-18081
Modeling of blood flow in vessels of the microcirculation
N80-14685

BLOOD FLOW
Steady magnetic fields in noninvasive electromagnetic flowmetry
A80-21033
Modeling of blood flow in vessels of the microcirculation
N80-14685
Effect of prolonged hypokinesia on tissue blood flow
[NASA-TM-76005] N80-14688

BLOOD VOLUME
Fluid volumes changes induced by spaceflight
A80-20023

BODY FLUIDS
Fluid volumes changes induced by spaceflight
A80-20023
Changes of some blood indices and myocardial electrolyte content during hypokinesia
[NASA-TM-75954] N80-15798

BODY SIZE (BIOLOGY)
Design criteria for characterizing individuals in the extreme upper and lower body size ranges
[AD-A072353] N80-14721

BODY TEMPERATURE
Body temperature and heart rate relationships during submaximal bicycle ergometer exercises
A80-17728
Temperature compensation of the metabolism of serotonin in the brain of hibernating mammals
A80-18082
Tolerance to shift work: A chronologic approach
N80-15815

BONES
Bone remodeling in centrifuged rats - Histomorphometric study after an 18-day run
A80-20450

BRAIN
Temperature compensation of the metabolism of serotonin in the brain of hibernating mammals
A80-18082
Effect of rhythmic photostimulation on monkeys with hyperkinesis of post-encephalitic genesis
[NASA-TM-75986] N80-14674
Brain waves and the enhancement of pilot performance
N80-14751

BRAIN CIRCULATION
Microwave irradiation and the blood-brain barrier
A80-21023

BRAIN DAMAGE
Motion sickness. I - A theory. II - A clinical study based on surgery of cerebral hemisphere lesions. III - A clinical study based on surgery of posterior fossa tumors
A80-20452

BREATHING APPARATUS
An advanced oxygen system for future combat aircraft
N80-14680

C

CABIN ATMOSPHERES
Philosophy of protection of US aircrews against chemical warfare agents
N80-14734
Atmosphere --- physiological basis for spacecraft pressure tolerance limits
N80-15789
Contaminants --- physiological effects of spacecraft contaminants
N80-15790

CALCIFEROL
Effect of 1 alpha-hydroxy-cholecalciferol and varying phosphorous content in the diet on calcium phosphorous metabolism in hypokinetic rats
A80-20445

CALCIUM METABOLISM
A study of metabolic balance in crewmembers of Skylab IV
A80-20021
Effect of 1 alpha-hydroxy-cholecalciferol and varying phosphorous content in the diet on calcium phosphorous metabolism in hypokinetic rats
A80-20445
Hormonal regulation of calcium and phosphorus homeostasis during physical activity
A80-20684
Mechanism of disorder of plastic processes in tissue during prolonged hypokinesia
[NASA-TM-75955] N80-15799

CAPILLARIES (ANATOMY)
Modeling of blood flow in vessels of the microcirculation
N80-14685

CARBAMATES (TRADENAME)
Consideration of pyridostigmine as a prophylactic agent for aircrew
N80-14730

CARBON
Comparison of diurnal fluctuations of dissolved inorganic carbon and algal productivity estimates in an oligotrophic and mesotrophic freshwater environment
[PB-301201/0] N80-15785

CARBON DIOXIDE REMOVAL
Regenerative CO2 removal for PLSS application
[NASA-CR-160419] N80-14718

CARDIAC VENTRICLES
Left ventricular relaxation and filling pattern in different forms of left ventricular hypertrophy - An echocardiographic study
A80-18975

CARDIOLOGY
Confidence regions of planer cardiac vectors
A80-19850
Practical criteria for analyzing the heart hemodynamics of young athletes
A80-20212

CARDIOVASCULAR SYSTEM
Joint Soviet-American experiment on hypokinesia: Experimental results
[NASA-TM-76013] N80-15796

CATARACTS
Microwave cataractogenesis
A80-21022

CELLS (BIOLOGY)
Review of cell aging in Drosophila and mouse
A80-17741
Study of fungal phenotypes after exposure to space flight parameters
A80-17986
Effect of hypoxia on the contractile activity of smooth muscle cells in the thoracic duct
A80-20683
Cellular effects: Millimeter waves and Raman spectra - Report of a panel discussion
A80-21031

CENTRIFUGING STRESS
Bone remodeling in centrifuged rats - Histomorphometric study after an 18-day run
A80-20450

CEREBRAL CORTEX
Visual cortical neurons - Are bars or gratings the optimal stimuli
A80-17711
Motion sickness. I - A theory. II - A clinical study based on surgery of cerebral hemisphere lesions. III - A clinical study based on surgery of posterior fossa tumors
A80-20452

CHEMICAL ENERGY
Energy uptake in the first step of visual excitation
A80-20387

CHEMICAL WARFARE
Maintenance of air operations while under attack with chemical agents --- protective clothing
[AGARD-CP-264-SUPPL] N80-14728
Consideration of pyridostigmine as a prophylactic agent for aircrew
N80-14730
Approaches to CW agent area detection systems for airfields
N80-14733
Philosophy of protection of US aircrews against chemical warfare agents
N80-14734
Concerning individual equipment for fighter pilots in the Air Force
N80-14735
US aircrew chemical defense assemblies
N80-14736
FRG aircrew chemical defence assemblies
N80-14737
Integration of protection against chemical warfare agents with aircrew personal equipment
N80-14738

CHLORINATION
Waste stabilization lagoon microorganism removal efficiency and effluent disinfection with chlorine
[PB-300631/9] N80-15786

CHLOROPHYLLS
Charge separation in synthetic photo-reaction centers
[CONF-781048-1] N80-15784

CHOLESTEROL
Serum cholesterol levels in selected Air Force cadets compared with levels in the West Point study
A80-20442

CHOLINERGICS
Therapy on nerve agent poisoning
N80-14732

CHOLINESTERASE
The effects of acute and chronic low dose exposure to anticholinesterases
N80-14729
The effect of locally applied organophosphates on miosis and acetylcholinesterase adaptation to chronic treatment
N80-14731
Therapy on nerve agent poisoning
N80-14732
Activity of cholinesterases of blood and heart in rats of different sex and age during muscular loads and hypokinesia
[NASA-TM-75951] N80-15781

CHRONOLOGY
Circadian and circannual rhythms in healthy adults
N80-15807

CIRCADIAN RHYTHMS
Sleep, Wakefulness and Circadian Rhythm
[AGARD-LS-105] N80-15806
Circadian and circannual rhythms in healthy adults
N80-15807
Circadian rhythms of human performance and resistance: Operational aspects
N80-15808
Sleep stage organization: Neuro endocrine relations
N80-15809
Tolerance to shift work: A chronologic approach
N80-15815
Circadian rhythms in air operations
N80-15816
Management of irregular rest and activity
N80-15819

CLOSED ECOLOGICAL SYSTEMS
Study of fungal phenotypes after exposure to space flight parameters
A80-17986
Biological systems for human life support: Review of the research in the USSR
[NASA-TM-76018] N80-14717

COCKPITS
Heat stress exposure of aerial spray pilots
A80-20451

COGNITIVE PSYCHOLOGY
Combined effects of broadband noise and complex waveform vibration on cognitive performance
A80-20441

COLD ACCLIMATIZATION
Temperature compensation of the metabolism of serotonin in the brain of hibernating mammals
A80-18082

COLD TOLERANCE
Thermal environment --- physiological basis for temperature tolerance limits
N80-15791

COLOR VISION
Theoretical problems in modeling color grating detection --- in human vision
A80-20861

COMBAT
Aircrew performance research opportunities using the Air Combat Maneuvering Range (ACMR)
N80-14753

COMPLEX SYSTEMS
Mathematical concepts for modeling human behavior in complex man-machine systems
A80-19025

COMPUTER GRAPHICS
Real-time simulation of FLIR and LLLTV Systems for aircrew training
A80-20899
Special session on vision
[LBL-9160] N80-15802

COMPUTER PROGRAMS
Modeling biodynamic effects of vibration, fifth year
[AD-A073819] N80-14719
Electromagnetic fields in biological media. Part 2: The SCAT program, multilayered sphere, theory and applications
[PB-300904/0] N80-15804

COMPUTERIZED SIMULATION
A mathematical and experimental simulation of the hematological response to weightlessness
A80-20020
Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, University of Pittsburgh, Pittsburgh, Pa., April 25-27, 1979. Part 1 - Biomedical
A80-20855
Time simulation of an air surveillance task with varying amounts of radar information
[AD-A074866] N80-14722
Motor Vehicle Manufacturers Association (MVMA) Two-Dimensional Crash Victim Simulation tutorial system: Self-study guide
[PB-299256/8] N80-14723

Motor Vehicle Manufacturers Association (MVMA) Two-Dimensional Crash Victim Simulation tutorial system: Audio-visual program
[PB-299257/6] N80-14724
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 1
[PB-299305/3] N80-14725
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 2
[PB-299306/1] N80-14726
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 3
[PB-299307/9] N80-14727

CONCORDE AIRCRAFT
Supersonic aerial transport: Medical and physiological aspects --- Concorde aircraft
N80-14683

CONFERENCES
Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, University of Pittsburgh, Pittsburgh, Pa., April 25-27, 1979. Part 1 - Biomedical
A80-20855

CONFIDENCE LIMITS
Confidence regions of planar cardiac vectors
A80-19850

CONGRESSIONAL REPORTS
Technologies for the handicapped and the aged
[NASA-TM-80842] N80-14715

CORRELATION
Assessment correlates of workload and performance
N80-14758

CRITERIA
Problems related to medical criteria for the selection of military navigation personnel
N80-14679

CRYOGENICS
A controlled rate freeze/thaw system for cryopreservation of biological materials
[NASA-CR-162531] N80-14675

CYTOLOGY
Proton movements in response to a light-driven electrogenic pump for sodium ions in Halobacterium halobium membranes
A80-17686

D

DECISION MAKING
Are important weights sensitive to the range of alternatives in multiattribute utility measurement
[AD-A073366] N80-14701

DECISION THEORY
Subjective versus statistical importance weights. A criterion validation
[AD-A073367] N80-14702

DEOXYRIBONUCLEIC ACID
The informational structure of DNA, RNA, and amino acid sequences
A80-20856
Information processes in the evolution of protein synthesis
A80-20857

DESIGN ANALYSIS
Investigation of effects of temperature, salinity, and electrode design on the performance of an electrochemical coliform detector
[NASA-TM-80130] N80-14676

DIAGNOSIS
Static acoustic impedance profiles in auditory diagnosis
[ASME PAPER 79-WA/BIO-1] A80-18643

DIALYSIS
Dialysis system --- using ion exchange resin membranes permeable to urea molecules
[NASA-CASE-NPO-14101-1] N80-14687

DIETS
Effect of 1 alpha-hydroxy-cholecalciferol and varying phosphorous content in the diet on calcium phosphorous metabolism in hypokinetic rats
A80-20445

DIFFERENTIATION (BIOLOGY)
Micromorphology of neurohypophysis of rats under experimental conditions
[NASA-TM-75947] N80-14671

DISEASES
Toxic polypeptides and uremia
[PB-301063/4] N80-15803

DISPLAY DEVICES
The effect of character size on the legibility of numeric displays during vertical whole-body vibration
A80-18839
Real-time simulation of FLIR and LLLTV Systems for aircrew training
A80-20899
Effect of peripherally presented visual signals on pilot performance during flight simulation
[AD-A073604] N80-14703

DIURNAL VARIATIONS
Comparison of diurnal fluctuations of dissolved inorganic carbon and algal productivity estimates in an oligotrophic and mesotrophic freshwater environment
[PB-301201/0] N80-15785

DOSIMETERS
Electromagnetic dosimetry for models of humans and animals - A review of theoretical and numerical techniques
A80-21020

DROSOPHILA
Review of cell aging in Drosophila and mouse
A80-17741

E

EARDRUMS
Eustachian tube function in selection of airmen
A80-20443

ECHOCARDIOGRAPHY
Left ventricular relaxation and filling pattern in different forms of left ventricular hypertrophy - An echocardiographic study
A80-18975

EDUCATION
The European approach to the selection and training of SL payload specialists
N80-14681

EFFERENT NERVOUS SYSTEMS
RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization
[NASA-TM-75983] N80-14672

EFFLUENTS
Biological screening of complex samples from industrial/energy processes
[PB-300459/5] N80-15805

ELECTRIC FIELDS
Biological effects of high-voltage electric fields, an update. Volume 2: Bibliography
[EPRI-EA-1123-VOL-2] N80-15801

ELECTRIC POWER TRANSMISSION
Biological effects of high-voltage electric fields, an update. Volume 2: Bibliography
[EPRI-EA-1123-VOL-2] N80-15801

ELECTRIC STIMULI
Evoked potentials in immobilized cats to a combination of clicks with painful electrocutaneous stimuli
[NASA-TM-75941] N80-15780

ELECTROCARDIOGRAPHY
Polycardiographic research with a single-channel electrocardiograph
A80-20213

ELECTROMAGNETIC ABSORPTION
State of the knowledge for electromagnetic absorbed dose in man and animals
A80-21019
Electromagnetic dosimetry for models of humans and animals - A review of theoretical and numerical techniques
A80-21020

ELECTROMAGNETIC FIELDS
Occupational exposure to radio-frequency electromagnetic fields
A80-21017
Electromagnetic fields in biological media. Part 2: The SCAT program, multilayered sphere, theory and applications
[PB-300904/0] N80-15804

ELECTROMAGNETIC MEASUREMENT
Steady magnetic fields in noninvasive electromagnetic flowmetry
A80-21033

ELECTROMAGNETIC RADIATION
Electromagnetic radiation from selected telecommunications systems
A80-21018
Biological effects of electric and magnetic fields associated with ELF communications systems
A80-21029
Frequency and power windowing in tissue interactions with weak electromagnetic fields
A80-21032
ELECTROPHYSIOLOGY
The microwave auditory phenomenon
A80-21024
Brain waves and the enhancement of pilot performance
N80-14751
EMOTIONAL FACTORS
Some considerations concerning methods to evaluate and assess workload in aircraft pilots
N80-14743
ENDOCRINE SECRETIONS
Advances in microwave-induced neuroendocrine effects - The concept of stress
A80-21025
ENDOCRINE SYSTEMS
Sleep stage organization: Neuro endocrine relations
N80-15809
ENERGY CONSUMPTION
Energy uptake in the first step of visual excitation
A80-20387
ENVIRONMENT EFFECTS
Sleep disturbances in humans
N80-15810
ENVIRONMENT PROTECTION
Biological screening of complex samples from industrial/energy processes
[PB-300459/5] N80-15805
ENVIRONMENTAL TESTS
Microbial colonization of materials at Innisfail, Queensland
[MRL-TN-428] N80-14670
ENZYME ACTIVITY
Therapy on nerve agent poisoning
N80-14732
EPIDEMIOLOGY
Epidemiologic studies of microwave effects
A80-21026
EQUATIONS OF MOTION
Kinematic analysis of osmotic processes under non-equilibrium conditions
N80-14669
ERGOMETERS
Body temperature and heart rate relationships during submaximal bicycle ergometer exercises
A80-17728
ERROR ANALYSIS
Validation and error in multiplicative utility functions
[AD-A073362] N80-14698
ERYTHROCYTES
A mathematical and experimental simulation of the hematological response to weightlessness
A80-20020
Development of 'sports anemia' in physically fit men after daily sustained submaximal exercise
A80-20448
A controlled rate freeze/thaw system for cryopreservation of biological materials
[NASA-CR-162531] N80-14675
The interaction of ozone with the human erythrocyte --- biological effects of photochemical oxidants
N80-14686
ESTROGENS
Hypergravity and estrogen effects on avian anterior pituitary growth hormone and prolactin levels
A80-20447
EUROPEAN SPACE PROGRAMS
Biology and medicine in space: Research opportunities offered by Spacelab. An invitation to European investigators
[ESA-BR-01] N80-14677
EUSTACHIAN TUBES
Eustachian tube function in selection of airmen
A80-20443
EVOKED RESPONSE (PSYCHOPHYSIOLOGY)
Deiters-nucleus potentials evoked by stimulation of the neural elements of bones and musculo-cutaneous nerves in animals with the cerebrum and cerebellum removed
A80-20682
Evoked potentials in immobilized cats to a combination of clicks with painful electrocutaneous stimuli
[NASA-TM-75941] N80-15780
EXCRETION
Amino aciduria in weightlessness
A80-20022
EXOBIOLOGY
Recent advances in Aeronautical and Space Medicine
[AGARD-CP-265] N80-14678
Simulation of physiological systems in order to evaluate and predict the human condition in a space flight
[NASA-TM-76016] N80-14716
Biological systems for human life support: Review of the research in the USSR
[NASA-TM-76018] N80-14717
EXPOSURE
Maintenance of air operations while under attack with chemical agents --- protective clothing
[AGARD-CP-264-SUPPL] N80-14728
The effects of acute and chronic low dose exposure to anticholinesterases
N80-14729
The effect of locally applied organophosphates on miosis and acetylcholinesterase adaptation to chronic treatment
N80-14731
EXTRAVEHICULAR ACTIVITY
Regenerative CO2 removal for PLSS application
[NASA-CR-160419] N80-14718
EXTREMELY LOW RADIO FREQUENCIES
Biological effects of electric and magnetic fields associated with ELF communications systems
A80-21029
EYE (ANATOMY)
Special session on vision
[LBL-9160] N80-15802
EYE MOVEMENTS
Interpreting nonlinear systems - The third order kernel of the eye movement control system
A80-20860
The effect of certain extremal factors on the human auditory function
A80-21038

F

FATIGUE (BIOLOGY)
Evaluation of human strain during interrupted exposure to vibration
A80-17726
Sleep disturbance and performance
N80-15814
FEMALES
A consideration of factors contributing to strength differences in men and women
[AD-A072671] N80-14694
FIGHTER AIRCRAFT
An advanced oxygen system for future combat aircraft
N80-14680
FLIGHT CLOTHING
Concerning individual equipment for fighter pilots in the Air Force
N80-14735
US aircrew chemical defense assemblies
N80-14736
FRG aircrew chemical defence assemblies
N80-14737
Integration of protection against chemical warfare agents with aircrew personal equipment
N80-14738
FLIGHT CREWS
Sleep and body rhythm disturbance in long-range aviation. The problem and a search for relief
N80-14714
Consideration of pyridostigmine as a prophylactic agent for aircrew
N80-14730
Philosophy of protection of US aircrews against chemical warfare agents
N80-14734

Aircrew workload assessment techniques --- human factors engineering study of performance of flight crews workloads
N80-14746
Aircrew performance research opportunities using the Air Combat Maneuvering Range (ACMR)
N80-14753
Speech patterns and aircrew workload
N80-14754
Management of irregular rest and activity
N80-15819

FLIGHT FATIGUE
Survey of methods to assess workload
[AGARD-AG-246] N80-14739
Concepts of fatigue --- survey of studies on pilot performance and flight fatigue discussed in terms of physiological and psychological stress
N80-14741
Concepts of stress
N80-14742
Physiologic aspects of workload/fatigue/stress
N80-14744
Some insights relative to the man-machine system: An overview of ten years of research
N80-14745

FLIGHT FITNESS
Recent advances in Aeronautical and Space Medicine
[AGARD-CP-265] N80-14678
Problems related to medical criteria for the selection of military navigation personnel
N80-14679
The European approach to the selection and training of SL payload specialists
N80-14681

FLIGHT OPERATIONS
Some considerations concerning methods to evaluate and assess workload in aircraft pilots
N80-14743
Workload assessment methodology development
N80-14747

FLIGHT SAFETY
When day is done and shadows fall, we miss the airport most of all --- visual accommodation and aircraft flight safety
A80-19024

FLIGHT SIMULATION
A new engineering approach to motion cueing technology --- for flight simulation
[AIAA PAPER 80-0047] A80-18250

FLIGHT SIMULATORS
Proficiency maintenance and assessment in an instrument flight simulator
A80-19023
Real-time simulation of FLIR and LLLTV Systems for aircrew training
A80-20899

FLIGHT STRESS (BIOLOGY)
Supersonic aerial transport: Medical and physiological aspects --- Concorde aircraft
N80-14683
Survey of methods to assess workload
[AGARD-AG-246] N80-14739
Concepts of stress
N80-14742
Some considerations concerning methods to evaluate and assess workload in aircraft pilots
N80-14743
Physiologic aspects of workload/fatigue/stress
N80-14744
Biochemical indices of stress: Biochemical aspects of the stress response
N80-15812

FLIGHT TRAINING
Proficiency maintenance and assessment in an instrument flight simulator
A80-19023

FLIR DETECTORS
Real-time simulation of FLIR and LLLTV Systems for aircrew training
A80-20899

FLOWMETERS
Steady magnetic fields in noninvasive electromagnetic flowmetry
A80-21033

FLUOROCARBONS
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes
[NASA-CR-162537] N80-14689

FLYING PERSONNEL
Problems related to medical criteria for the selection of military navigation personnel
N80-14679

FOREARM
Quantitative study of free amino acids in human eccrine sweat excreted from the forearms of healthy trained and untrained men during exercise
A80-17727

FOURIER TRANSFORMATION
Spatial filtering and mechanisms of perception --- in human vision
A80-20858

FREQUENCY RESPONSE
Static acoustic impedance profiles in auditory diagnosis
[ASME PAPER 79-WA/BIO-1] A80-18643

FUNGI
Study of fungal phenotypes after exposure to space flight parameters
A80-17986

G

GAS DETECTORS
Approaches to CW agent area detection systems for airfields
N80-14733

GENETIC CODE
The informational structure of DNA, RNA, and amino acid sequences
A80-20856
Information processes in the evolution of protein synthesis
A80-20857

GERMANY
FRG aircrew chemical defence assemblies
N80-14737

GLAUCOMA
Intra-ocular pressure normalization technique and equipment
[NASA-CASE-LEW-12955-1] N80-14684

GRAVITATIONAL EFFECTS
Effect of hypogravity on human lymphocyte activation
A80-20446
Hypergravity and estrogen effects on avian anterior pituitary growth hormone and prolactin levels
A80-20447

GROUP DYNAMICS
A criterion validation of multiattribute utility analysis and of a group communication strategy
[AD-A073364] N80-14699
Extended analysis of small group performance and the effects of contingency management in a programmed environment
[AD-A068665] N80-14705

GROWTH
Hypergravity and estrogen effects on avian anterior pituitary growth hormone and prolactin levels
A80-20447
Microbial colonization of materials at Innisfail, Queensland
[MRL-TN-428] N80-14670

H

HEALTH PHYSICS
Electromagnetic dosimetry for models of humans and animals - A review of theoretical and numerical techniques
A80-21020
Microwave biological effects - An overview
A80-21021
Microwave cataractogenesis
A80-21022
Soviet and Eastern European research on biological effects of microwave radiation
A80-21027
Study of effects of long-term low-level rf exposure on rats - A plan
A80-21028
Cellular effects: Millimeter waves and Raman spectra - Report of a panel discussion
A80-21031

HEARING
Derivation of presbycusis and Noise Induced Permanent Threshold Shift (NIPTS) to be used for the basis of a standard on the effects of noise on hearing
[AD-A071310] N80-14690

HEART
Activity of cholinesterases of blood and heart in rats of different sex and age during muscular loads and hypokinesia
[NASA-TM-75951] N80-15781

HEART DISEASES
Left ventricular relaxation and filling pattern in different forms of left ventricular hypertrophy - An echocardiographic study
A80-18975

HEART RATE
Body temperature and heart rate relationships during submaximal bicycle ergometer exercises
A80-17728
Handling qualities, workload and heart rate
N80-14750

HEAT MEASUREMENT
Energy uptake in the first step of visual excitation
A80-20387

HEAT TOLERANCE
Three instruments for assessment of WBGT and a comparison with WGT (BOTSBALL)
[AD-A074979] N80-14691
Thermal environment --- physiological basis for temperature tolerance limits
N80-15791

HEMATOCRIT RATIO
Development of 'sports anemia' in physically fit men after daily sustained submaximal exercise
A80-20448

HEMATOLOGY
A mathematical and experimental simulation of the hematological response to weightlessness
A80-20020
The interaction of ozone with the human erythrocyte --- biological effects of photochemical oxidants
N80-14686

HEMODYNAMIC RESPONSES
A mathematical and experimental simulation of the hematological response to weightlessness
A80-20020

HEMODYNAMICS
Practical criteria for analyzing the heart hemodynamics of young athletes
A80-20212
Effect of prolonged hypokinesia on tissue blood flow
[NASA-TM-76005] N80-14688
Changes of some blood indices and myocardial electrolyte content during hypokinesia
[NASA-TM-75954] N80-15798

HEMOGLOBIN
Development of 'sports anemia' in physically fit men after daily sustained submaximal exercise
A80-20448

HIBERNATION
Temperature compensation of the metabolism of serotonin in the brain of hibernating mammals
A80-18082

HIGH GRAVITY ENVIRONMENTS
Hypergravity and estrogen effects on avian anterior pituitary growth hormone and prolactin levels
A80-20447

HISTOLOGY
Bone remodeling in centrifuged rats - Histomorphometric study after an 18-day run
A80-20450

HOMEOSTASIS
Hormonal regulation of calcium and phosphorus homeostasis during physical activity
A80-20684

HORMONE METABOLISMS
Hormonal regulation of calcium and phosphorus homeostasis during physical activity
A80-20684

HORMONES
Biochemical indices of stress: Biochemical aspects of the stress response
N80-15812

HUMAN BEHAVIOR
Mathematical concepts for modeling human behavior in complex man-machine systems
A80-19025
A study in procedural manipulation of locus of control
[AD-A068658] N80-14704
Rule learning and systematic instruction in pilot training
[AD-A068906] N80-14709
Rating errors of inconsistency as a function of dimensionality of behavioral anchors
[AD-A068922] N80-14710
A mind/brain/matter model consistent with quantum physics and UFO phenomena
[AD-A068988] N80-14711

HUMAN BEINGS
State of the knowledge for electromagnetic absorbed dose in man and animals
A80-21019
Circadian and circannual rhythms in healthy adults
N80-15807

HUMAN BODY
Quantitative study of free amino acids in human eccrine sweat excreted from the forearms of healthy trained and untrained men during exercise
A80-17727
The interaction of ozone with the human erythrocyte --- biological effects of photochemical oxidants
N80-14686
Design criteria for characterizing individuals in the extreme upper and lower body size ranges
[AD-A072353] N80-14721

HUMAN FACTORS ENGINEERING
The effect of character size on the legibility of numeric displays during vertical whole-body vibration
A80-18839
When day is done and shadows fall, we miss the airport most of all --- visual accommodation and aircraft flight safety
A80-19024
Mathematical concepts for modeling human behavior in complex man-machine systems
A80-19025
Three instruments for assessment of WBGT and a comparison with WGT (BOTSBALL)
[AD-A074979] N80-14691
Anthropometric sizing, fit-testing and evaluation of the MBU-12/P oral-nasal oxygen mask
[AD-A074723] N80-14692
Importance weight assessment for additive, riskless preference functions: A review
[AD-A073365] N80-14700
Effect of peripherally presented visual signals on pilot performance during flight simulation
[AD-A073604] N80-14703
Extended analysis of small group performance and the effects of contingency management in a programmed environment
[AD-A068665] N80-14705
Ability, involvement and climate as multiple and interactive predictors of performance
[AD-A068891] N80-14706
Methodological and conceptual issues in understanding ability-performance relationships
[AD-A068894] N80-14708
Rule learning and systematic instruction in pilot training
[AD-A068906] N80-14709
Technologies for the handicapped and the aged
[NASA-TM-80842] N80-14715
Methods for evaluating the physical and effort requirements of Navy tasks: Metabolic, performance, and physical ability correlates of perceived effort
[AD-A072497] N80-14720
FRG aircrew chemical defence assemblies
N80-14737
Integration of protection against chemical warfare agents with aircrew personal equipment
N80-14738
Aircrew workload assessment techniques --- human factors engineering study of performance of flight crews workloads
N80-14746
Quantitative military workload analysis
N80-14748
Visual performance: A method to assess workload in the flight environment
N80-14749
Handling qualities, workload and heart rate
N80-14750

Daytime visual acuity of observers through a window with and without binoculars [AD-A074722] N80-15800
Some human factors issues in the development and evaluation of cockpit alerting and warning systems [NASA-RP-1055] N80-15821

HUMAN PERFORMANCE
The effect of certain extremal factors on the human auditory function A80-21038
The effect of aircraft noise on the functional state of human operators A80-21039
Extended analysis of small group performance and the effects of contingency management in a programmed environment [AD-A068665] N80-14705
Ability, involvement and climate as multiple and interactive predictors of performance [AD-A068891] N80-14706
Work performance as a function of the interaction of ability, work values, and the perceived work environment [AD-A068893] N80-14707
Methodological and conceptual issues in understanding ability-performance relationships [AD-A068894] N80-14708
Rating errors of inconsistency as a function of dimensionality of behavioral anchors [AD-A068922] N80-14710
Sleep and body rhythm disturbance in long-range aviation. The problem and a search for relief N80-14714
Methods for evaluating the physical and effort requirements of Navy tasks: Metabolic, performance, and physical ability correlates of perceived effort [AD-A072497] N80-14720
Individual and system performance indices for the air traffic control system N80-14756
Assessment correlates of workload and performance N80-14758
Circadian rhythms of human performance and resistance: Operational aspects N80-15808
Sleep disturbance and performance N80-15814
Circadian rhythms in air operations N80-15816
Hypnotics and the management of disturbed sleep N80-15818

HUMAN REACTIONS
Biological rhythms of man living in isolation from time cues N80-15813

HUMAN TOLERANCES
The physiological basis for spacecraft environmental limits [NASA-RP-1045] N80-15788
Atmosphere --- physiological basis for spacecraft pressure tolerance limits N80-15789
Sound and noise --- in spacecraft N80-15793
Radiofrequency radiation --- spacecraft environmental limits N80-15794

HYDROCARBONS
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes [NASA-CR-162537] N80-14689

HYPERBARIC CHAMBERS
Perspectives of the utilization of hyperbaric oxygenation in aviation medicine A80-20500

HYPODYNAMIA
RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization [NASA-TM-75983] N80-14672
The effects of hypodynamia and hypokinesia on the arterial bed of pelvic limb muscles in the rabbit [NASA-TM-75984] N80-14673

HYPOKINESIA
Effect of 1 alpha-hydroxy-cholecalciferol and varying phosphorous content in the diet on calcium phosphorous metabolism in hypokinetic rats A80-20445
The effect of certain extremal factors on the human auditory function A80-21038
The effects of hypodynamia and hypokinesia on the arterial bed of pelvic limb muscles in the rabbit [NASA-TM-75984] N80-14673
Effect of prolonged hypokinesia on tissue blood flow [NASA-TM-76005] N80-14688
Influence of hypokinesis on physiological functions in fowl [NASA-TM-75999] N80-15778
Rat reaction to hypokinesia after prior adaptation to hypoxia [NASA-TM-75964] N80-15782
Study on the neuronal circuits implicated in postural tremor and hypokinesia [NASA-TM-76004] N80-15783
Joint Soviet-American experiment on hypokinesia: Experimental results [NASA-TM-76013] N80-15796
Changes of some blood indices and myocardial electrolyte content during hypokinesia [NASA-TM-75954] N80-15798
Mechanism of disorder of plastic processes in tissue during prolonged hypokinesia [NASA-TM-75955] N80-15799

HYPOXIA
Effect of hypoxia on the contractile activity of smooth muscle cells in the thoracic duct A80-20683
Rat reaction to hypokinesia after prior adaptation to hypoxia [NASA-TM-75964] N80-15782

HYSTERESIS
Nonlinear interactions in binocular vision A80-20859

I

IMAGE CONTRAST
Theoretical problems in modeling color grating detection --- in human vision A80-20861

IMMUNOLOGY
The course of experimental staphylococcus infection in albino mice during action of certain factors of space flight [NASA-TM-75973] N80-15779

IMPACT RESISTANCE
Physical forces generating acceleration, vibration, and impact --- physiological effects N80-15792

INDICATING INSTRUMENTS
Preliminary investigation of pilot scanning techniques of dial pointing instruments [NASA-TM-80079] N80-14697

INDUSTRIAL SAFETY
Occupational exposure to radio-frequency electromagnetic fields A80-21017

INFECTIOUS DISEASES
The course of experimental staphylococcus infection in albino mice during action of certain factors of space flight [NASA-TM-75973] N80-15779

INFERENCE
Subjective versus statistical importance weights. A criterion validation [AD-A073367] N80-14702

INSOMNIA
Sleep disturbances in humans N80-15810

INTRAOCULAR PRESSURE
Intra-ocular pressure normalization technique and equipment [NASA-CASE-LEW-12955-1] N80-14684

ION EXCHANGE RESINS
Dialysis system --- using ion exchange resin membranes permeable to urea molecules [NASA-CASE-NPO-14101-1] N80-14687

- **ION PUMPS**
  - Proton movements in response to a light-driven electrogenic pump for sodium ions in Halobacterium halobium membranes A80-17686
- **ION SELECTIVE ELECTRODES**
  - Investigation of effects of temperature, salinity, and electrode design on the performance of an electrochemical coliform detector [NASA-TM-80130] N80-14676
- **IONIZING RADIATION**
  - Early transient incapacitation: A review with consideration of underlying mechanisms [AD-A071803] N80-14693
- **ISOMERS**
  - A mathematical model of the disruption of mirror symmetry in prebiological evolution A80-20680

J

- **JOINTS (JUNCTIONS)**
  - Measurement of resistive torques in major human joints [AD-A071170] N80-14695
- **JUDGMENTS**
  - Validation and error in multiplicative utility functions [AD-A073362] N80-14698
  - Importance weight assessment for additive, riskless preference functions: A review [AD-A073365] N80-14700
  - Are important weights sensitive to the range of alternatives in multiattribute utility measurement [AD-A073366] N80-14701
  - Subjective versus statistical importance weights. A criterion validation [AD-A073367] N80-14702

K

- **KERNEL FUNCTIONS**
  - Interpreting nonlinear systems - The third order kernel of the eye movement control system A80-20860

L

- **LAGOONS**
  - Waste stabilization lagoon microorganism removal efficiency and effluent disinfection with chlorine [PB-300631/9] N80-15786
- **LEARNING**
  - Rule learning and systematic instruction in pilot training [AD-A068906] N80-14709
- **LEGIBILITY**
  - The effect of character size on the legibility of numeric displays during vertical whole-body vibration A80-18839
- **LIFE SUPPORT SYSTEMS**
  - Anthropometric sizing, fit-testing and evaluation of the MBU-12/P oral-nasal oxygen mask [AD-A074723] N80-14692
  - Biological systems for human life support: Review of the research in the USSR [NASA-TM-76018] N80-14717
  - US aircrew chemical defense assemblies N80-14736
- **LIPOPROTEINS**
  - Serum cholesterol levels in selected Air Force cadets compared with levels in the West Point study A80-20442
- **LOGIC**
  - A mind/brain/matter model consistent with quantum physics and UFO phenomena [AD-A068988] N80-14711
- **LYMPH**
  - Effect of hypoxia on the contractile activity of smooth muscle cells in the thoracic duct A80-20683
- **LYMPHOCYTES**
  - Effect of hypogravity on human lymphocyte activation A80-20446

M

- **MAGNETIC FIELDS**
  - Steady magnetic fields in noninvasive electromagnetic flowmetry A80-21033
- **MALES**
  - A consideration of factors contributing to strength differences in men and women [AD-A072671] N80-14694
- **MAN MACHINE SYSTEMS**
  - A new engineering approach to motion cueing technology --- for flight simulation [AIAA PAPER 80-0047] A80-18250
  - Mathematical concepts for modeling human behavior in complex man-machine systems A80-19025
  - A nonparametric model of detection of signals, observed by a human operator on a CRT screen in the presence of noise A80-19452
  - Sleep and body rhythm disturbance in long-range aviation. The problem and a search for relief N80-14714
  - Technologies for the handicapped and the aged [NASA-TM-80842] N80-14715
  - Time simulation of an air surveillance task with varying amounts of radar information [AD-A074866] N80-14722
  - Some insights relative to the man-machine system: An overview of ten years of research N80-14745
  - Model task for the dynamics of an underwater two-legged walker [NASA-TM-75697] N80-15822
  - Man-machine communication in computer-aided remote manipulation [AD-A074566] N80-15823
  - Teleoperators under the sea [PB-299883/9] N80-15824
- **MANIPULATORS**
  - Man-machine communication in computer-aided remote manipulation [AD-A074566] N80-15823
- **MANNED SPACE FLIGHT**
  - Biology and medicine in space: Research opportunities offered by Spacelab. An invitation to European investigators [ESA-BR-01] N80-14677
  - Results of medical studies during long-term manned flights on the orbital Salyut-6 and Soyuz complex [NASA-TM-76014] N80-15797
- **MATHEMATICAL MODELS**
  - Mathematical concepts for modeling human behavior in complex man-machine systems A80-19025
  - A mathematical model of the disruption of mirror symmetry in prebiological evolution A80-20680
  - Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, University of Pittsburgh, Pittsburgh, Pa., April 25-27, 1979. Part 1 - Biomedical A80-20855
  - Validation and error in multiplicative utility functions [AD-A073362] N80-14698
  - Process model of how the human operator tracks discontinuous inputs [AD-A069001] N80-14712
  - Quantitative military workload analysis N80-14748
  - Mental dynamics --- mathematical description [LA-7946-MS] N80-15820
- **MEASURING INSTRUMENTS**
  - Three instruments for assessment of WBGT and a comparison with WGT (BOTSBALL) [AD-A074979] N80-14691
- **MEDICAL ELECTRONICS**
  - Polycardiographic research with a single-channel electrocardiograph A80-20213
- **MEMBRANES**
  - Dialysis system --- using ion exchange resin membranes permeable to urea molecules [NASA-CASE-NPO-14101-1] N80-14687

- MENTAL PERFORMANCE
  - Effect of peripherally presented visual signals on pilot performance during flight simulation [AD-A073604] N80-14703
  - Mental dynamics --- mathematical description [LA-7946-MS] N80-15820
- MICE
  - Review of cell aging in Drosophila and mouse A80-17741
- MICROBIOLOGY
  - Study of fungal phenotypes after exposure to space flight parameters A80-17986
- MICROORGANISMS
  - Study of fungal phenotypes after exposure to space flight parameters A80-17986
  - Microbial colonization of materials at Innisfail, Queensland [MRL-TN-428] N80-14670
  - Waste stabilization lagoon microorganism removal efficiency and effluent disinfection with chlorine [PB-300631/9] N80-15786
- MICROWAVES
  - Microwave biological effects - An overview A80-21021
  - Microwave cataractogenesis A80-21022
  - Microwave irradiation and the blood-brain barrier A80-21023
  - The microwave auditory phenomenon A80-21024
  - Advances in microwave-induced neuroendocrine effects - The concept of stress A80-21025
  - Epidemiologic studies of microwave effects A80-21026
  - Soviet and Eastern European research on biological effects of microwave radiation A80-21027
  - Electromagnetic fields in biological media. Part 2: The SCAT program, multilayered sphere, theory and applications [PB-300904/0] N80-15804
- MIDDLE EAR PRESSURE
  - Static acoustic impedance profiles in auditory diagnosis [ASME PAPER 79-WA/BIO-1] A80-18643
  - Eustachian tube function in selection of airmen A80-20443
- MILITARY OPERATIONS
  - Maintenance of air operations while under attack with chemical agents --- protective clothing [AGARD-CP-264-SUPPL] N80-14728
  - Concerning individual equipment for fighter pilots in the Air Force N80-14735
  - Quantitative military workload analysis N80-14748
  - Management of irregular rest and activity N80-15819
- MILLIMETER WAVES
  - Cellular effects: Millimeter waves and Raman spectra - Report of a panel discussion A80-21031
- MINERAL METABOLISM
  - Effect of 1 alpha-hydroxy-cholecalciferol and varying phosphorous content in the diet on calcium phosphorous metabolism in hypokinetic rats A80-20445
- MIOSIS
  - The effect of locally applied organophosphates on miosis and acetylcholinesterase adaptation to chronic treatment N80-14731
- MISSION PLANNING
  - Management of irregular rest and activity N80-15819
- MONITORS
  - Psychophysiological monitoring of operator's emotional stress in aviation and astronautics A80-20449
- MOTION PERCEPTION
  - A new engineering approach to motion cueing technology --- for flight simulation [AIAA PAPER 80-0047] A80-18250
- MOTION SICKNESS
  - Space motion sickness A80-20018
  - A sudden-stop vestibulovisual test for rapid assessment of motion sickness manifestations A80-20448
  - Motion sickness. I - A theory. II - A clinical study based on surgery of cerebral hemisphere lesions. III - A clinical study based on surgery of posterior fossa tumors A80-20452
- MOTIVATION
  - A study in procedural manipulation of locus of control [AD-A068658] N80-14704
  - Work performance as a function of the interaction of ability, work values, and the perceived work environment [AD-A068893] N80-14707
- MOTOR VEHICLES
  - Motor Vehicle Manufacturers Association (MVMA) Two-Dimensional Crash Victim Simulation tutorial system: Self-study guide [PB-299256/8] N80-14723
  - Motor Vehicle Manufacturers Association (MVMA) Two-Dimensional Crash Victim Simulation tutorial system: Audio-visual program [PB-299257/6] N80-14724
  - MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 1 [PB-299305/3] N80-14725
  - MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 2 [PB-299306/1] N80-14726
  - MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 3 [PB-299307/9] N80-14727
- MUSCULAR FUNCTION
  - Effect of hypoxia on the contractile activity of smooth muscle cells in the thoracic duct A80-20683
- MUSCULAR STRENGTH
  - A consideration of factors contributing to strength differences in men and women [AD-A072671] N80-14694
- MUSCULAR TONUS
  - Physiological regulation of oxygen transport to muscles /from results of mathematical analysis of experimental data/ A80-18081
- MYOCARDIUM
  - Left ventricular relaxation and filling pattern in different forms of left ventricular hypertrophy - An echocardiographic study A80-18975

N

- NERVOUS SYSTEM
  - Micromorphology of neurohypophysis of rats under experimental conditions [NASA-TM-75947] N80-14671
- NEUROGLIA
  - RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization [NASA-TM-75983] N80-14672
- NEUROLOGY
  - Psychostimulants N80-15817
- NEUROMUSCULAR TRANSMISSION
  - The effects of acute and chronic low dose exposure to anticholinesterases N80-14729
  - Therapy on nerve agent poisoning N80-14732
  - Activity of cholinesterases of blood and heart in rats of different sex and age during muscular loads and hypokinesia [NASA-TM-75951] N80-15781
  - Study on the neuronal circuits implicated in postural tremor and hypokinesia [NASA-TM-76004] N80-15783
- NEURONS
  - Visual cortical neurons - Are bars or gratings the optimal stimuli A80-17711
  - Topographic characteristics of post-synaptic actions of primary vestibular fibers on the vestibulospinal neurons of Deiters nucleus A80-20681

Deiters-nucleus potentials evoked by stimulation of the neural elements of bones and musculo-cutaneous nerves in animals with the cerebrum and cerebellum removed
A80-20682

Theoretical problems in modeling color grating detection --- in human vision
A80-20861

NEUROPHYSIOLOGY

Topographic characteristics of post-synaptic actions of primary vestibular fibers on the vestibulospinal neurons of Deiters nucleus
A80-20681

Deiters-nucleus potentials evoked by stimulation of the neural elements of bones and musculo-cutaneous nerves in animals with the cerebrum and cerebellum removed
A80-20682

Nonlinear interactions in binocular vision
A80-20859

Advances in microwave-induced neuroendocrine effects - The concept of stress
A80-21025

Study on the neuronal circuits implicated in postural tremor and hypokinesia
[NASA-TM-76004] N80-15783

Sleep stage organization: Neuro endocrine relations
N80-15809

NIGHT VISION

The effect of age and vitamin provision of pilots on their night vision characteristics
A80-21040

NITROGEN METABOLISM

A study of metabolic balance in crewmembers of Skylab IV
A80-20021

NOISE (SOUND)

Derivation of presbycusis and Noise Induced Permanent Threshold Shift (NIPTS) to be used for the basis of a standard on the effects of noise on hearing
[AD-A071310] N80-14690

Sound and noise --- in spacecraft
N80-15793

NOISE INTENSITY

Combined effects of broadband noise and complex waveform vibration on cognitive performance
A80-20441

NOISE POLLUTION

Combined effects of broadband noise and complex waveform vibration on cognitive performance
A80-20441

NONEQUILIBRIUM CONDITIONS

Kinematic analysis of osmotic processes under non-equilibrium conditions
N80-14669

NONLINEAR SYSTEMS

Nonlinear interactions in binocular vision
A80-20859

Interpreting nonlinear systems - The third order kernel of the eye movement control system
A80-20860

NUMERICAL ANALYSIS

Electromagnetic dosimetry for models of humans and animals - A review of theoretical and numerical techniques
A80-21020

O

OLFACTORY PERCEPTION

Relationship among the 55 Hz bioelectric rhythm of the olfactory bulb, the bulb S-rhythm, and respiration
A80-20211

OPERATOR PERFORMANCE

A nonparametric model of detection of signals, observed by a human operator on a CRT screen in the presence of noise
A80-19452

The effect of antiorthostatic stimuli on human operators studied using rheography data
A80-20082

Combined effects of broadband noise and complex waveform vibration on cognitive performance
A80-20441

Psychophysiological monitoring of operator's emotional stress in aviation and astronautics
A80-20449

Process model of how the human operator tracks discontinuous inputs
[AD-A069001] N80-14712

ORGANIC MATERIALS

Microbial colonization of materials at Innisfail, Queensland
[MRL-TN-428] N80-14670

ORGANIC PHOSPHORUS COMPOUNDS

The effect of locally applied organophosphates on miosis and acetylcholinesterase adaptation to chronic treatment
N80-14731

ORTHOSTATIC TOLERANCE

The effect of antiorthostatic stimuli on human operators studied using rheography data
A80-20082

OSMOSIS

Kinematic analysis of osmotic processes under non-equilibrium conditions
N80-14669

OSTEOPOROSIS

Bone remodeling in centrifuged rats - Histomorphometric study after an 18-day run
A80-20450

OTOLOGY

Static acoustic impedance profiles in auditory diagnosis
[ASME PAPER 79-WA/BIO-1] A80-18643

OXYGEN CONSUMPTION

Physiological regulation of oxygen transport to muscles /from results of mathematical analysis of experimental data/
A80-18081

OXYGEN MASKS

Anthropometric sizing, fit-testing and evaluation of the MBU-12/P oral-nasal oxygen mask
[AD-A074723] N80-14692

OXYGEN SUPPLY EQUIPMENT

An advanced oxygen system for future combat aircraft
N80-14680

OXYGENATION

Perspectives of the utilization of hyperbaric oxygenation in aviation medicine
A80-20500

OZONE

The interaction of ozone with the human erythrocyte --- biological effects of photochemical oxidants
N80-14686

P

PAIN

Evoked potentials in immobilized cats to a combination of clicks with painful electrocutaneous stimuli
[NASA-TM-75941] N80-15780

PERCEPTION

A mind/brain/matter model consistent with quantum physics and UFO phenomena
[AD-A068988] N80-14711

PERFORMANCE PREDICTION

Ability, involvement and climate as multiple and interactive predictors of performance
[AD-A068891] N80-14706

Work performance as a function of the interaction of ability, work values, and the perceived work environment
[AD-A068893] N80-14707

PERIPHERAL VISION

Effect of peripherally presented visual signals on pilot performance during flight simulation
[AD-A073604] N80-14703

PERMEABILITY

Dialysis system --- using ion exchange resin membranes permeable to urea molecules
[NASA-CASE-NPO-14101-1] N80-14687

PERSONNEL

Occupational exposure to radio-frequency electromagnetic fields
A80-21017

PERSONNEL SELECTION

Problems related to medical criteria for the selection of military navigation personnel
N80-14679

The European approach to the selection and training of SL payload specialists
N80-14681

PHOSPHORUS
Effect of 1 alpha-hydroxy-cholecalciferol and varying phosphorous content in the diet on calcium phosphorous metabolism in hypokinetic rats
A80-20445

PHOSPHORUS METABOLISM
Hormonal regulation of calcium and phosphorus homeostasis during physical activity
A80-20684

PHOTOABSORPTION
Energy uptake in the first step of visual excitation
A80-20387

PHOTOCHEMICAL OXIDANTS
The interaction of ozone with the human erythrocyte --- biological effects of photochemical oxidants
N80-14686

PHOTOCHEMICAL REACTIONS
Energy uptake in the first step of visual excitation
A80-20387

PHOTOSENSITIVITY
Visual cortical neurons - Are bars or gratings the optimal stimuli
A80-17711
Effect of rhythmic photostimulation on monkeys with hyperkinesis of post-encephalitic genesis
[NASA-TM-75986] N80-14674

PHOTOSYNTHESIS
Charge separation in synthetic photo-reaction centers
[CONF-781048-1] N80-15784

PHYSICAL EXAMINATIONS
Serum cholesterol levels in selected Air Force cadets compared with levels in the West Point study
A80-20442

PHYSICAL EXERCISE
Quantitative study of free amino acids in human eccrine sweat excreted from the forearms of healthy trained and untrained men during exercise
A80-17727
Body temperature and heart rate relationships during submaximal bicycle ergometer exercises
A80-17728
Exercise response to simulated weightlessness
A80-20019
Development of 'sports anemia' in physically fit men after daily sustained submaximal exercise
A80-20448

PHYSICAL FITNESS
Development of 'sports anemia' in physically fit men after daily sustained submaximal exercise
A80-20448
Methods for evaluating the physical and effort requirements of Navy tasks: Metabolic, performance, and physical ability correlates of perceived effort
[AD-A072497] N80-14720

PHYSIOLOGICAL EFFECTS
Combined effects of broadband noise and complex waveform vibration on cognitive performance
A80-20441
Eustachian tube function in selection of airmen
A80-20443
Effect of 1 alpha-hydroxy-cholecalciferol and varying phosphorous content in the diet on calcium phosphorous metabolism in hypokinetic rats
A80-20445
Effect of hypogravity on human lymphocyte activation
A80-20446
Bone remodeling in centrifuged rats - Histomorphometric study after an 18-day run
A80-20450
Heat stress exposure of aerial spray pilots
A80-20451
Microwave irradiation and the blood-brain barrier
A80-21023
Frequency and power windowing in tissue interactions with weak electromagnetic fields
A80-21032
The effect of aircraft noise on the functional state of human operators
A80-21039
The effects of hypodynamia and hypokinesia on the arterial bed of pelvic limb muscles in the rabbit
[NASA-TM-75984] N80-14673
Early transient incapacitation: A review with consideration of underlying mechanisms
[AD-A071803] N80-14693
The effects of acute and chronic low dose exposure to anticholinesterases
N80-14729
Workload and stress in air traffic controllers
N80-14757
Influence of hypokinesis on physiological functions in fowl
[NASA-TM-75999] N80-15778
The course of experimental staphylococcus infection in albino mice during action of certain factors of space flight
[NASA-TM-75973] N80-15779
Rat reaction to hypokinesia after prior adaptation to hypoxia
[NASA-TM-75964] N80-15782
The physiological basis for spacecraft environmental limits
[NASA-RP-1045] N80-15788
Atmosphere --- physiological basis for spacecraft pressure tolerance limits
N80-15789
Contaminants --- physiological effects of spacecraft contaminants
N80-15790
Thermal environment --- physiological basis for temperature tolerance limits
N80-15791
Weightlessness --- physiological effects
N80-15795
Changes of some blood indices and myocardial electrolyte content during hypokinesia
[NASA-TM-75954] N80-15798

PHYSIOLOGICAL FACTORS
Physiological regulation of oxygen transport to muscles /from results of mathematical analysis of experimental data/
A80-18081
Physiological factors in space operations. Emphasis on space shuttle
N80-14682
A consideration of factors contributing to strength differences in men and women
[AD-A072671] N80-14694
Physiologic aspects of workload/fatigue/stress
N80-14744

PHYSIOLOGICAL RESPONSES
Visual cortical neurons - Are bars or gratings the optimal stimuli
A80-17711
The effect of antiorthostatic stimuli on human operators studied using rheography data
A80-20082
Development of 'sports anemia' in physically fit men after daily sustained submaximal exercise
A80-20448
The microwave auditory phenomenon
A80-21024
Advances in microwave-induced neuroendocrine effects - The concept of stress
A80-21025
Circadian rhythms in air operations
N80-15816

PHYSIOLOGICAL TESTS
Evaluation of human strain during interrupted exposure to vibration
A80-17726
Practical criteria for analyzing the heart hemodynamics of young athletes
A80-20212
Polycardiographic research with a single-channel electrocardiograph
A80-20213
Simulation of physiological systems in order to evaluate and predict the human condition in a space flight
[NASA-TM-76016] N80-14716

PHYSIOLOGY
Methods for evaluating the physical and effort requirements of Navy tasks: Metabolic, performance, and physical ability correlates of perceived effort
[AD-A072497] N80-14720
Activity of cholinesterases of blood and heart in rats of different sex and age during muscular loads and hypokinesia
[NASA-TM-75951] N80-15781

PILOT PERFORMANCE
  Proficiency maintenance and assessment in an instrument flight simulator A80-19023
  Psychophysiological monitoring of operator's emotional stress in aviation and astronautics A80-20449
  Heat stress exposure of aerial spray pilots A80-20451
  The effect of age and vitamin provision of pilots on their night vision characteristics A80-21040
  Effect of peripherally presented visual signals on pilot performance during flight simulation [AD-A073604] N80-14703
  Survey of methods to assess workload [AGARD-AG-246] N80-14739
  Concepts of workload --- study of work capacity and pilot performance in terms of physiological and psychological stress N80-14740
  Concepts of fatigue --- survey of studies on pilot performance and flight fatigue discussed in terms of physiological and psychological stress N80-14741
  Some considerations concerning methods to evaluate and assess workload in aircraft pilots N80-14743
  Some insights relative to the man-machine system: An overview of ten years of research N80-14745
  Aircrew workload assessment techniques --- human factors engineering study of performance of flight crews workloads N80-14746
  Workload assessment methodology development N80-14747
  Visual performance: A method to assess workload in the flight environment N80-14749
  Handling qualities, workload and heart rate N80-14750
  Brain waves and the enhancement of pilot performance N80-14751
  Pupillometric methods of workload evaluation: Present status and future possibilities --- pilot workload N80-14752
  Aircrew performance research opportunities using the Air Combat Maneuvering Range (ACMR) N80-14753
  Speech patterns and aircrew workload N80-14754
PILOT SELECTION
  Eustachian tube function in selection of airmen A80-20443
PILOT TRAINING
  Proficiency maintenance and assessment in an instrument flight simulator A80-19023
  When day is done and shadows fall, we miss the airport most of all --- visual accommodation and aircraft flight safety A80-19024
  Rule learning and systematic instruction in pilot training [AD-A068906] N80-14709
PILOTS (PERSONNEL)
  Preliminary investigation of pilot scanning techniques of dial pointing instruments [NASA-TM-80079] N80-14697
  Biochemical indices of stress: Biochemical aspects of the stress response N80-15812
PITUITARY GLAND
  Micromorphology of neurohypophysis of rats under experimental conditions [NASA-TM-75947] N80-14671
PITUITARY HORMONES
  Hypergravity and estrogen effects on avian anterior pituitary growth hormone and prolactin levels A80-20447
POLARIZATION (CHARGE SEPARATION)
  Charge separation in synthetic photo-reaction centers [CONF-781048-1] N80-15784
POLLUTION CONTROL
  Biological screening of complex samples from industrial/energy processes [PB-300459/5] N80-15805
POLLUTION MONITORING
  Investigation of effects of temperature, salinity, and electrode design on the performance of an electrochemical coliform detector [NASA-TM-80130] N80-14676
POLYPEPTIDES
  The informational structure of DNA, RNA, and amino acid sequences A80-20856
  Information processes in the evolution of protein synthesis A80-20857
  Toxic polypeptides and uremia [PB-301063/4] N80-15803
PORTABLE LIFE SUPPORT SYSTEMS
  Regenerative CO2 removal for PLSS application [NASA-CR-160419] N80-14718
PRESERVING
  A controlled rate freeze/thaw system for cryopreservation of biological materials [NASA-CR-162531] N80-14675
PRESSURE BREATHING
  An advanced oxygen system for future combat aircraft N80-14680
PRESSURE EFFECTS
  Eustachian tube function in selection of airmen A80-20443
PRESSURE REGULATORS
  Intra-ocular pressure normalization technique and equipment [NASA-CASE-LEW-12955-1] N80-14684
PRESSURIZED CABINS
  Atmosphere --- physiological basis for spacecraft pressure tolerance limits N80-15789
PRODUCTIVITY
  Comparison of diurnal fluctuations of dissolved inorganic carbon and algal productivity estimates in an oligotrophic and mesotrophic freshwater environment [PB-301201/0] N80-15785
PROPHYLAXIS
  Consideration of pyridostigmine as a prophylactic agent for aircrew N80-14730
PROTECTION
  Philosophy of protection of US aircrews against chemical warfare agents N80-14734
  Integration of protection against chemical warfare agents with aircrew personal equipment N80-14739
PROTECTIVE CLOTHING
  Maintenance of air operations while under attack with chemical agents --- protective clothing [AGARD-CP-264-SUPPL] N80-14728
  Concerning individual equipment for fighter pilots in the Air Force N80-14735
  US aircrew chemical defense assemblies N80-14736
  FRG aircrew chemical defence assemblies N80-14737
  Integration of protection against chemical warfare agents with aircrew personal equipment N80-14738
PROTEIN METABOLISM
  Mechanism of disorder of plastic processes in tissue during prolonged hypokinesia [NASA-TM-75955] N80-15799
PROTEINS
  Information processes in the evolution of protein synthesis A80-20857
PROTONS
  Proton movements in response to a light-driven electrogenic pump for sodium ions in Halobacterium halobium membranes A80-17686
PSYCHOLOGICAL EFFECTS
  The effect of aircraft noise on the functional state of human operators A80-21039

PSYCHOLOGY
A study in procedural manipulation of locus of control
[AD-A068658] N80-14704
PSYCHOMOTOR PERFORMANCE
Psychophysiological monitoring of operator's emotional stress in aviation and astronautics
A80-20449
Circadian rhythms of human performance and resistance: Operational aspects
N80-15808
PSYCHOPHYSICS
A mind/brain/matter model consistent with quantum physics and UFO phenomena
[AD-A068988] N80-14711
PSYCHOPHYSIOLOGY
An exploratory study of psychophysiological measurements as indicators of air traffic control sector workload
N80-14755
PUBLIC HEALTH
Health effects of aerosols emitted from an activated sludge plant
[PB-299583/5] N80-14696
PUPILLOMETRY
Pupillometric methods of workload evaluation: Present status and future possibilities --- pilot workload
N80-14752

Q

QUANTITATIVE ANALYSIS
Quantitative study of free amino acids in human eccrine sweat excreted from the forearms of healthy trained and untrained men during exercise
A80-17727

R

RADIANT FLUX DENSITY
Electromagnetic radiation from selected telecommunications systems
A80-21018
RADIATION DAMAGE
Microwave cataractogenesis
A80-21022
RADIATION DOSAGE
Occupational exposure to radio-frequency electromagnetic fields
A80-21017
Electromagnetic dosimetry for models of humans and animals - A review of theoretical and numerical techniques
A80-21020
Microwave cataractogenesis
A80-21022
Microwave irradiation and the blood-brain barrier
A80-21023
Advances in microwave-induced neuroendocrine effects - The concept of stress
A80-21025
Study of effects of long-term low-level rf exposure on rats - A plan
A80-21028
Electromagnetic fields in biological media. Part 2: The SCAT program, multilayered sphere, theory and applications
[PB-300904/0] N80-15804
RADIATION EFFECTS
Microwave biological effects - An overview
A80-21021
The microwave auditory phenomenon
A80-21024
Epidemiologic studies of microwave effects
A80-21026
Soviet and Eastern European research on biological effects of microwave radiation
A80-21027
Study of effects of long-term low-level rf exposure on rats - A plan
A80-21028
Biological effects of electric and magnetic fields associated with ELF communications systems
A80-21029
RF-field interactions with biological systems - Electrical properties and biophysical mechanisms
A80-21030
Frequency and power windowing in tissue interactions with weak electromagnetic fields
A80-21032
Early transient incapacitation: A review with consideration of underlying mechanisms
[AD-A071803] N80-14693
RADIATION HAZARDS
Electromagnetic radiation from selected telecommunications systems
A80-21018
State of the knowledge for electromagnetic absorbed dose in man and animals
A80-21019
Microwave biological effects - An overview
A80-21021
Radiofrequency radiation --- spacecraft environmental limits
N80-15794
RADIATION MEASURING INSTRUMENTS
Electromagnetic radiation from selected telecommunications systems
A80-21018
RADIATION MEDICINE
Study of effects of long-term low-level rf exposure on rats - A plan
A80-21028
RADIATION SICKNESS
Early transient incapacitation: A review with consideration of underlying mechanisms
[AD-A071803] N80-14693
RADIO FREQUENCIES
Occupational exposure to radio-frequency electromagnetic fields
A80-21017
RF-field interactions with biological systems - Electrical properties and biophysical mechanisms
A80-21030
RADIO TRANSMISSION
Electromagnetic radiation from selected telecommunications systems
A80-21018
RADIO WAVES
Study of effects of long-term low-level rf exposure on rats - A plan
A80-21028
Radiofrequency radiation --- spacecraft environmental limits
N80-15794
RADIOBIOLOGY
Electromagnetic dosimetry for models of humans and animals - A review of theoretical and numerical techniques
A80-21020
Soviet and Eastern European research on biological effects of microwave radiation
A80-21027
RF-field interactions with biological systems - Electrical properties and biophysical mechanisms
A80-21030
Cellular effects: Millimeter waves and Raman spectra - Report of a panel discussion
A80-21031
RAMAN SPECTRA
Cellular effects: Millimeter waves and Raman spectra - Report of a panel discussion
A80-21031
RANGE (EXTREMES)
Design criteria for characterizing individuals in the extreme upper and lower body size ranges
[AD-A072353] N80-14721
RANGES (FACILITIES)
Aircrew performance research opportunities using the Air Combat Maneuvering Range (ACMR)
N80-14753
RATINGS
Rating errors of inconsistency as a function of dimensionality of behavioral anchors
[AD-A068922] N80-14710
REAL TIME OPERATION
Real-time simulation of FLIR and LLLTV Systems for aircrew training
A80-20899
REBREATHING
Regenerative CO2 removal for PLSS application
[NASA-CR-160419] N80-14718
REDUCED GRAVITY
Effect of hypogravity on human lymphocyte activation
A80-20446

REMOTE CONTROL
Man-machine communication in computer-aided remote manipulation
[AD-A074566] N80-15823
Teleoperators under the sea
[PB-299883/9] N80-15824

RESPIRATORY PHYSIOLOGY
Relationship among the 55 Hz bioelectric rhythm of the olfactory bulb, the bulb S-rhythm, and respiration
A80-20211

RETINA
A facilitation effect in orientation discrimination
[AD-A072726] N80-14713

RETINAL ADAPTATION
Special session on vision
[LBL-9160] N80-15802

RHEOLOGY
The effect of antiorthostatic stimuli on human operators studied using rheography data
A80-20082

RHYTHM (BIOLOGY)
Relationship among the 55 Hz bioelectric rhythm of the olfactory bulb, the bulb S-rhythm, and respiration
A80-20211
Sleep and body rhythm disturbance in long-range aviation. The problem and a search for relief
N80-14714
Biological rhythms of man living in isolation from time cues
N80-15813

RIBONUCLEIC ACIDS
The informational structure of DNA, RNA, and amino acid sequences
A80-20856
Information processes in the evolution of protein synthesis
A80-20857
RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization
[NASA-TM-75983] N80-14672

S

SALYUT SPACE STATION
Scientific biomedical studies during the flight of the first Bulgarian cosmonaut
A80-19100
Results of medical studies during long-term manned flights on the orbital Salyut-6 and Soyuz complex
[NASA-TM-76014] N80-15797

SEDATIVES
Hypnotics and the management of disturbed sleep
N80-15818

SENSORY STIMULATION
Effect of rhythmic photostimulation on monkeys with hyperkinesis of post-encephalitic genesis
[NASA-TM-75986] N80-14674

SEROTONIN
Temperature compensation of the metabolism of serotonin in the brain of hibernating mammals
A80-18082

SERUMS
Serum cholesterol levels in selected Air Force cadets compared with levels in the West Point study
A80-20442

SEWAGE TREATMENT
Health effects of aerosols emitted from an activated sludge plant
[PB-299583/5] N80-14696
Waste stabilization lagoon microorganism removal efficiency and effluent disinfection with chlorine
[PB-300631/9] N80-15786

SIGNAL DETECTION
A nonparametric model of detection of signals, observed by a human operator on a CRT screen in the presence of noise
A80-19452

SIGNAL TO NOISE RATIOS
A nonparametric model of detection of signals, observed by a human operator on a CRT screen in the presence of noise
A80-19452

SITTING POSITION
Evaluation of human strain during interrupted exposure to vibration
A80-17726

SKIN TEMPERATURE (BIOLOGY)
Body temperature and heart rate relationships during submaximal bicycle ergometer exercises
A80-17728

SKYLAB 4
A study of metabolic balance in crewmembers of Skylab IV
A80-20021

SLEEP
Sleep, Wakefulness and Circadian Rhythm
[AGARD-LS-105] N80-15806
Sleep stage organization: Neuro endocrine relations
N80-15809
Biological rhythms of man living in isolation from time cues
N80-15813
Hypnotics and the management of disturbed sleep
N80-15818

SLEEP DEPRIVATION
Temperature compensation of the metabolism of serotonin in the brain of hibernating mammals
A80-18082
Sleep and body rhythm disturbance in long-range aviation. The problem and a search for relief
N80-14714
Sleep disturbances in humans
N80-15810
Sleep disturbance and performance
N80-15814

SODIUM
Proton movements in response to a light-driven electrogenic pump for sodium ions in Halobacterium halobium membranes
A80-17686

SOYUZ SPACECRAFT
Results of medical studies during long-term manned flights on the orbital Salyut-6 and Soyuz complex
[NASA-TM-76014] N80-15797

SPACE FLIGHT STRESS
Recent advances in Aeronautical and Space Medicine
[AGARD-CP-265] N80-14678
Physiological factors in space operations. Emphasis on space shuttle
N80-14682
Simulation of physiological systems in order to evaluate and predict the human condition in a space flight
[NASA-TM-76016] N80-14716

SPACE SHUTTLES
Physiological factors in space operations. Emphasis on space shuttle
N80-14682
Regenerative CO2 removal for PLSS application
[NASA-CR-160419] N80-14718

SPACEBORNE EXPERIMENTS
Study of fungal phenotypes after exposure to space flight parameters
A80-17986

SPACECRAFT CONTAMINATION
Contaminants --- physiological effects of spacecraft contaminants
N80-15790

SPACECRAFT ENVIRONMENTS
Biology and medicine in space: Research opportunities offered by Spacelab. An invitation to European investigators
[ESA-BR-01] N80-14677
Biological systems for human life support: Review of the research in the USSR
[NASA-TM-76018] N80-14717
The physiological basis for spacecraft environmental limits
[NASA-RP-1045] N80-15788
Atmosphere --- physiological basis for spacecraft pressure tolerance limits
N80-15789
Contaminants --- physiological effects of spacecraft contaminants
N80-15790
Thermal environment --- physiological basis for temperature tolerance limits
N80-15791
Sound and noise --- in spacecraft
N80-15793

Radiofrequency radiation --- spacecraft environmental limits N80-15794

Weightlessness --- physiological effects N80-15795

SPACECREWS

Space motion sickness A80-20018

Amino aciduria in weightlessness A80-20022

Fluid volumes changes induced by spaceflight A80-20023

The European approach to the selection and training of SL payload specialists N80-14681

SPACELAB

Biology and medicine in space: Research opportunities offered by Spacelab. An invitation to European investigators [ESA-BR-01] N80-14677

SPACELAB PAYLOADS

The European approach to the selection and training of SL payload specialists N80-14681

SPATIAL FILTERING

Spatial filtering and mechanisms of perception --- in human vision A80-20858

SPEECH

Speech patterns and aircrew workload N80-14754

SPINAL CORD

Topographic characteristics of post-synaptic actions of primary vestibular fibers on the vestibulospinal neurons of Deiters nucleus A80-20681

RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization [NASA-TM-75983] N80-14672

STANDARDS

Derivation of presbycusis and Noise Induced Permanent Threshold Shift (NIPTS) to be used for the basis of a standard on the effects of noise on hearing [AD-A071310] N80-14690

STATISTICAL DECISION THEORY

Validation and error in multiplicative utility functions [AD-A073362] N80-14698

A criterion validation of multiattribute utility analysis and of a group communication strategy [AD-A073364] N80-14699

Importance weight assessment for additive, riskless preference functions: A review [AD-A073365] N80-14700

Are important weights sensitive to the range of alternatives in multiattribute utility measurement [AD-A073366] N80-14701

STIMULANT

Psychostimulants N80-15817

STRESS (PHYSIOLOGY)

Evaluation of human strain during interrupted exposure to vibration A80-17726

Hormonal regulation of calcium and phosphorus homeostasis during physical activity A80-20584

Advances in microwave-induced neuroendocrine effects - The concept of stress A80-21025

Micromorphology of neurohypophysis of rats under experimental conditions [NASA-TM-75947] N80-14671

Supersonic aerial transport: Medical and physiological aspects --- Concorde aircraft N80-14683

Three instruments for assessment of WBGT and a comparison with WGT (BOTSBALL) [AD-A074979] N80-14691

Extended analysis of small group performance and the effects of contingency management in a programmed environment [AD-A068665] N80-14705

Concepts of workload --- study of work capacity and pilot performance in terms of physiological and psychological stress N80-14740

Concepts of fatigue --- survey of studies on pilot performance and flight fatigue discussed in terms of physiological and psychological stress N80-14741

Concepts of stress N80-14742

Influence of hypokinesis on physiological functions in fowl [NASA-TM-75999] N80-15778

Rat reaction to hypokinesia after prior adaptation to hypoxia [NASA-TM-75964] N80-15782

STRESS (PSYCHOLOGY)

Psychophysiological monitoring of operator's emotional stress in aviation and astronautics A80-20449

The effect of certain extremal factors on the human auditory function A80-21038

Concepts of workload --- study of work capacity and pilot performance in terms of physiological and psychological stress N80-14740

Concepts of fatigue --- survey of studies on pilot performance and flight fatigue discussed in terms of physiological and psychological stress N80-14741

Concepts of stress N80-14742

Handling qualities, workload and heart rate N80-14750

Pupillometric methods of workload evaluation: Present status and future possibilities --- pilot workload N80-14752

Speech patterns and aircrew workload N80-14754

An exploratory study of psychophysiological measurements as indicators of air traffic control sector workload N80-14755

Individual and system performance indices for the air traffic control system N80-14756

Workload and stress in air traffic controllers N80-14757

Assessment correlates of workload and performance N80-14758

SUPERSONIC FLIGHT

Supersonic aerial transport: Medical and physiological aspects --- Concorde aircraft N80-14683

SUPINE POSITION

Joint Soviet-American experiment on hypokinesia: Experimental results [NASA-TM-76013] N80-15796

SURGERY

Motion sickness. I - A theory. II - A clinical study based on surgery of cerebral hemisphere lesions. III - A clinical study based on surgery of posterior fossa tumors A80-20452

Intra-ocular pressure normalization technique and equipment [NASA-CASE-LEW-12955-1] N80-14684

SURVEILLANCE RADAR

Time simulation of an air surveillance task with varying amounts of radar information [AD-A074866] N80-14722

SWEAT

Quantitative study of free amino acids in human eccrine sweat excreted from the forearms of healthy trained and untrained men during exercise A80-17727

SYMMETRY

A mathematical model of the disruption of mirror symmetry in prebiological evolution A80-20680

T

TARGET ACQUISITION

Process model of how the human operator tracks discontinuous inputs [AD-A069001] N80-14712

TECHNOLOGY ASSESSMENT
US aircrew chemical defense assemblies
N80-14736

TECHNOLOGY UTILIZATION
Perspectives of the utilization of hyperbaric oxygenation in aviation medicine
A80-20500

TELECOMMUNICATION
Electromagnetic radiation from selected telecommunications systems
A80-21018

TELEOPERATORS
Teleoperators under the sea
[PB-299883/9] N80-15824

TELEVISION SYSTEMS
Real-time simulation of FLIR and LLLTV Systems for aircrew training
A80-20899

TEMPERATURE COMPENSATION
Temperature compensation of the metabolism of serotonin in the brain of hibernating mammals
A80-18082

TEMPERATURE CONTROL
A controlled rate freeze/thaw system for cryopreservation of biological materials
[NASA-CR-162531] N80-14675

TEMPERATURE EFFECTS
Heat stress exposure of aerial spray pilots
A80-20451

THERMAL STRESSES
Heat stress exposure of aerial spray pilots
A80-20451

THRESHOLDS (PERCEPTION)
Derivation of presbycusis and Noise Induced Permanent Threshold Shift (NIPTS) to be used for the basis of a standard on the effects of noise on hearing
[AD-A071310] N80-14690

TIME SHARING
Mathematical concepts for modeling human behavior in complex man-machine systems
A80-19025

TISSUES (BIOLOGY)
RF-field interactions with biological systems - Electrical properties and biophysical mechanisms
A80-21039

Frequency and power windowing in tissue interactions with weak electromagnetic fields
A80-21032

Effect of prolonged hypokinesia on tissue blood flow
[NASA-TM-76005] N80-14688

Mechanism of disorder of plastic processes in tissue during prolonged hypokinesia
[NASA-TM-75955] N80-15799

TOXIC DISEASES
Therapy on nerve agent poisoning
N80-14732

TOXIC HAZARDS
Maintenance of air operations while under attack with chemical agents --- protective clothing
[AGARD-CP-264-SUPPL] N80-14728

Approaches to CW agent area detection systems for airfields
N80-14733

Philosophy of protection of US aircrews against chemical warfare agents
N80-14734

TOXICITY
The effects of acute and chronic low dose exposure to anticholinesterases
N80-14729

TOXICOLOGY
Toxic polypeptides and uremia
[PB-301063/4] N80-15803

Biological screening of complex samples from industrial/energy processes
[PB-300459/5] N80-15805

TRACKING (POSITION)
Process model of how the human operator tracks discontinuous inputs
[AD-A069001] N80-14712

TRAINING EVALUATION
Proficiency maintenance and assessment in an instrument flight simulator
A80-19023

TRANSFER OF TRAINING
Proficiency maintenance and assessment in an instrument flight simulator
A80-19023

TREMORS
Study on the neuronal circuits implicated in postural tremor and hypokinesia
[NASA-TM-76004] N80-15783

TUMORS
Motion sickness. I - A theory. II - A clinical study based on surgery of cerebral hemisphere lesions. III - A clinical study based on surgery of posterior fossa tumors
A80-20452

U

U.S.S.R.
Soviet and Eastern European research on biological effects of microwave radiation
A80-21027

U.S.S.R. SPACE PROGRAM
Scientific biomedical studies during the flight of the first Bulgarian cosmonaut
A80-19100

UNDERWATER ENGINEERING
Model task for the dynamics of an underwater two-legged walker
[NASA-TM-75697] N80-15822

UNDERWATER VEHICLES
Teleoperators under the sea
[PB-299883/9] N80-15824

UREAS
Dialysis system --- using ion exchange resin membranes permeable to urea molecules
[NASA-CASE-NPO-14101-1] N80-14687

UROLOGY
Toxic polypeptides and uremia
[PB-301063/4] N80-15803

V

VALUE
Subjective versus statistical importance weights. A criterion validation
[AD-A073367] N80-14702

VECTORCARDIOGRAPHY
Confidence regions of planar cardiac vectors
A80-19850

VESTIBULAR TESTS
A sudden-stop vestibulovisual test for rapid assessment of motion sickness manifestations
A80-20444

VESTIBULES
Topographic characteristics of post-synaptic actions of primary vestibular fibers on the vestibulospinal neurons of Deiters nucleus
A80-20681

VIBRATION
Modeling biodynamic effects of vibration, fifth year
[AD-A073819] N80-14719

Physical forces generating acceleration, vibration, and impact --- physiological effects
N80-15792

VIBRATION EFFECTS
Evaluation of human strain during interrupted exposure to vibration
A80-17726

The effect of character size on the legibility of numeric displays during vertical whole-body vibration
A80-18839

Combined effects of broadband noise and complex waveform vibration on cognitive performance
A80-20441

VIEWING
Preliminary investigation of pilot scanning techniques of dial pointing instruments
[NASA-TM-80079] N80-14697

VISION
Visual performance: A method to assess workload in the flight environment
N80-14749

Special session on vision
[LBL-9160] N80-15802

VISUAL ACCOMMODATION
When day is done and shadows fall, we miss the airport most of all --- visual accommodation and aircraft flight safety
A80-19024

VISUAL ACUITY
The effect of character size on the legibility of numeric displays during vertical whole-body vibration
A80-18839
Daytime visual acuity of observers through a window with and without binoculars
[AD-A074722] N80-15800
VISUAL AIDS
Motor Vehicle Manufacturers Association (MVMA) Two-Dimensional Crash Victim Simulation tutorial system: Audio-visual program
[PB-299257/6] N80-14724
VISUAL DISCRIMINATION
Theoretical problems in modeling color grating detection --- in human vision
A80-20861
A facilitation effect in orientation discrimination
[AD-A072726] N80-14713
VISUAL FLIGHT
When day is done and shadows fall, we miss the airport most of all --- visual accommodation and aircraft flight safety
A80-19024
VISUAL PERCEPTION
Spatial filtering and mechanisms of perception --- in human vision
A80-20858
Special session on vision
[LBL-9160] N80-15802
VISUAL PIGMENTS
Energy uptake in the first step of visual excitation
A80-20387
VISUAL STIMULI
Visual cortical neurons - Are bars or gratings the optimal stimuli
A80-17711
A sudden-stop vestibulovisual test for rapid assessment of motion sickness manifestations
A80-20444
A facilitation effect in orientation discrimination
[AD-A072726] N80-14713
VISUAL TASKS
Hypnotics and the management of disturbed sleep
N80-15818
VITAMINS
The effect of age and vitamin provision of pilots on their night vision characteristics
A80-21040

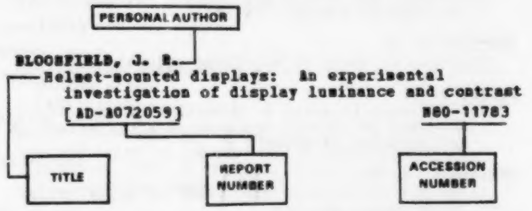
W

WAKEFULNESS
Sleep, Wakefulness and Circadian Rhythm
[AGARD-LS-105] N80-15806
Vigilance and attention
N80-15811
Biological rhythms of man living in isolation from time cues
N80-15813
WALKING MACHINES
Model task for the dynamics of an underwater two-legged walker
[NASA-TM-75697] N80-15822
WARNING SYSTEMS
Approaches to CW agent area detection systems for airfields
N80-14733
Some human factors issues in the development and evaluation of cockpit alerting and warning systems
[NASA-RP-1055] N80-15821
WEIGHTING FUNCTIONS
Validation and error in multiplicative utility functions
[AD-A073362] N80-14698
A criterion validation of multiattribute utility analysis and of a group communication strategy
[AD-A073364] N80-14699
Importance weight assessment for additive, riskless preference functions: A review
[AD-A073365] N80-14700
Are important weights sensitive to the range of alternatives in multiattribute utility measurement
[AD-A073366] N80-14701
Subjective versus statistical importance weights. A criterion validation
[AD-A073367] N80-14702
WEIGHTLESSNESS
A study of metabolic balance in crewmembers of Skylab IV
A80-20021
Amino aciduria in weightlessness
A80-20022
Recent advances in Aeronautical and Space Medicine
[AGARD-CP-265] N80-14678
Physiological factors in space operations. Emphasis on space shuttle
N80-14682
Weightlessness --- physiological effects
N80-15795
WEIGHTLESSNESS SIMULATION
Exercise response to simulated weightlessness
A80-20019
A mathematical and experimental simulation of the hematological response to weightlessness
A80-20020
Effect of hypogravity on human lymphocyte activation
A80-20446
WIENER FILTERING
Interpreting nonlinear systems - The third order kernel of the eye movement control system
A80-20860
WORK
Work performance as a function of the interaction of ability, work values, and the perceived work environment
[AD-A068893] N80-14707
Concepts of workload --- study of work capacity and pilot performance in terms of physiological and psychological stress
N80-14740
WORK CAPACITY
Concepts of workload --- study of work capacity and pilot performance in terms of physiological and psychological stress
N80-14740
WORK-REST CYCLE
Tolerance to shift work: A chronologic approach
N80-15815
WORKLOADS (PSYCHOPHYSIOLOGY)
The effect of aircraft noise on the functional state of human operators
A80-21039
Survey of methods to assess workload
[AGARD-AG-246] N80-14739
Concepts of workload --- study of work capacity and pilot performance in terms of physiological and psychological stress
N80-14740
Some considerations concerning methods to evaluate and assess workload in aircraft pilots
N80-14743
Physiologic aspects of workload/fatigue/stress
N80-14744
Aircrew workload assessment techniques --- human factors engineering study of performance of flight crews workloads
N80-14746
Workload assessment methodology development
N80-14747

PERSONAL AUTHOR INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 205)* APRIL 1980

Typical Personal Author Index Listing


PERSONAL AUTHOR
BLOOMFIELD, J. R.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059]
N80-11783
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ADEY, W. R.
Frequency and power windowing in tissue interactions with weak electromagnetic fields
A80-21032

ALBANESE, R. A.
Quantitative military workload analysis
N80-14748

ALBRECHT, D. G.
Visual cortical neurons - Are bars or gratings the optimal stimuli
A80-17711

ALEXANDER, M.
Anthropometric sizing, fit-testing and evaluation of the MBU-12/P oral-nasal oxygen mask
[AD-A074723] N80-14692

ALPEROVITCH, Y.
Man-machine communication in computer-aided remote manipulation
[AD-A074566] N80-15823

AMODEO, P. A., JR.
Comparison of diurnal fluctuations of dissolved inorganic carbon and algal productivity estimates in an oligotrophic and mesotrophic freshwater environment
[PB-301201/0] N80-15785

ANSELMO, V. J.
A controlled rate freeze/thaw system for cryopreservation of biological materials
[NASA-CR-162531] N80-14675

ANTONOVA, G. A.
Activity of cholinesterases of blood and heart in rats of different sex and age during muscular loads and hypokinesia
[NASA-TM-75951] N80-15781

ARNOLD, E. L.
Serum cholesterol levels in selected Air Force cadets compared with levels in the West Point study
A80-20442

ASTLE, L.
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes
[NASA-CR-162537] N80-14689

ATLAN, H.
Review of cell aging in Drosophila and mouse
A80-17741

AVETIKIAN, SH. T.
The effect of antiorthostatic stimuli on human operators studied using rheography data
A80-20082

AZHEVSKII, P. IA.
Perspectives of the utilization of hyperbaric oxygenation in aviation medicine
A80-20500

B

BAEHR, E. F.
Intra-ocular pressure normalization technique and equipment
[NASA-CASE-LEW-12955-1] N80-14684

BANTZER, P.
Quantitative study of free amino acids in human eccrine sweat excreted from the forearms of healthy trained and untrained men during exercise
A80-17727

BARASHOVA, Z. I.
Rat reaction to hypokinesia after prior adaptation to hypoxia
[NASA-TM-75964] N80-15782

BARRON, F. H.
Validation and error in multiplicative utility functions
[AD-A073362] N80-14698

BARTLETT, C. J.
Rating errors of inconsistency as a function of dimensionality of behavioral anchors
[AD-A068922] N80-14710

BATTOCLETTI, J. H.
Steady magnetic fields in noninvasive electromagnetic flowmetry
A80-21033

BEARDEN, T. E.
A mind/brain/matter model consistent with quantum physics and UFO phenomena
[AD-A068988] N80-14711

BEATTY, J.
Pupillometric methods of workload evaluation: Present status and future possibilities
N80-14752

BECKER, J. H.
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 3
[PB-299307/9] N80-14727

BEDARD, P.
Study on the neuronal circuits implicated in postural tremor and hypokinesia
[NASA-TM-76004] N80-15783

BEEBE, T.
Individual and system performance indices for the air traffic control system
N80-14756

BELAKOVSKII, M. S.
Effect of 1 alpha-hydroxy-cholecalciferol and varying phosphorous content in the diet on calcium phosphorous metabolism in hypokinetic rats
A80-20445

BELETSKII, V. V.
Model task for the dynamics of an underwater two-legged walker
[NASA-TM-75697] N80-15822

BELL, T. R.
Technologies for the handicapped and the aged
[NASA-TM-80842] N80-14715

BENNETT, R. O.
Motor Vehicle Manufacturers Association (MVMA) Two-Dimensional Crash Victim Simulation tutorial system: Self-study guide
[PB-299256/8] N80-14723
Motor Vehicle Manufacturers Association (MVMA) Two-Dimensional Crash Victim Simulation tutorial system: Audio-visual program
[PB-299257/6] N80-14724

MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 1
[PB-299305/3] N80-14725
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 2
[PB-299306/1] N80-14726
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 3
[PB-299307/9] N80-14727

BENSCH, K. G.
Review of cell aging in Drosophila and mouse
A80-17701

BERMUDEZ, J. M.
Effect of peripherally presented visual signals on pilot performance during flight simulation
[AD-A073604] N80-14703

BISHOP, K.
Process model of how the human operator tracks discontinuous inputs
[AD-A069001] N80-14712

BJURSTEDT, H.
Biology and medicine in space: Research opportunities offered by Spacelab. An invitation to European investigators
[ESA-BR-01] N80-14677

BLAZHEEVICH, N. V.
Effect of 1 alpha-hydroxy-cholecalciferol and varying phosphorous content in the diet on calcium phosphorous metabolism in hypokinetic rats
A80-20445

BLEIFELD, W.
Left ventricular relaxation and filling pattern in different forms of left ventricular hypertrophy - An echocardiographic study
A80-18975

BORLAND, R. G.
Hypnotics and the management of disturbed sleep
N80-15818

BORMAN, E. A.
The course of experimental staphylococcus infection in albino mice during action of certain factors of space flight
[NASA-TM-75973] N80-15779

BOUCHER, R.
Study on the neuronal circuits implicated in postural tremor and hypokinesia
[NASA-TM-76004] N80-15783

BOUVIER, G.
Study on the neuronal circuits implicated in postural tremor and hypokinesia
[NASA-TM-76004] N80-15783

BOWLES, D. S.
Waste stabilization lagoon microorganism removal efficiency and effluent disinfection with chlorine
[PB-300631/9] N80-15786

BOWMAN, B. M.
Motor Vehicle Manufacturers Association (MVMA) Two-Dimensional Crash Victim Simulation tutorial system: Self-study guide
[PB-299256/8] N80-14723
Motor Vehicle Manufacturers Association (MVMA) Two-Dimensional Crash Victim Simulation tutorial system: Audio-visual program
[PB-299257/6] N80-14724
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 1
[PB-299305/3] N80-14725
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 2
[PB-299306/1] N80-14726
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 3
[PB-299307/9] N80-14727

BRADY, J. V.
Extended analysis of small group performance and the effects of contingency management in a programmed environment
[AD-A068665] N80-14705

BRICTSON, C. A.
Aircrew performance research opportunities using the Air Combat Maneuvering Range (ACMR)
N80-14753

BRIEGLEB, W.
Effect of hypogravity on human lymphocyte activation
A80-20446

BRISSON, G. R.
Body temperature and heart rate relationships during submaximal bicycle ergometer exercises
A80-17728

BROWN, J. L.
A facilitation effect in orientation discrimination
[AD-A072726] N80-14713

BRUMBERG, V. A.
RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization
[NASA-TM-75983] N80-14672

BUCKLEY, E. P.
An exploratory study of psychophysiological measurements as indicators of air traffic control sector workload
N80-14755
Individual and system performance indices for the air traffic control system
N80-14756

BUDERER, M. C.
Exercise response to simulated weightlessness
A80-20019

BUDKO, V. N.
A nonparametric model of detection of signals, observed by a human operator on a CRT screen in the presence of noise
A80-19452

BUROVSKIY, N. N.
Joint Soviet-American experiment on hypokinesia: Experimental results
[NASA-TM-76013] N80-15796

C

CADIGAN, F. C.
The effects of acute and chronic low dose exposure to anticholinesterases
N80-14729

CANNINGS, R.
Speech patterns and aircrew workload
N80-14754

CANNON, B.
Health effects of aerosols emitted from an activated sludge plant
[PB-299583/5] N80-14696

CARPENTER, D. O.
Early transient incapacitation: A review with consideration of underlying mechanisms
[AD-A071803] N80-14693

CHERNIAKOV, I. N.
Perspectives of the utilization of hyperbaric oxygenation in aviation medicine
A80-20500

CHIPMAN, M.
The effects of acute and chronic low dose exposure to anticholinesterases
N80-14729

CHOU, C.-K.
Study of effects of long-term low-level rf exposure on rats - A plan
A80-21028

CHU, Y. Y.
Man-machine communication in computer-aided remote manipulation
[AD-A074566] N80-15823

CHURCHILL, T.
Design criteria for characterizing individuals in the extreme upper and lower body size ranges
[AD-A072353] N80-14721

CIAVARELLI, A. P.
Aircrew performance research opportunities using the Air Combat Maneuvering Range (ACMR)
N80-14753

CIERNA, V.
Influence of hypokinesis on physiological functions in fowl
[NASA-TM-75999] N80-15778

CLARK, D. A.
Serum cholesterol levels in selected Air Force cadets compared with levels in the West Point study
A80-20442

CLEARY, S. F.
Microwave cataractogenesis
A80-21022

CLESCERI, N. L.
Comparison of diurnal fluctuations of dissolved inorganic carbon and algal productivity estimates in an oligotrophic and mesotrophic freshwater environment
[PB-301201/0] N80-15785

COGOLI, A.
Effect of hypogravity on human lymphocyte activation
A80-20446

COMPTON, G. L.
Proficiency maintenance and assessment in an instrument flight simulator
A80-19023

COOPER, A.
Energy uptake in the first step of visual excitation
A80-20387

CRAWFORD, B. M.
Workload assessment methodology development
N80-14747

CRIMMINS, F. T.
Approaches to CW agent area detection systems for airfields
N80-14733

CROOKS, W. H.
Man-machine communication in computer-aided remote manipulation
[AD-A074566] N80-15823

CROSBY, E. C.
Motion sickness. I - A theory. II - A clinical study based on surgery of cerebral hemisphere lesions. III - A clinical study based on surgery of posterior fossa tumors
A80-20452

CZEISLER, C. A.
Biological rhythms of man living in isolation from time cues
N80-15813

D

DANILOV, I. V.
Effect of rhythmic photostimulation on monkeys with hyperkinesis of post-encephalitic genesis
[NASA-TM-75986] N80-14674

DE VALOIS, R. L.
Visual cortical neurons - Are bars or gratings the optimal stimuli
A80-17711

DEFAYOLLE, M.
Vigilance and attention
N80-15811
Psychostimulants
N80-15817

DI FERRANTE, N.
Amino aciduria in weightlessness
A80-20022

DION, M.
Body temperature and heart rate relationships during submaximal bicycle ergometer exercises
A80-17728

DISKALENKO, V. V.
The effect of certain extremal factors on the human auditory function
A80-21038

DOELLING, N.
Teleoperators under the sea
[PB-299883/9] N80-15824

DUBIN, S.
Confidence regions of planar cardiac vectors
A80-19850

DURNEY, C. H.
Electromagnetic dosimetry for models of humans and animals - A review of theoretical and numerical techniques
A80-21020

E

ECONOMOS, A. C.
Review of cell aging in Drosophila and mouse
A80-17741

EDWARDS, W.
Importance weight assessment for additive, riskless preference functions: A review
[AD-A073365] N80-14700
Subjective versus statistical importance weights. A criterion validation
[AD-A073367] N80-14702

EHRLICH, K.
Toxic polypeptides and uremia
[PB-301063/4] N80-15803

EILS, L. C., III
A criterion validation of multiattribute utility analysis and of a group communication strategy
[AD-A073364] N80-14699

ELLIS, J. P.
Biochemical indices of stress: Biochemical aspects of the stress response
N80-15812

EMURIAN, H. H.
Extended analysis of small group performance and the effects of contingency management in a programmed environment
[AD-A068665] N80-14705

ENGIN, A. E.
Measurement of resistive torques in major human joints
[AD-A071170] N80-14695

ERNSTING, J.
An advanced oxygen system for future combat aircraft
N80-14680
Maintenance of air operations while under attack with chemical agents
[AGARD-CP-264-SUPPL] N80-14728

EVRARD, E.
Problems related to medical criteria for the selection of military navigation personnel
N80-14679

F

FALLON, P. P.
US aircrew chemical defense assemblies
N80-14736

FANARDZHIAN, V. V.
Topographic characteristics of post-synaptic actions of primary vestibular fibers on the vestibulospinal neurons of Deiters nucleus
A80-20681

FEDOROV, B. M.
Changes of some blood indices and myocardial electrolyte content during hypokinesia
[NASA-TM-75954] N80-15798

FEDOTOVA, V. P.
Effect of prolonged hypokinesia on tissue blood flow
[NASA-TM-76005] N80-14688

FINEBERG, M. L.
Proficiency maintenance and assessment in an instrument flight simulator
A80-19023

FIORINDO, R. P.
Hypergravity and estrogen effects on avian anterior pituitary growth hormone and prolactin levels
A80-20447

FLEISHMAN, E. A.
Methods for evaluating the physical and effort requirements of Navy tasks: Metabolic, performance, and physical ability correlates of perceived effort
[AD-A072497] N80-14720

FOLEY, W. L.
Real-time simulation of FLIR and LLLTV Systems for aircrew training
A80-20899

FONNUM, F.
The effect of locally applied organophosphates on miosis and acetylcholinesterase adaptation to chronic treatment
N80-14731

FOSTER, K. R.
RF-field interactions with biological systems - Electrical properties and biophysical mechanisms
A80-21030

FOULDS, E. L.
Serum cholesterol levels in selected Air Force cadets compared with levels in the West Point study
A80-20442

FROLOV, M. V.
Psychophysiological monitoring of operator's emotional stress in aviation and astronautics
A80-20449

G

GABRIELLI, W. F., JR.
Are important weights sensitive to the range of alternatives in multiattribute utility measurement
[AD-A073366] N80-14701

GADE, P. A.
Proficiency maintenance and assessment in an instrument flight simulator
A80-19023

GANDHI, O. P.
State of the knowledge for electromagnetic absorbed dose in man and animals
A80-21019

GARTNER, W. B.
Concepts of workload
N80-14740

Concepts of fatigue
N80-14741

GASPA, P. H. V.
Concerning individual equipment for fighter pilots in the Air Force
N80-14735

GEBHARDT, D. L.
Methods for evaluating the physical and effort requirements of Navy tasks: Metabolic, performance, and physical ability correlates of perceived effort
[AD-A072497] N80-14720

GEDEVANISHVILI, D. M.
Relationship among the 55 Hz bioelectric rhythm of the olfactory bulb, the bulb S-rhythm, and respiration
A80-20211

GERLACH, V. S.
Rule learning and systematic instruction in pilot training
[AD-A068906] N8C-14709

GILINSKIY, M. A.
Evoked potentials in immobilized cats to a combination of clicks with painful electrocutaneous stimuli
[NASA-TM-75941] N80-15780

GINSBURG, A. P.
Spatial filtering and mechanisms of perception
A80-20858

GLADYSHEVA, N. A.
Effect of hypoxia on the contractile activity of smooth muscle cells in the thoracic duct
A80-20683

GOLDMAN, R. F.
Three instruments for assessment of WBGT and a comparison with WGT (BOTSBALL)
[AD-A074979] N80-14691

GOLUBKOV, V. V.
Model task for the dynamics of an underwater two-legged walker
[NASA-TM-75697] N80-15822

GORDON, N.
Heat stress exposure of aerial spray pilots
A80-20451

GRANA, D. C.
Investigation of effects of temperature, salinity, and electrode design on the performance of an electrochemical coliform detector
[NASA-TM-80130] N80-14676

GRAYBIEL, A.
A sudden-stop vestibulovisual test for rapid assessment of motion sickness manifestations
A80-20444

GREENE, R. V.
Proton movements in response to a light-driven electrogenic pump for sodium ions in Halobacterium halobium membranes
A80-17686

GRIBETZ, B.
Heat stress exposure of aerial spray pilots
A80-20451

GRIFFIN, M. J.
The effect of character size on the legibility of numeric displays during vertical whole-body vibration
A80-18839

GRISSETT, J. D.
Biological effects of electric and magnetic fields associated with ELF communications systems
A80-21029

GROTH, P.
Eustachian tube function in selection of airmen
A80-20443

GROUNDS, D. J.
Weightlessness
N80-15795

GUY, A. W.
Study of effects of long-term low-level rf exposure on rats - A plan
A80-21028

H

HANNON, R. L.
Work performance as a function of the interaction of ability, work values, and the perceived work environment
[AD-A068893] N80-14707

HANRATH, P.
Left ventricular relaxation and filling pattern in different forms of left ventricular hypertrophy - An echocardiographic study
A80-18975

HARLOW, F. H.
Mental dynamics
[LA-7946-MS] N80-15820

HARRIS, C. S.
Combined effects of broadband noise and complex waveform vibration on cognitive performance
A80-20441

HARRIS, R. L., SR.
Preliminary investigation of pilot scanning techniques of dial pointing instruments
[NASA-TM-80079] N80-14697

HARRISON, R. G.
A controlled rate freeze/thaw system for cryopreservation of biological materials
[NASA-CR-162531] N80-14675

HARTMAN, B. O.
Survey of methods to assess workload
[AGARD-AG-246] N80-14739

Some insights relative to the man-machine system: An overview of ten years of research
N80-14745

Biochemical indices of stress: Biochemical aspects of the stress response
N80-15812

Management of irregular rest and activity
N80-15819

HARTZELL, E. J.
Process model of how the human operator tracks discontinuous inputs
[AD-A069001] N80-14712

HARVEY, S.
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes
[NASA-CR-162537] N80-14689

HATLEY, V. W.
A study in procedural manipulation of locus of control
[AD-A068658] N80-14704

HAWKINS, F. H.
Sleep and body rhythm disturbance in long-range aviation. The problem and a search for relief
N80-14714

HECKART, S. A.
Daytime visual acuity of observers through a window with and without binoculars
[AD-A074722] N80-15800

HEPPNER, D. B.
Regenerative CO2 removal for PLSS application
[NASA-CR-160419] N80-14718

HERR, A.
Confidence regions of planar cardiac vectors
A80-19850

HOFFMAN, R. G.
Ability, involvement and climate as multiple and interactive predictors of performance
[AD-A068891] N80-14706

HOGAN, J. C.
Methods for evaluating the physical and effort requirements of Navy tasks: Metabolic, performance, and physical ability correlates of perceived effort
[AD-A072497] N80-14720

HOLDEN, J.
Health effects of aerosols emitted from an activated sludge plant
[PB-299583/5] N80-14696

HOLLAND, F. F., JR.
Toxic polypeptides and uremia
[PB-301063/4] N80-15803

HOMICK, J. L.
Space motion sickness
A80-20018

Physiological factors in space operations. Emphasis on space shuttle
N80-14682

Sound and noise
N80-15793

HORDINSKY, J. R.
The European approach to the selection and training of SL payload specialists
N80-14681

HORRIGAN, D. J.
Atmosphere
N80-15789

HUNT, P.
Confidence regions of planar cardiac vectors
A80-19850

I

ISOARD, P.
Development of 'sports anemia' in physically fit men after daily sustained submaximal exercise
A80-20448

IVANOV, E. A.
Psychophysiological monitoring of operator's emotional stress in aviation and astronautics
A80-20449

IVANOV, K. P.
Physiological regulation of oxygen transport to muscles /from results of mathematical analysis of experimental data/
A80-18081

IVARSSON, A.
Eustachian tube function in selection of airmen
A80-20443

J

JAGACINSKI, R. J.
Process model of how the human operator tracks discontinuous inputs
[AD-A069001] N80-14712

JAGGARD, D. L.
Cellular effects: Millimeter waves and Raman spectra - Report of a panel discussion
A80-21031

JASLOW, H.
A new engineering approach to motion cueing technology
[AIAA PAPER 80-0047] A80-18250

JEX, H. R.
Modeling biodynamic effects of vibration, fifth year
[AD-A073819] N80-14719

JOHANNSEN, G.
Mathematical concepts for modeling human behavior in complex man-machine systems
A80-19025

JOHN, R. S.
A criterion validation of multiattribute utility analysis and of a group communication strategy
[AD-A073364] N80-14699
Importance weight assessment for additive, riskless preference functions: A review
[AD-A073365] N80-14700
Subjective versus statistical importance weights. A criterion validation
[AD-A073367] N80-14702

JOHNSON, B. A.
Waste stabilization lagoon microorganism removal efficiency and effluent disinfection with chlorine
[PB-300631/9] N80-15786

JOHNSON, D. L.
Derivation of presbycusis and Noise Induced Permanent Threshold Shift (NIPTS) to be used for the basis of a standard on the effects of noise on hearing
[AD-A071310] N80-14690

JOHNSON, J. E., JR.
Review of cell aging in Drosophila and mouse
A80-17741

JOHNSON, L. C.
Sleep disturbances in humans
N80-15810
Sleep disturbance and performance
N80-15814

JOHNSON, P. C.
A mathematical and experimental simulation of the hematological response to weightlessness
A80-20020
Fluid volumes changes induced by spaceflight
A80-20023

JOHNSON, R. B.
Study of effects of long-term low-level rf exposure on rats - A plan
A80-21028

JOHNSON, W. W.
Process model of how the human operator tracks discontinuous inputs
[AD-A069001] N80-14712

JUSTESEN, D. R.
Microwave irradiation and the blood-brain barrier
A80-21023

K

KAAELBLE, D. H.
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes
[NASA-CR-162537] N80-14689

KAPLAN, H. L.
Contaminants
N80-15790

KATCHER, B. L.
Rating errors of inconsistency as a function of dimensionality of behavioral anchors
[AD-A068922] N80-14710

KATZ, J. J.
Charge separation in synthetic photo-reaction centers
[CONF-781048-1] N80-15784

KELDERBACHER, S.-D.
Quantitative study of free amino acids in human eccrine sweat excreted from the forearms of healthy trained and untrained men during exercise
A80-17727

KESSELER, K.
Quantitative study of free amino acids in human eccrine sweat excreted from the forearms of healthy trained and untrained men during exercise
A80-17727

KIMBALL, K.
Visual performance: A method to assess workload in the flight environment
N80-14749

KIMZEY, S. L.
A mathematical and experimental simulation of the hematological response to weightlessness
A80-20020

KLEIN, E.
Toxic polypeptides and uremia
[PB-301063/4] N80-15803

KLEIN, K. E.
The European approach to the selection and training of SL payload specialists
N80-14681
Circadian rhythms of human performance and resistance: Operational aspects
N80-15808
Circadian rhythms in air operations
N80-15816

KLEIN, S.
Interpreting nonlinear systems - The third order kernel of the eye movement control system
A80-20860

KLEMENTEV, P. N.
A nonparametric model of detection of signals, observed by a human operator on a CRT screen in the presence of noise
A80-19452

KOBLIANSKII, V. V.
The effect of age and vitamin provision of pilots on their night vision characteristics
A80-21040

KOONTZ, A. R.
The interaction of ozone with the human erythrocyte
N80-14686

KOPP, D. W.
The informational structure of DNA, RNA, and amino acid sequences
A80-20856
Information processes in the evolution of protein synthesis
A80-20857

KORSAKOV, I. A.
Evoked potentials in immobilized cats to a combination of clicks with painful electrocutaneous stimuli
[NASA-TM-75941] N80-15780

KORTELA, I. M.
A facilitation effect in orientation discrimination
[AD-A072726] N80-14713

KOVTUN, V. P.
Practical criteria for analyzing the heart hemodynamics of young athletes
A80-20212

KRASNA, N.
Heat stress exposure of aerial spray pilots
A80-20451

KROTOV, V. P.
Changes of some blood indices and myocardial electrolyte content during hypokinesia
[NASA-TM-75954] N80-15798

KUDRAYATSEVA, N. N.
Effect of rhythmic photostimulation on monkeys with hyperkinesis of post-encephalitic genesis
[NASA-TM-75986] N80-14674

KULESH, V. E.
A mathematical model of the disruption of mirror symmetry in prebiological evolution
A80-20680

KUNZ, L. L.
Study of effects of long-term low-level rf exposure on rats - A plan
A80-21028

KUTATELADZE, T. K.
Practical criteria for analyzing the heart hemodynamics of young athletes
A80-20212

KUZNETSOV, V. S.
The effect of aircraft noise on the functional state of human operators
A80-21039

L

LACKNER, J. R.
A sudden-stop vestibulovisual test for rapid assessment of motion sickness manifestations
A80-20444

LAMOSOVA, D.
Influence of hypokinesis on physiological functions in fowl
[NASA-TM-75999] N80-15778

LANYI, J. K.
Proton movements in response to a light-driven electrogenic pump for sodium ions in Halobacterium halobium membranes
A80-17696

LAROCHELLE, L.
Study on the neuronal circuits implicated in postural tremor and hypokinesia
[NASA-TM-76004] N80-15783

LARSEN, W. E.
Some human factors issues in the development and evaluation of cockpit alerting and warning systems
[NASA-RP-1055] N80-15821

LAWRENCE, G. H.
Brain waves and the enhancement of pilot performance
N80-14751

LAWSON, D.
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes
[NASA-CR-162537] N80-14689

LEACH, C. S.
A study of metabolic balance in crewmembers of Skylab IV
A80-20021

Amino aciduria in weightlessness
A80-20022

LEONARD, J. I.
A mathematical and experimental simulation of the hematological response to weightlessness
A80-20020

LEONE, C. H.
US aircrew chemical defense assemblies
N80-14736

Integration of protection against chemical warfare agents with aircrew personal equipment
N80-14738

LEVITES, Z. P.
Effect of prolonged hypokinesia on tissue blood flow
[NASA-TM-76005] N80-14688

LEWIS, C. H.
The effect of character size on the legibility of numeric displays during vertical whole-body vibration
A80-18839

LIABAKH, E. G.
Physiological regulation of oxygen transport to muscles /from results of mathematical analysis of experimental data/
A80-18081

LIAPPIS, N.
Quantitative study of free amino acids in human eccrine sweat excreted from the forearms of healthy trained and untrained men during exercise
A80-17727

LIN, J. C.
The microwave auditory phenomenon
A80-21024

LONGRIDGE, T. M.
Effect of peripherally presented visual signals on pilot performance during flight simulation
[AD-A073604] N80-14703

LORDS, J. L.
Cellular effects: Millimeter waves and Raman spectra - Report of a panel discussion
A80-21031

LOTZ, W. G.
Advances in microwave-induced neuroendocrine effects - The concept of stress
A80-21025

LU, S.-T.
Advances in microwave-induced neuroendocrine effects - The concept of stress
A80-21025

M

MAGDALENO, R. E.
Modeling biodynamic effects of vibration, fifth year
[AD-A073819] N80-14719

MAKAROV, G. A.
Mechanism of disorder of plastic processes in tissue during prolonged hypokinesia
[NASA-TM-75955] N80-15799

MALTHE-SORENSSEN, D.
The effect of locally applied organophosphates on miosis and acetylcholinesterase adaptation to chronic treatment
N80-14731

MATHEY, D. G.
Left ventricular relaxation and filling pattern in different forms of left ventricular hypertrophy - An echocardiographic study
A80-18975

MCCAMBRIDGE, J. J.
Approaches to CW agent area detection systems for airfields
N80-14733

Philosophy of protection of US aircrews against chemical warfare agents
N80-14734

Integration of protection against chemical warfare agents with aircrew personal equipment
N80-14738

MCCLOY, T. M.
Effect of peripherally presented visual signals on pilot performance during flight simulation
[AD-A073604] N80-14703

MCCONVILLE, J. T.
Anthropometric sizing, fit-testing and evaluation of the MBU-12/P oral-nasal oxygen mask
[AD-A074723] N80-14692

MCKENZIE, R. E.
Survey of methods to assess workload
[AGARD-AG-246] N80-14739

Concepts of stress
N80-14742

Some insights relative to the man-machine system: An overview of ten years of research
N80-14745

An exploratory study of psychophysiological measurements as indicators of air traffic control sector workload
N80-14755

Assessment correlates of workload and performance
N80-14758

MCREE, D. I.
Soviet and Eastern European research on biological effects of microwave radiation
A80-21027

MEITNER, E. R.
Micromorphology of neurohypophysis of rats under experimental conditions
[NASA-TM-75947] N80-14671

MELTON, C. E.
Workload and stress in air traffic controllers
N80-14757

MICHAELSON, S. M.
Microwave biological effects - An overview
A80-21021
Advances in microwave-induced neuroendocrine effects - The concept of stress
A80-21025

MICKLE, M. H.
Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, University of Pittsburgh, Pittsburgh, Pa., April 25-27, 1979. Part 1 - Biomedical
A80-20855

MIDDLEBROOKS, E. J.
Waste stabilization lagoon microorganism removal efficiency and effluent disinfection with chlorine
[PB-300631/9] N80-15786

MILD, K. H.
Occupational exposure to radio-frequency electromagnetic fields
A80-21017

MIQUEL, J.
Review of cell aging in Drosophila and mouse
A80-17741

MOACANIN, J.
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes
[NASA-CR-162537] N80-14689

MONTALVO, F. S.
Special session on vision
[LBL-9160] N80-15802

MOOREEDE, M. C.
Biological rhythms of man living in isolation from time cues
N80-15813

MOROZOV, L. L.
A mathematical model of the disruption of mirror symmetry in prebiological evolution
A80-20680

MOSER, G. W.
The informational structure of DNA, RNA, and amino acid sequences
A80-20856
Information processes in the evolution of protein synthesis
A80-20857

MOSSER, E. L.
Serum cholesterol levels in selected Air Force cadets compared with levels in the West Point study
A80-20442

MUELLER, M.
Effect of hypogravity on human lymphocyte activation
A80-20446

MUELLER, W. A.
Dialysis system
[NASA-CASE-NPO-14101-1] N80-14687

MURPHY, M. R.
Concepts of workload
N80-14740
Concepts of fatigue
N80-14741

MURRAY, R. H.
Recent advances in Aeronautical and Space Medicine
[AGARD-CP-265] N80-14678

N

NACHTWEY, D. S.
Radiofrequency radiation
N80-15794

NEGULESCO, J. A.
Hypergravity and estrogen effects on avian anterior pituitary growth hormone and prolactin levels
A80-20447

NETTMARK, A.
Eustachian tube function in selection of airmen
A80-20443

NEUDER, S. M.
Electromagnetic fields in biological media. Part 2: The SCAT program, multilayered sphere, theory and applications
[PB-300904/0] N80-15804

NICHOLSON, A. N.
Hypnotics and the management of disturbed sleep
N80-15818

NOGUES, C.
Bone remodeling in centrifuged rats - Histomorphometric study after an 18-day run
A80-20450

NORTHROP, R.
Health effects of aerosols emitted from an activated sludge plant
[PB-299583/5] N80-14696

NOVIKOVA, N. N.
A nonparametric model of detection of signals, observed by a human operator on a CRT screen in the presence of noise
A80-19452

NVOTA, J.
Influence of hypokinesis on physiological functions in fowl
[NASA-TM-75999] N80-15778

O

OCONNOR, W. F.
Individual and system performance indices for the air traffic control system
N80-14756

OGDEN, G. D.
Methods for evaluating the physical and effort requirements of Navy tasks: Metabolic, performance, and physical ability correlates of perceived effort
[AD-A072437] N80-14720

OLIVER, A.
Study on the neuronal circuits implicated in postural tremor and hypokinesia
[NASA-TM-76004] N80-15783

ONKARAM, B.
Three instruments for assessment of WBGT and a comparison with WGT (BOTSBALL)
[AD-A074979] N80-14691

ORLOV, V. P.
Deiters-nucleus potentials evoked by stimulation of the neural elements of bones and musculo-cutaneous nerves in animals with the cerebrum and cerebellum removed
A80-20682

P

PEARSON, W. H.
Time simulation of an air surveillance task with varying amounts of radar information
[AD-A074866] N80-14722

PERELLI, L. P.
Physiologic aspects of workload/fatigue/stress
N80-14744

PETERSEN, R. C.
Electromagnetic radiation from selected telecommunications systems
A80-21018

PEUCHMAUR, M.
Bone remodeling in centrifuged rats - Histomorphometric study after an 18-day run
A80-20450

PEVZNER, L. Z.
RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization
[NASA-TM-75983] N80-14672

POIRIER, L. J.
Study on the neuronal circuits implicated in postural tremor and hypokinesia
[NASA-TM-76004] N80-15793

POOL, S. L.
Physiological factors in space operations. Emphasis on space shuttle
N80-14682

POPOVA, N. K.
Temperature compensation of the metabolism of serotonin in the brain of hibernating mammals
A80-18082

POZDNIAKOV, A. L.
Effect of 1 alpha-hydroxy-cholecalciferol and varying phosphorous content in the diet on calcium phosphorous metabolism in hypokinetic rats
A80-20445

PRASASSARAKICH, P.
Modeling of blood flow in vessels of the microcirculation
N80-14685

PRIETT, T. E.
A consideration of factors contributing to strength differences in men and women
[AD-A072671] N80-14694

PRODIN, V. I.
Perspectives of the utilization of hyperbaric oxygenation in aviation medicine
A80-20500

PROKHOROV, V. Y.
The course of experimental staphylococcus infection in albino mice during action of certain factors of space flight
[NASA-TM-75973] N80-15779

PROKSOVA, E.
Micromorphology of neurohypophysis of rats under experimental conditions
[NASA-TM-75947] N80-14671

Q

QUICK, R. F., JR.
Theoretical problems in modeling color grating detection
A80-20861

R

RABOUTET, J.
Supersonic aerial transport: Medical and physiological aspects
N80-14683

RADOMSKI, M. W.
Development of 'sports anemia' in physically fit men after daily sustained submaximal exercise
A80-20448

RAMBAUT, P. C.
A study of metabolic balance in crewmembers of Skylab IV
A80-20021
Amino aciduria in weightlessness
A80-20022
Physiological factors in space operations. Emphasis on space shuttle
N80-14682

RANDLE, R. J., JR.
Some human factors issues in the development and evaluation of cockpit alerting and warning systems
[NASA-RP-1055] N80-15821

REINBERG, A.
Circadian and circannual rhythms in healthy adults
N80-15807
Tolerance to shift work: A chronologic approach
N80-15815

REYNOLDS, J. H.
Waste stabilization lagoon microorganism removal efficiency and effluent disinfection with chlorine
[PB-300631/9] N80-15786

RICHARDSON, D.
Consideration of pyridostigmine as a prophylactic agent for aircrew
N80-14730

RICHTER, E. D.
Heat stress exposure of aerial spray pilots
A80-20451

ROBBINS, D. H.
Motor Vehicle Manufacturers Association (MVMA). Two-Dimensional Crash Victim Simulation tutorial system: Self-study guide
[PB-299256/8] N80-14723
Motor Vehicle Manufacturers Association (MVMA) Two-Dimensional Crash Victim Simulation tutorial system: Audio-visual program
[PB-299257/6] N80-14724
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 1
[PB-299305/3] N80-14725
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 2
[PB-299306/1] N80-14726
MVMA Two-Dimensional Crash Victim Simulation, version 4, volume 3
[PB-299307/9] N80-14727

ROBINETTE, K.
Design criteria for characterizing individuals in the extreme upper and lower body size ranges
[AD-A072353] N80-14721

ROHMERT, W.
Evaluation of human strain during interrupted exposure to vibration
A80-17726

ROMANKO, A. M.
Polycardiographic research with a single-channel electrocardiograph
A80-20213

ROOT, D. E.
Philosophy of protection of US aircrews against chemical warfare agents
N80-14734

ROSCOE, A. H.
Handling qualities, workload and heart rate
N80-14750

ROSCOE, S. N.
When day is done and shadows fall, we miss the airport most of all
A80-19024

ROSENBERT, S.
Health effects of aerosols emitted from an activated sludge plant
[PB-299583/5] N80-14696

ROTONDO, G.
Some considerations concerning methods to evaluate and assess workload in aircraft pilots
N80-14743

ROUSE, W. B.
Mathematical concepts for modeling human behavior in complex man-machine systems
A80-19025

ROZANOVA, V. D.
Activity of cholinesterases of blood and heart in rats of different sex and age during muscular loads and hypokinesia
[NASA-TM-75951] N80-15781

RUMMEL, J. A.
Exercise response to simulated weightlessness
A80-20019

S

SABISTON, B. H.
Development of 'sports anemia' in physically fit men after daily sustained submaximal exercise
A80-20448

SALLES-CUNHA, S. X.
Steady magnetic fields in noninvasive electromagnetic flowmetry
A80-21033

SANCES, A., JR.
Steady magnetic fields in noninvasive electromagnetic flowmetry
A80-21033

SANDERS, M.
Visual performance: A method to assess workload in the flight environment
N80-14749

SARKISIAN, V. A.
Topographic characteristics of post-synaptic actions of primary vestibular fibers on the vestibulospinal neurons of Deiters nucleus
A80-20681

SARLANIS, K.
An exploratory study of psychophysiological measurements as indicators of air traffic control sector workload
N80-14755

SAWIN, C. F.
Exercise response to simulated weightlessness
A80-20019

SCHEIBE, W.
Evaluation of human strain during interrupted exposure to vibration
A80-17726

SCHERER, K.
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes
[NASA-CR-162537] N80-14689

SCHIFLETT, S. G.
Aircrew workload assessment techniques
N80-14746

SCHNEIDER, B.
Methodological and conceptual issues in understanding ability-performance relationships
[AD-A068894] N80-14708

SCHNEIDER, R. C.
Motion sickness. I - A theory. II - A clinical study based on surgery of cerebral hemisphere lesions. III - A clinical study based on surgery of posterior fossa tumors
A80-20452

SCHUBERT, F. H.
Regenerative CO2 removal for PLSS application
[NASA-CR-160419] N80-14718

SCHWAN, H. P.
RF-field interactions with biological systems - Electrical properties and biophysical mechanisms
A80-21030

SCHWANK, J. C. H.
Effect of peripherally presented visual signals on pilot performance during flight simulation
[AD-A073604] N80-14703

SELF, H. C.
Daytime visual acuity of observers through a window with and without binoculars
[AD-A074722] N80-15800

SHAGINIAN, V. S.
Practical criteria for analyzing the heart hemodynamics of young athletes
A80-20212

SHAKET, E.
Man-machine communication in computer-aided remote manipulation
[AD-A074566] N80-15823

SHEPELEV, Y. Y.
Biological systems for human life support: Review of the research in the USSR
[NASA-TM-76018] N80-14717

SHILOV, V. M.
The course of experimental staphylococcus infection in albino mice during action of certain factors of space flight
[NASA-TM-75973] N80-15779

SHOENBERGER, R. W.
Combined effects of broadband noise and complex waveform vibration on cognitive performance
A80-20441

SIEGERT, R.
Left ventricular relaxation and filling pattern in different forms of left ventricular hypertrophy - An echocardiographic study
A80-18975

SILVERMAN, C.
Epidemiologic studies of microwave effects
A80-21026

SIMMONS, R.
Visual performance: A method to assess workload in the flight environment
N80-14749

SIMONOV, P. V.
Psychophysiological monitoring of operator's emotional stress in aviation and astronautics
A80-20449

SINGH, P.
Study on the neuronal circuits implicated in postural tremor and hypokinesia
[NASA-TM-76004] N80-15783

SKRALY, J. A.
The informational structure of DNA, RNA, and amino acid sequences
A80-20856
Information processes in the evolution of protein synthesis
A80-20857

SLONIM, A. D.
Temperature compensation of the metabolism of serotonin in the brain of hibernating mammals
A80-18082

SMITH, B. A.
Effect of peripherally presented visual signals on pilot performance during flight simulation
[AD-A073604] N80-14703

SOKOLOV, N. E.
The effects of hypodynamia and hypokinesia on the arterial bed of pelvic limb muscles in the rabbit
[NASA-TM-75984] N80-14673

SOLI, N. E.
The effect of locally applied organophosphates on miosis and acetylcholinesterase adaptation to chronic treatment
N80-14731

SPIRICHEV, V. B.
Effect of 1 alpha-hydroxy-cholecalciferol and varying phosphorous content in the diet on calcium phosphorous metabolism in hypokinetic rats
A80-20445

STEPANOVA, Y. A.
Model task for the dynamics of an underwater two-legged walker
[NASA-TM-75697] N80-15822

STONE, B. M.
Hypnotics and the management of disturbed sleep
N80-15818

STROSCHEIN, L. A.
Three instruments for assessment of WBGT and a comparison with WGT (BOTSBALL)
[AD-A074979] N80-14691

T

TANAKA, H.
Body temperature and heart rate relationships during submaximal bicycle ergometer exercises
A80-17728

TARAKANOVA, O. I.
Rat reaction to hypokinesia after prior adaptation to hypoxia
[NASA-TM-75964] N80-15782

TARASENKO, G. I.
The effect of aircraft noise on the functional state of human operators
A80-21039

TEBBETS, I.
Anthropometric sizing, fit-testing and evaluation of the MBU-12/P oral-nasal oxygen mask
[AD-A074723] N80-14692

TERRANOVA, T.
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes
[NASA-CR-162537] N80-14689

TESAROVA, D.
Influence of hypokinesis on physiological functions in fowl
[NASA-TM-75999] N80-15778

THORELL, L. G.
Visual cortical neurons - Are bars or gratings the optimal stimuli
A80-17711

TJERNSTROM, O.
Eustachian tube function in selection of airmen
A80-20443

TORONTO, A.
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes
[NASA-CR-162537] N80-14689

TSYBIZOV, G. G.
Hormonal regulation of calcium and phosphorus homeostasis during physical activity
A80-20684

TURNHAM, T.
Toxic polypeptides and uremia
[PB-301063/4] N80-15803

U

UPSHER, F. J.
Microbial colonization of materials at Innisfail, Queensland
[MRL-TN-428] N80-14670

USHAKOV, A. S.
Effect of 1 alpha-hydroxy-cholecalciferol and varying phosphorous content in the diet on calcium phosphorous metabolism in hypokinetic rats
A80-20445

V

VALLUCHI-HORF, H.
Effect of hypogravity on human lymphocyte activation A80-20446

VEPKHVADZE, G. L.
Relationship among the 55 Hz bioelectric rhythm of the olfactory bulb, the bulb S-rhythm, and respiration A80-20211

VERIGO, V. V.
Simulation of physiological systems in order to evaluate and predict the human condition in a space flight [NASA-TM-76016] N80-14716

VILLAMAR, H.
Kinematic analysis of osmotic processes under non-equilibrium conditions N80-14669

VOGT, W. G.
Modeling and simulation. Volume 10 - Proceedings of the Tenth Annual Pittsburgh Conference, University of Pittsburgh, Pittsburgh, Pa., April 25-27, 1979. Part 1 - Biomedical A80-20855

VOITENKO, N. N.
Temperature compensation of the metabolism of serotonin in the brain of hibernating mammals A80-18082

VOLLE, M. A.
Body temperature and heart rate relationships during submaximal bicycle ergometer exercises A80-17728

VOLZ, P. A.
Study of fungal phenotypes after exposure to space flight parameters A80-17986

VONBLUECHER, H.
FRG aircrew chemical defence assemblies N80-14737

VONWINTERFELDT, D.
Are important weights sensitive to the range of alternatives in multiattribute utility measurement [AD-A073366] N80-14701

VYBON, P.
Influence of hypokinesis on physiological functions in fowl [NASA-TM-75999] N80-15778

W

WADDEN, R.
Health effects of aerosols emitted from an activated sludge plant [PB-299583/5] N80-14696

WALIGORA, J. M.
The physiological basis for spacecraft environmental limits [NASA-RP-1045] N80-15788
Thermal environment N80-15791
Physical forces generating acceleration, vibration, and impact N80-15792

WARD, S.
Process model of how the human operator tracks discontinuous inputs [AD-A069001] N80-14712

WEGER, N. P.
Therapy on nerve agent poisoning N80-14732

WEGMANN, H. M.
Circadian rhythms of human performance and resistance: Operational aspects N80-15808
Circadian rhythms in air operations N80-15816

WEITZMAN, D. O.
Proficiency maintenance and assessment in an instrument flight simulator A80-19023

WEITZMAN, E. D.
Sleep stage organization: Neuro endocrine relations N80-15809
Biological rhythms of man living in isolation from time cues N80-15813

WHALEY, P. W.
Static acoustic impedance profiles in auditory diagnosis [ASME PAPER 79-WA/BIO-1] A80-18643

WHEDON, G. D.
A study of metabolic balance in crewmembers of Skylab IV A80-20021

WIERWILLE, W. W.
Aircrew workload assessment techniques N80-14746

WIGHT, J. L.
Waste stabilization lagoon microorganism removal efficiency and effluent disinfection with chlorine [PB-300631/9] N80-15786

WILLIAMS, D. H.
Some human factors issues in the development and evaluation of cockpit alerting and warning systems [NASA-RP-1055] N80-15821

WILLIGES, R. C.
Aircrew workload assessment techniques N80-14746

WILSON, F. H., JR.
Serum cholesterol levels in selected Air Force cadets compared with levels in the West Point study A80-20442

WILSON, H. R.
Nonlinear interactions in binocular vision A80-20859

WOODS, R. R.
Regenerative CO2 removal for PLSS application [NASA-CR-160419] N80-14718

Y

YAVROUIAN, A.
Synthesis and biological screening by novel hybrid fluorocarbon hydrocarbon compounds for use as artificial blood substitutes [NASA-CR-162537] N80-14689

YEGOROV, A. D.
Results of medical studies during long-term manned flights on the orbital Salyut-6 and Soyuz complex [NASA-TM-76014] N80-15797

Z

ZHORZHOLADZE, T. K.
Practical criteria for analyzing the heart hemodynamics of young athletes A80-20212

ZHURAVLEVA, Y. N.
Changes of some blood indices and myocardial electrolyte content during hypokinesia [NASA-TM-75954] N80-15798

ZINGERMAN, A. M.
The effect of antiorthostatic stimuli on human operators studied using rheography data A80-20082

ZIRKLE, L. D.
Static acoustic impedance profiles in auditory diagnosis [ASME PAPER 79-WA/BIO-1] A80-18643

ZLATAREV, K.
Scientific biomedical studies during the flight of the first Bulgarian cosmonaut A80-19100

ZORILE, V. L.
The effect of aircraft noise on the functional state of human operators A80-21039

1. Report No.
NASA-SP-7011 (205)

2. Government Accession No.

3. Recipient's Catalog No.

4. Title and Subtitle
AEROSPACE MEDICINE AND BIOLOGY
A Continuing Bibliography (Supplement 205)

5. Report Date
April 1980

6. Performing Organization Code

7. Author(s)

8. Performing Organization Report No.

9. Performing Organization Name and Address
National Aeronautics and Space Administration
Washington, D. C. 20546

10. Work Unit No.

11. Contract or Grant No.

12. Sponsoring Agency Name and Address

13. Type of Report and Period Covered

14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This bibliography lists 212 reports, articles, and other documents introduced into the NASA scientific and technical information system in March 1980.

17. Key Words (Suggested by Author(s))
Aerospace Medicine
Bibliographies
Biological Effects

18. Distribution Statement
Unclassified - Unlimited

19. Security Classif. (of this report)
Unclassified

20. Security Classif. (of this page)
Unclassified

21. No. of Pages
70

22. Price*
$7.00 HC

*For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1980

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to eleven special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley
COLORADO
University of Colorado, Boulder
DISTRICT OF COLUMBIA
Library of Congress
GEORGIA
Georgia Institute of Technology, Atlanta
ILLINOIS
The John Crerar Library, Chicago
MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge
MISSOURI
Linda Hall Library, Kansas City
NEW YORK
Columbia University, New York
OKLAHOMA
University of Oklahoma, Bizzell Library
PENNSYLVANIA
Carnegie Library of Pittsburgh
WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library
COLORADO
Denver Public Library
CONNECTICUT
Hartford Public Library
MARYLAND
Enoch Pratt Free Library, Baltimore
MASSACHUSETTS
Boston Public Library
MICHIGAN
Detroit Public Library
MINNESOTA
Minneapolis Public Library
MISSOURI
Kansas City Public Library
St. Louis Public Library
NEW JERSEY
Trenton Public Library
NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library
OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library
TENNESSEE
Memphis Public Library
TEXAS
Dallas Public Library
Fort Worth Public Library
WASHINGTON
Seattle Public Library
WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019.

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy of microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESA - Information Retrieval Service, European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

POSTMASTER: **If Undeliverable (Section 158 Postal Manual) Do Not Return**

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP-7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP-7037	AERONAUTICAL ENGINEERING Engineering, design, and operation of aircraft and aircraft components	Monthly
NASA SP-7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP-7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP-7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP-7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C. 20546

NASA SP-7011 (206)

Aerospace Medicine and Biology
A Continuing Bibliography with Indexes

Pages 73-96

May 1980

NASA

7011 (206

Aerospace Medicine and Biology
A Continuing Bibliography with Indexes

NASA SP-7011 (206)
May 1980

National Aeronautics and
Space Administration

NEWARK PUBLIC LIBRARY

JUN 20 1980

U. S. [illegible] PUBS.
DEPOSITORY 75

y Aerospace Medicine & Biology
& Biology Aerospace Medicine
ledicine & Biology Aerospace M
ospace Medicine & Biology Aer
logy Aerospace Medicine & Bio
cine & Biology Aerospace Medic
ce Medicine & Biology Aerospa
y Aerospace Medicine & Biology
& Biology Aerospace Medicine
ledicine & Biology Aerospace M
ospace Medicine & Biology Aer
logy Aerospace Medicine & Bio

NAS 1.21:

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series) N80-16023 – N80-17980

IAA (A-10000 Series) A80-21041 – A80-24720

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by Informatics Information Systems Company.

NASA SP-7011(206)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 206)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in April 1980 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*

NASA Scientific and Technical Information Branch 1980
National Aeronautics and Space Administration
Washington, DC

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This Supplement is available from the National Technical Information Service (NTIS), Springfield, Virginia 22161, at the price $7.00 domestic; $14.00 foreign.

INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 169 reports, articles and other documents announced during April 1980 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA).* The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1980 Supplements.

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A80-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies of accessions are available at $7.00 per document up to a maximum of 40 pages. The charge for each additional page is $0.25. Microfiche (1) of documents announced in *IAA* are available at the rate of $3.00 per microfiche on demand, and at the rate of $1.25 per microfiche for standing orders for all *IAA* microfiche. The price for the *IAA* microfiche by category is available at the rate of $1.50 per microfiche plus a $1.00 service charge per category per issue. Microfiche of all the current AIAA Meeting Papers are available on a standing order basis at the rate of $1.50 per microfiche.

Minimum air-mail postage to foreign countries is $1.00 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

STAR ENTRIES (N80-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page vii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the * symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard $3.50 price, for those documents identified by a # symbol.)

---

(1) A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts*. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: Fachinformationszentrum, Karlsruhe. Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM).

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: U.S. Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free.

Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is $65.00 domestic; $130.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics
and Astronautics
Technical Information Service
555 West 57th Street, 12th Floor
New York, New York 10019

British Library Lending Division,
Boston Spa, Wetherby, Yorkshire,
England

Commissioner of Patents and
Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service
ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Scientific and Technical Information
Facility
P.O. Box 8757
B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Branch (NST-41)
Washington, D.C. 20546

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, California 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey
1033 General Services Administration
Building
Washington, D.C. 20242

U.S. Geological Survey
601 E. Cedar Avenue
Flagstaff, Arizona 86002

U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

U.S. Geological Survey
Bldg. 25, Denver Federal Center
Denver, Colorado 80225

Fachinformationszentrum Energie, Physik,
Mathematik GMBH
7514 Eggenstein Leopoldshafen
Federal Republic of Germany

NTIS PRICE SCHEDULES

Schedule A

STANDARD PAPER COPY PRICE SCHEDULE

(Effective January 1, 1980)

Price Code	Page Range	North American Price	Foreign Price
A01	Microfiche	$ 3.50	$ 5.25
A02	001-025	5.00	10.00
A03	026-050	6.00	12.00
A04	051-075	7.00	14.00
A05	076-100	8.00	16.00
A06	101-125	9.00	18.00
A07	126-150	10.00	20.00
A08	151-175	11.00	22.00
A09	176-200	12.00	24.00
A10	201-225	13.00	26.00
A11	226-250	14.00	28.00
A12	251-275	15.00	30.00
A13	276-300	16.00	32.00
A14	301-325	17.00	34.00
A15	326-350	18.00	36.00
A16	351-375	19.00	38.00
A17	376-400	20.00	40.00
A18	401-425	21.00	42.00
A19	426-450	22.00	44.00
A20	451-475	23.00	46.00
A21	476-500	24.00	48.00
A22	501-525	25.00	50.00
A23	526-550	26.00	52.00
A24	551-575	27.00	54.00
A25	576-600	28.00	56.00
A99	601-up	-- 1/	-- 2/

1/ Add $1.00 for each additional 25 page increment or portion thereof for 601 pages up

2/ Add $2.00 for each additional 25 page increment or portion thereof for 601 pages and more

Schedule E

EXCEPTION PRICE SCHEDULE

Paper Copy & Microfiche

Price Code	North American Price	Foreign Price
E01	$ 5.50	$ 11.50
E02	6.50	13.50
E03	8.50	17.50
E04	10.50	21.50
E05	12.50	25.50
E06	14.50	29.50
E07	16.50	33.50
E08	18.50	37.50
E09	20.50	41.50
E10	22.50	45.50
E11	24.50	49.50
E12	27.50	55.50
E13	30.50	61.50
E14	33.50	67.50
E15	36.50	73.50
E16	39.50	79.50
E17	42.50	85.50
E18	45.50	91.50
E19	50.50	100.50
E20	60.50	121.50
E99 - Write for quote		
N01	28.00	40.00

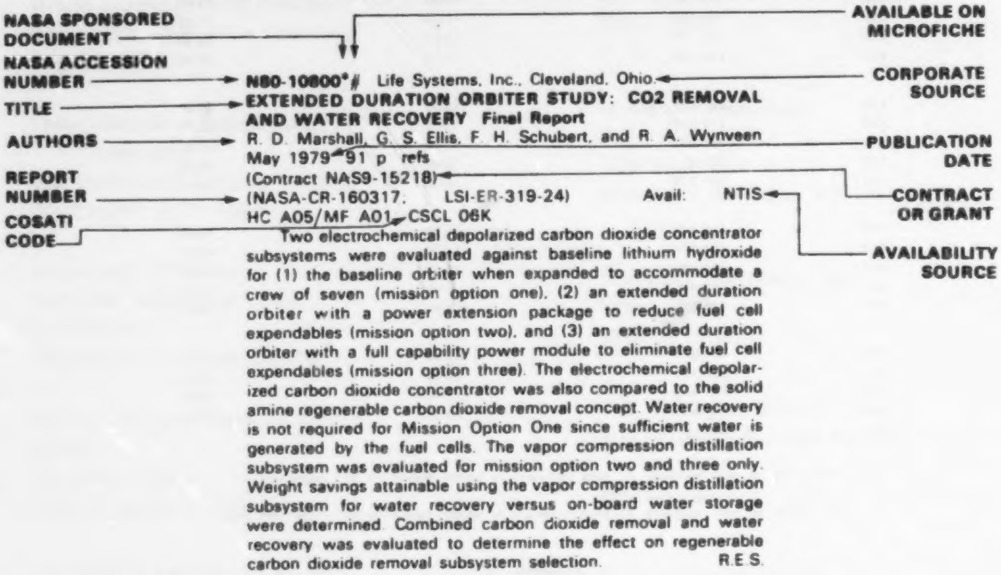
TABLE OF CONTENTS

Page

IAA ENTRIES (A80-10000) 73
STAR ENTRIES (N80-10000) 85

Subject Index I-1
Personal Author Index I-21

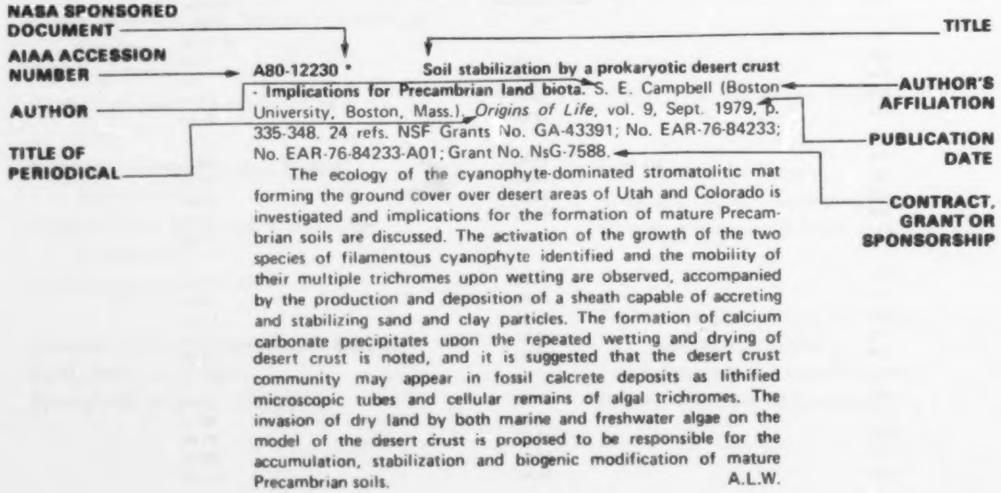
TYPICAL CITATION AND ABSTRACT FROM *STAR*


NASA SPONSORED DOCUMENT
AVAILABLE ON MICROFICHE
NASA ACCESSION NUMBER
CORPORATE SOURCE
TITLE
AUTHORS
PUBLICATION DATE
REPORT NUMBER
CONTRACT OR GRANT
COSATI CODE
AVAILABILITY SOURCE

N80-10800*# Life Systems, Inc., Cleveland, Ohio.
EXTENDED DURATION ORBITER STUDY: CO2 REMOVAL AND WATER RECOVERY Final Report
R. D. Marshall, G. S. Ellis, F. H. Schubert, and R. A. Wynveen
May 1979 91 p refs
(Contract NAS9-15218)
(NASA-CR-160317; LSI-ER-319-24) Avail: NTIS
HC A05/MF A01 CSCL 06K

Two electrochemical depolarized carbon dioxide concentrator subsystems were evaluated against baseline lithium hydroxide for (1) the baseline orbiter when expanded to accommodate a crew of seven (mission option one), (2) an extended duration orbiter with a power extension package to reduce fuel cell expendables (mission option two), and (3) an extended duration orbiter with a full capability power module to eliminate fuel cell expendables (mission option three). The electrochemical depolarized carbon dioxide concentrator was also compared to the solid amine regenerable carbon dioxide removal concept. Water recovery is not required for Mission Option One since sufficient water is generated by the fuel cells. The vapor compression distillation subsystem was evaluated for mission option two and three only. Weight savings attainable using the vapor compression distillation subsystem for water recovery versus on-board water storage were determined. Combined carbon dioxide removal and water recovery was evaluated to determine the effect on regenerable carbon dioxide removal subsystem selection. R.E.S.

TYPICAL CITATION AND ABSTRACT FROM *IAA*


NASA SPONSORED DOCUMENT
TITLE
AIAA ACCESSION NUMBER
AUTHOR'S AFFILIATION
AUTHOR
PUBLICATION DATE
TITLE OF PERIODICAL
CONTRACT, GRANT OR SPONSORSHIP

A80-12230 * **Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota.** S. E. Campbell (Boston University, Boston, Mass.), *Origins of Life*, vol. 9, Sept. 1979, p. 335-348. 24 refs. NSF Grants No. GA-43391; No. EAR-76-84233; No. EAR-76-84233-A01; Grant No. NsG-7588.

The ecology of the cyanophyte-dominated stromatolitic mat forming the ground cover over desert areas of Utah and Colorado is investigated and implications for the formation of mature Precambrian soils are discussed. The activation of the growth of the two species of filamentous cyanophyte identified and the mobility of their multiple trichromes upon wetting are observed, accompanied by the production and deposition of a sheath capable of accreting and stabilizing sand and clay particles. The formation of calcium carbonate precipitates upon the repeated wetting and drying of desert crust is noted, and it is suggested that the desert crust community may appear in fossil calcrete deposits as lithified microscopic tubes and cellular remains of algal trichromes. The invasion of dry land by both marine and freshwater algae on the model of the desert crust is proposed to be responsible for the accumulation, stabilization and biogenic modification of mature Precambrian soils. A.L.W.

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 206)

MAY 1980

IAA ENTRIES

A80-21094 # Simulation of walking under conditions of weightlessness (Imitatsiia khod'by v nevesomosti). V. V. Beletskii and N. S. Konikova. *Akademiia Nauk SSSR, Izvestiia, Mekhanika Tverdogo Tela*, Sept.-Oct. 1979, p. 48-53. In Russian.

The analysis deals with the plane motions of a dynamic biped walking machine consisting of 5 inertial elements: a balancer-body and two identical two-link legs. It is shown that simulation of biped walking under zero-g conditions requires appreciably smaller control moments than in the presence of a gravitational field. V.P.

A80-21421 # Ecological physiology of the brain (Ekologicheskaia fiziologiia mozga). N. N. Vasilevskii. Leningrad, Izdatel'stvo Meditsina, 1979. 200 p. 294 refs. In Russian.

Neurophysiological mechanisms of the adaptive activity of the brain are examined. Specifically, attention is given to: (1) adaptive self-regulation and the 'plasticity' of neurodynamic processes, (2) the effects of extreme conditions (including sensory deprivation) on the adaptive plasticity of the brain, (3) operant controlled neural activity, (4) elementary selective response systems, and (5) mechanisms of conditioned reflexes as forms of selective response. B.J.

A80-21539 Training and acclimatization - Effects on responses to exercise in a desert environment. C. L. Wells, S. H. Constable, and A. L. Haan (Arizona State University, Tempe, Ariz.). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 105-112. 20 refs.

A80-21540 Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position. O. G. Gazenko, V. I. Shumakov, L. I. Kakurin, V. E. Katkov, V. V. Chestukhin, V. M. Mikhailov, A. Z. Troshin, and V. N. Nesvetov (Ministry of Health of USSR, Institute of Biomedical Problems and Institute of Transplantology and Artificial Organs, Moscow, USSR). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 113-120. 39 refs.

A80-21541 Comparison of two techniques for the development and maintenance of tracking behavior in monkeys. D. F. McCoy, S. R. Aeschleman, G. B. Nallan, and G. M. Pace (Kentucky, University, Lexington, Ky.). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 121-125. Grant No. AF-AFOSR-75-2751.

The present study compared two methods by which animal subjects can be taught to perform a pursuit tracking task. Rhesus monkeys were trained to track in order to avoid shock (Method No. 1) or to obtain food (Method No. 2). One animal received training under both procedures. Both techniques were effective; however, the method utilizing shock produced faster learning and more efficient performance. The possible reasons for these differences are discussed along with generality of the results. These methods should have implications for tracking research in which animal models are required. (Author)

A80-21542 Blockade of the different enzymatic steps in the synthesis of brain amines and memory /CAR/ in hypobaric hypoxic rats treated and untreated with L. Dopa. F. Boismare, M. Le Poncin-Lafitte, and J. R. Rapin (Rouen-Haute Normandie, Université, Rouen, France). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 126-128. 9 refs.

A80-21543 Oxygenation and ambient air pressure influences on alcohol-induced nystagmus in rabbits. L. M. Odkvist (University Hospital, Linkoping, Sweden) and W. J. Oosterveld (Wilhelmina Gasthuis, Amsterdam, Netherlands). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 129-131. 39 refs.

A80-21544 * Simulated weightlessness - Effects on bioenergetic balance. J. P. Jordan, H. A. Sykes, J. C. Crownover, C. L. Schatte, J. B. Simmons, II, and D. P. Jordan (Colorado State University, Fort Collins, Colo.). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 132-136. 35 refs. Grant No. NsG-2232.

As a prelude to a flight experiment, an attempt was made to separate energy requirements associated with gravity from all other metabolic needs. The biological effects of weightlessness were simulated by suspending animals in a harness so that antigravity muscles were not supporting the body. Twelve pairs of rats were allowed to adapt to wearing a harness for 5 d. Experimental animals were then suspended in harness for 7 d followed by recovery for 7 d. Control animals were harnessed but never suspended. Oxygen consumption, carbon dioxide production and rate of (C-14)O2 expiration from radio-labeled glucose were monitored on selected days. Food intake and body mass were recorded daily. Metabolic rate decreased in experimental animals during 7 d of suspension and returned to normal during recovery. Although some of the metabolic changes may have related to variation in food intake, simulated weightlessness appears to directly affect bioenergetic balance. (Author)

A80-21545 Permeability changes in cerebral, iridic, and retinal vessels during experimental decompression sickness in the rat. T. Tervo, J. Lethosalo, V.-P. Lehto, M. Heino, I. Kantola, and L. A. Laitinen (Finnish Navy; Central Military Hospital I; Helsinki, University, Helsinki, Finland). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 137-141. 29 refs.

A80-21546 **Development of Performance Evaluation Tests for Environmental Research /PETER/ - Complex counting test.** R. S. Kennedy and A. C. Bittner, Jr. (U.S. Naval Medical Research and Development Command, Naval Aerospace Medical Research Laboratory, New Orleans, La.). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 142-144. 12 refs.

This study is the first in a program to develop a battery of Performance Evaluation Tests for Environmental Research (PETER). Nineteen volunteer subjects were tested daily for three weeks on a complex task requiring the operator to keep simultaneous track of several things with changing states. Average daily performances are reported as well as reliabilities of three main types: (1) internal consistency of the test; (2) sensitivity - the ability to differentiate subjects; and (3) stability - consistency of measurement over repeated sessions. The results showed that, on this task, learning was accomplished quickly, and performance stayed level for three weeks. The cross-trial reliability for this test was found relatively stable after 3 d of practice, with a decline of only r = .94 to r = .79 over 11 d. This task is further noted as having several characteristics which make it particularly suitable for use in environmental research. It is concluded that the complex counting test can be recommended for use in environmental and other time-course research. (Author)

A80-21547 * **Physiological response to hyper- and hypogravity during rollercoaster flight.** R. J. von Baumgarten, H. Vogel (Mainz, Universität, Mainz, West Germany), G. Baldrighi (Michigan, University, Ann Arbor, Mich.), and R. Thümler (Michigan, University, Ann Arbor, Mich.; Mainz, Universität, Mainz, West Germany). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 145-154. 27 refs. Contract No. NAS2-9466.

Twenty-six healthy male subjects were flown in a Lear jet aircraft through rollercoaster and parabolic weightlessness flight. Eye movements, respiration, and blood volume pulse were recorded on magnetic tape. The same subjects underwent a battery of five vestibular tests in the laboratory on the ground. One subject in each flight was flown in an upright position, the other in a 90 deg forward tilted head position. The forward tilted subjects always reported motion sickness earlier and after fewer rollercoaster maneuvers than the upright-sitting subjects. It is concluded that the susceptibility to changes of X-axis acceleration is higher than to changes of Z-axis acceleration. Correlation was found between the ability to estimate the subjective vertical (modified Müller-Aubert-test), optokinetic nystagmus asymmetries, and susceptibility to rollercoaster flight sickness. (Author)

A80-21548 **Effect of alcohol ingestion on man's thermoregulatory responses during cold water immersion.** T. Graham and K. Baulk (Guelph, University, Guelph, Ontario, Canada). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 155-159. 23 refs.

A80-21549 **Bioman - An improved occupant-crew station compliance modeling system.** G. D. Frisch (U.S. Naval Medical Research and Development Command, Naval Aerospace Medical Research Laboratory, New Orleans, La.) and L. A. D'Aulerio (U.S. Naval Material Command, Naval Air Development Center, Warminster, Pa.). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 160-167. 13 refs. Navy-supported research.

A computerized, three-dimensional model of the human body and aircraft crew station, to be used in evaluating the physical compatibility of crew members with their stations from the points of view of crew performance and safety, is presented. The graphics model uses as input data generated by crew station geometry and occupant dynamic models, as well as human dynamic response data and test track and ejection tower test data. The Cockpit Geometry Evaluation Computer Program System is used to check and transform digitized crew station data, while the Calspan Simulator program is used to simulate occupant response. The human body can be represented graphically as a set of ellipsoids, as in the Calspan program, or by a high-resolution topographic method, taking into account possible head protection. The package is capable of displaying crew responses from omnidirectional inputs from any perspective, thus making it applicable to aircraft ejections, carrier arrested landings and ditchings, the design of the crew station interiors, and other crew enclosures. A.L.W.

A80-21550 **The effect of propranolol on human psychomotor performance.** A. D. Broadhurst (West Suffolk Hospital, Bury St. Edmunds, England). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 176-179. 24 refs.

Despite their widespread usage the effect of beta blockers on human performance has been only sparsely studied and results of investigations are discrepant. This study examines the effect of one of the most commonly prescribed beta adrenergic blocking drugs, propranolol, on psychomotor function. To demonstrate the sensitivity of the test method and to provide some basis for comparison, the effect of small doses of sodium amylobarbitone on psychomotor performance is also measured. Results indicate that propranolol in a single dose of 40 mg produces a small but significant decrement of performance, an effect comparable to that of 25 mg of sodium amylobarbitone. Habituation to chronic administration of propranolol at a daily dose level of 120 mg is also apparent. The clinical significance of these effects, particularly in aviation medicine, is discussed. (Author)

A80-21551 **Trapped gas dysbarism requiring recompression therapy.** R. Beson, T. Wilson, and J. Etheredge ((U.S. Navy, Naval Air Station, Norfolk, Va.). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 180-181. 11 refs.

A case history of trapped gas dysbarism (barotrauma) requiring recompression therapy is presented to demonstrate the severity of the syndrome. Following exposure to a simulated altitude of 40,000 ft in a low-pressure chamber, a 27-year old male reported nausea, abdominal cramping and a sense of detachment from his surroundings. A tentative diagnosis of dysbarism-pain only-persistent was made, which was later changed to barotrauma (trapped intestinal gas). A Table 5 recompression schedule was subsequently employed in a hyperbaric facility to a depth of 60 ft, after 22 min of which the symptoms disappeared. Intermittant mild abdominal cramping was then experienced over the next 12 days, after which the patient was asymptomatic. It is concluded that flight surgeons and physiologists must be aware of the potentially severe complications of barotrauma as well as of decompression sickness. A.L.W.

A80-21552 **The 1976 accident experience of civilian pilots with static physical defects.** J. R. Dille and C. F. Booze (FAA, Civil Aeromedical Institute, Oklahoma City, Okla.). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 182-184. 5 refs.

The paper reports on aircraft accident experience of civilian pilots with physical defects in 1976. It was found that pilots with blindness in either eye or absence of either eye, deficient color vision with a waiver, and deficient distant vision had significantly more accidents than were expected on the basis of observed-to-expected ratios. The accident rates were calculated in 1975, and the rates for airmen with blindness in one eye or absence of an eye were found to be significant; the observed-to-expected ratios for 1976 were 1.91 for deficient color vision with a waiver, 1.28 for contact lens users, 1.37 for blindness in- or absence of either eye, and 1.62 for deficient distant vision. Finally, it was shown that the accident rates per 100,000 h of cumulative and last 6 months flying experience were significantly greater for contact lens users and monocular pilots than for the active airman population. A.T.

A80-21553 * **An ultrasonic plethysmograph for space flight applications.** P. K. Bhagat, J. F. Lafferty, D. Bowman, and M. P. Kadaba (Kentucky, University, Lexington, Ky.). *Aviation, Space, and Environmental Medicine,* vol. 51, Feb. 1980, p. 185-188. 14 refs. Contracts No. NAS9-14392; No. NAS9-15452.

The development of an ultrasonic plethysmograph based on the transit time measurement principle is reported, which meets the space-imposed requirements for evaluating cardiovascular deconditioning. It consists of a pulse generator, pulse receiver amplifier, voltage comparator, synchronous pulse generator, elapsed time counter, and transmit and receive piezoelectric crystals resonant at 2 MHz and of 3 mm diameter. The transit time for an ultrasonic pulse to propagate across a limb cross section is computed in a digital fashion using a 32 MHz clock, and resolution is 0.049 mm with the range being approximately 200 mm. Experimental results regarding dynamic system response were found comparable in both accuracy and sensitivity to those of a Whitney strain gage using a 50 torr venous occlusion. J.P.B.

A80-21781 'Acetonitrile' - A plausible source of amino acids on the primitive earth. A. K. Pant, D. D. Melkani, and H. D. Pathak (Kumaun University, Naini Tal, India). *British Interplanetary Society, Journal (Interstellar Studies),* vol. 32, June 1979, p. 223-227. 27 refs.

Acetonitrile, under mild hydrolytic conditions, gives rise to a number of ninhydrin positive compounds, some of which are of biological significance. The compounds identified include lysine, aspartic acid, serine, glycine, alpha-alanine and leucine. Metal oxide sensitizers remarkably affect the formation of amino acids. Since acetonitrile is easily formed by sparking a mixture of methane and ammonia, the main constituents of the primitive atmosphere, it is likely that it may have played a role in chemical evolution. (Author)

A80-21851 # An evaluation of heart rate during activity of high psychological and physiological stress (Zur Beurteilung der Herzschlagfrequenz bei psycho-physisch hoch belastenden Tätigkeiten). U. Philipp. Darmstadt, Technische Hochschule, Fachbereich Maschinenbau, Dr.-Ing. Dissertation, 1979. 187 p. 210 refs. In German.

The work examines the selection and testing of methods that determine heart rate on the basis of working condition examinations under various stress factors. These methods include the application of central nervous system functions and the simulation studies of processes to scaling and measuring heart rate with respect to stress reaction. The application of these techniques in engineering is examined and some examples are tested, whose results can help to determine the evaluation of heart rate under various stress conditions. C.F.W.

A80-21982 * Microbial sulfate reduction measured by an automated electrical impedance technique. R. S. Oremland and M. P. Silverman (NASA, Ames Research Center, Extraterrestrial Biology Div., Moffett Field, Calif.). *Geomicrobiology Journal,* vol. 1, no. 4, 1979, p. 355-372. 27 refs.

Electrical impedance measurements are used to investigate the rates of sulfate reduction by pure cultures of and sediments containing sulfur-reducing bacteria. Changes in the electrical impedance ratios of pure cultures of Desulfovibrio aestuarii and samples of reduced sediments from San Francisco Bay were measured by a Bactometer 32, and sulfate reduction was followed by measuring the incorporation of (S-35) sulfate into metal sulfides. The growth of the bacteria in pure culture is found to result in an increase of 0.2200 in the impedance ratio within 24 h, accompanied by increases in protein, ATP, sulfide and absorptance at 660 nm, all of which are inhibited by the addition of molybdate. Similar responses were observed in the sediments, although impedance ratio responses were not completely inhibited upon the addition of molybdate, due to the presence of nonsulfate-respiring microorganisms. Experiments conducted with sterile media and autoclaved sediments indicate that the presence of H2S together with iron is responsible for the impedance effect, and sulfate reduction rates ranging between 0.85 and 1.78 mmol/l per day are estimated for the sediments by the impedance technique. A.L.W.

A80-21984 * Residual nutational activity of the sunflower hypocotyl in simulated weightlessness. D. K. Chapman and A. H. Brown (Pennsylvania, University, Philadelphia, Pa.). *Plant and Cell Physiology,* vol. 20, no. 2, 1979, p. 473-478. 19 refs. Grants No. NGR-39-010-149; No. NGR-39-030-010; Contract No. NAS9-15340.

The gravity dependence of circumnutational activity in the sunflower hypocotyl is investigated under conditions of simulated weightlessness. Seedling cultures of the sunflower Helianthus annuus were placed four days after planting in clinostats rotating at a rate of 1.0 rpm in the horizontal or somersaulting configurations, and plant movements around their growth axes were recorded in infrared light by a time-lapse closed-circuit video system. The amplitudes and mean cycle durations of the plant nutations in the horizontal and tumbling clinostats are observed to be 20% and 72%, and 32% and 74%, respectively, of the values observed in stationary plants; extrapolations to a state of zero g by the imposition of small centripetal forces on horizontally clinostated plants also indicate some nutational motion in the absence of gravity. It is concluded that the results are incompatible with the model of Israelsson and Johnsson (1967) of geotropic response with overshoot for sunflower circumnutation; however, results of the Spacelab 1 mission experiment are needed to unambiguously define the role of gravitation. A.L.W.

A80-21988 * Noninvasive measures of bone bending rigidity in the monkey /M. nemestrina/. D. R. Young, W. H. Howard, C. Cann (NASA, Ames Research Center, Biomedical Research Div., Moffett Field, Calif.), and C. R. Steele (Stanford University, Stanford, Calif.). *Calcified Tissue International,* vol. 27, Mar. 1979, p. 109-115. 23 refs.

The in vivo bending rigidity and bone mineral content of monkey ulnae and tibiae were measured. Bending rigidity in the anteroposterior plane was measured by an impedance probe technique. Forced vibrations of the bones were induced with an electromechanical shaker, and force and velocity at the driving point were determined. The responses over the range of 100-250 Hz were utilized to compute the bending rigidity. Bone mineral content in the cross section was determined by a photon absorption technique. Seventeen male monkeys (Macaca nemestrina) weighing 6-14 kg were evaluated. Bending rigidity was correlated with the mineral content of the cross section, with a correlation coefficient of 0.899. Two monkeys were evaluated during prolonged hypodynamic restraint. Restraint produced regional losses of bone most obviously in the proximal tibia. The local bone mineral content declines 17 to 24% and the average bending rigidity declines 12 to 22%. Changes in bones leading to a reduction in mineral content and stiffness are discussed. (Author)

A80-22124 The effects of long-term intoxication by the inhalation of gaseous HF on myocardial cell metabolism and serum cardiac enzyme levels in guinea pigs (Effets de l'intoxication à long terme par inhalation de HF gazeux sur le métabolisme des cellules du myocarde et les taux sériques d'enzymes cardiaques de cobayes). P. Bourbon, J. Poey, C. Rioufol, M. Saouthi, and C. Phillibert (Institut National de la Santé et de la Recherche Médicale, Vigoulet-Auzil, Haute-Garonne; Toulouse III, Université, Toulouse, France). *Pollution Atmosphérique,* vol. 21, Oct.-Dec. 1979, p. 323-326. 10 refs. In French.

A80-22840 # Some problems of space medicine and international manned space flights (Wybrane zagadnienia medycyny kosmicznej a miedzynarodowe kosmiczne loty zalogowe). N. N. Gurovskii, A. D. Egorov (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR), and S. Baranski (Wojskowy Instytut Medycyny Lotniczej, Warsaw, Poland). *Postepy Astronautyki,* vol. 12, no. 3, 1979, p. 7-20. In Polish.

The effects of weightlessness on the human body are reviewed. Particular consideration is given to the activity of the vestibular, cardiovascular, and muscular systems under weightlessness. A model of adaptation to weightlessness is presented. The readaptation of the human body to normal gravity on the earth's surface, means of protecting the body against the negative effects of weightlessness, and the problem of rest during prolonged space flight, are also treated. Data on the performance of astronauts aboard the Salyut 6 station are examined. B.J.

A80-22967 **Adapting to two orientations - Disinhibition in a visual aftereffect.** S. Magnussen and W. Kurtenbach (Freiburg, Universität, Freiburg im Breisgau, West Germany). *Science*, vol. 207, Feb. 22, 1980, p. 908, 909. 16 refs. Research supported by the Alexander von Humboldt- Stiftung and Norges Almenvitenskapelige Forskningsrad; Deutsche Forschungsgemeinschaft Contract No. SFB-70.

The tilt aftereffect of adapting to two different orientations simultaneously is weaker than the aftereffect of adapting to the more effective of the two orientations alone. This finding is consistent with explanations of orientational aftereffects in terms of lateral inhibition between cortical orientation detectors, but not with explanations in terms of neural 'fatigue' from excitation. (Author)

A80-22969 **Linear summation of tilt illusion and tilt aftereffect.** S. Magnussen and W. Kurtenbach (Freiburg, Universität, Freiburg im Breisgau, West Germany). *Vision Research*, vol. 20, no. 1, 1980, p. 39-42. 28 refs. Research supported by the Alexander von Humboldt-Stiftung and Norges Almenvitenskapelige Forskningsrad; Deutsche Forschungsgemeinschaft Contract No. SFB-70.

A comparison of the tilt aftereffect (TAE) and the simultaneous tilt illusion (TI) revealed very similar angular functions. When an aftereffect and a simultaneous illusion of opposite signs were paired by first adapting to a clockwise orientation and then presenting the vertical test line together with a counterclockwise inducing line, the two effects summed linearly. The results suggest a unitary mechanism of TAE and TI, and are consistent with the hypothesis that they are manifestations of lateral inhibition between orientation detectors. (Author)

A80-22970 **Additivity of fusional vergence and pursuit eye movements.** J. M. Miller, H. Ono, and M. J. Steinbach (York University, Downsview, Ontario, Canada). *Vision Research*, vol. 20, no. 1, 1980, p. 43-47. 10 refs. National Research Council of Canada Grants No. A-0296; No. A-7664.

We measured binocular eye movements photoelectrically while subjects tracked a target moving smoothly along a horizontal path in the fronto-parallel plane, with interpolated step changes in depth. By measuring eye movement speeds when only fusional vergence or only pursuit was required we were able to ascertain how the vergence and pursuit movements combined when called out together. When the two were in opposite directions the net eye movement speed was equal to the difference of the vergence and pursuit components, reflecting perfect additivity. When vergence and pursuit were in the same direction a significant deviation from strict additivity was found, i.e. the combined eye movements were on average 11% slower than expected. We speculate that this attenuation may be peripheral in origin. (Author)

A80-22971 **Information used by the perceptual and oculomotor systems regarding the amplitude of saccadic and pursuit eye movements.** J. M. Miller (New School for Social Research, New York, N.Y.). *Vision Research*, vol. 20, no. 1, 1980, p. 59-68. 33 refs. Grant No. NIH-16327-09.

Measures were designed to assess the steady-state information about amplitude of eye movement used for performance of a visual localization task and for control of voluntary saccades. Each measure was applied to four experimental eye movement situations: a saccade in the dark, a saccade to a visible target, a single half-cycle, and the last of 5 half-cycles of pursuit of a target moving in a straight path with sinusoidal velocity at 0.33 Hz. The data indicate that, concerning a just-completed eye movement, (1) information available for control of voluntary saccades is no different from that used to perform a visual localization task, (2) pursuit of a target moving repetitively over a path is subject to considerable underestimation (33%) compared to pursuit of a single sweep of target motion (11% underestimation) and (3) retinal information concerning 'intended' saccade amplitude is utilized in judging the amplitude of the saccade which actually occurs. The ERS alone, however, is quite accurate and underestimates saccade amplitude by less than 4%. (Author)

A80-22972 **A two-stage identification scheme for the determination of the parameters of a model of left heart and systemic circulation.** J. W. Clark, Jr. (Rice University, Houston, Tex.), R. Y. S. Ling (McDonnell Douglas Corp., Houston, Tex.), R. Srinivasan (South Carolina, Medical University, Charleston, S.C.), J. S. Cole (Baylor College of Medicine, Houston, Tex.), and R. C. Pruett (Arco Oil, Plano, Tex.). *IEEE Transactions on Biomedical Engineering*, vol. BME-27, Jan. 1980, p. 20-29. 28 refs. NSF Grant No. ENG-77-17987.

A80-22985 # **Calorimetric measurements of microwave energy absorption by mice after simultaneous exposure of 18 animals.** S. J. Allen and W. D. Hurt (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Radio Science*, vol. 14, Nov.-Dec. 1979, Supplement, p. 1-4.

A multiple-cell calorimetric system was constructed, and the experimental procedure for its use was developed. An associated data-readout system is small, relatively inexpensive, and provides automated thermistor calibration, precise temperature measurements, and a printout of whole-body SARs. One system was used to determine the SAR of each of 18 mice that were simultaneously exposed to 2.6-GHZ radiation. (Author)

A80-22987 * **Part-body and multibody effects on absorption of radio-frequency electromagnetic energy by animals and by models of man.** O. P. Gandhi, M. J. Hagmann, and J. A. D'Andrea (Utah, University, Salt Lake City, Utah). *Radio Science*, vol. 14, Nov.-Dec. 1979, Supplement, p. 15-21. 10 refs. Grant No. DAMD17-74-C-4092; Contract No. NAS2-9555.

Fine structure in the whole-body resonant curve for radiofrequency energy deposition in man can be attributed to part-body resonances. As for head resonance, which occurs near 350 MHz in man, the absorptive cross section is nearly three times the physical cross section of the head. The arm has a prominent resonance at 150 MHz. Numerical solutions, antenna theory, and experimental results on animals have shown that whole-body energy deposition may be increased by 50 percent or more because of multiple bodies that are strategically located in the field. Empirical equations for SARs are also presented along with test data for several species of laboratory animals. Barbiturate anesthesia is sufficiently disruptive of thermoregulation that delta Ts of colonic temperature yield energy dose values in several mammals that compare quite favorably with those based on whole-body calorimetry. (Author)

A80-22988 **A geometrical-optics and an exact solution for internal fields in and energy absorption by a cylindrical model of man irradiated by an electromagnetic plane wave.** H. Massoudi, C. H. Durney (Utah, University, Salt Lake City, Utah), and C. C. Johnson. *Radio Science*, vol. 14, Nov.-Dec. 1979, Supplement, p. 35-42. 23 refs.

A geometrical-optics approximation was used to calculate the mass-normalized rate of RF energy absorption (the specific absorption rate or SAR) in cylindrical models of man and in experimental animals irradiated by an electromagnetic (EM) plane wave at high radio frequencies. Comparison of these results with corresponding geometrical-optics calculations for prolate spheroidal models showed that the relative absorptive cross section of the prolate spheroidal and cylindrical models of man are essentially the same at frequencies above 20 GHz. The exact solution for the SAR in a lossy, infinitely long homogeneous circular cylinder exposed to an electromagnetic plane wave, for perpendicular incidence and with the incident E field both perpendicular and parallel to the axis, is also given. Curves showing SAR versus frequency for cylindrical models of man and animals in comparison with composite curves obtained from prolate spheroidal calculation are presented. It is shown that the exact solution for SARs in cylindrical models of animals and human beings appears to be a good approximation in the frequency range just below the geometrical-optics limit, thus providing an important method for extending the calculation of SARs into a range of frequencies where calculations were not available previously. (Author)

A80-22989 **Heating of spherical versus realistic models of human and infrahuman heads by electromagnetic waves.** S. Rukspollmuang and K.-M. Chen (Michigan State University, East Lansing, Mich.). *Radio Science,* vol. 14, Nov.-Dec., 1979, p. 51-62. 9 refs. NSF Grant No. ENG-74-12603; Grant No. DAAG29-76-G-0201.

A numerical method based on a tensor integral equation has been employed to quantify the induced EM heating in realistic models of the human and infrahuman head. The head consists of a brain of realistic shape and eyes that are surrounded by bone structure. The numerical method has also been used to determine the induced EM heating in spherical models of human and infrahuman heads and brains. The EM heating induced in the brain of the realistic model is lower than that induced in the brain of the spherical model. The bony structure of the skull tends to attenuate heating of the brain, including the eyes. (Author)

A80-22990 **Circularly polarized 2450-MHz waveguide system for chronic exposure of small animals to microwaves.** A. W. Guy, J. Wallace, and J. A. McDougall (Washington, University, Seattle, Wash.). *Radio Science,* vol. 14, Nov.-Dec. 1979, Supplement, p. 63-74. U.S. Rehabilitation Services Administration Grant No. 16-P-56818; Grant No. NIH-N01-ES-6-2133.

A80-22992 # **Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength.** C. F. Blackman, J. A. Elder, C. M. Weil, S. G. Benane, D. C. Eichinger, and D. E. House (U.S. Environmental Protection Agency, Health Effects Research Laboratory, Research Triangle Park, N.C.). *Radio Science,* vol. 14, Nov.-Dec. 1979, Supplement, p. 93-98. 28 refs.

A80-22993 **Extremely-low-frequency fields and the slime mold Physarum polycephalum - Evidence of depressed cellular function and of internuclear interaction.** B. Greenebaum, E. M. Goodman, and M. T. Marron (Wisconsin, University, Kenosha, Wis.). *Radio Science,* vol. 14, Nov.-Dec. 1979, Supplement, p. 103-107. 12 refs. Navy-supported research.

The acellular slime mold Physarum polycephalum has been exposed continuously to a variety of low-level, extremely-low-frequency (ELF) fields for periods ranging from two months to five years. Changes in several biological parameters have been observed that are significant (P less than 0.05) and reproducible. Cultures were exposed to 75-, 60-, and 45-Hz CW, and 76-Hz frequency-modulated fields. Electric-field intensities ranged from 0.04 to 0.7 V/m (rms); magnetic fields, from 0.01 to 0.2 milliteslas (rms). The observed changes are generally those of a slowing of cellular processes. A longer nuclear-division cycle and depressed respiration rate have been seen under exposure to most CW fields and to all frequency-modulated fields that have been tested. Additional experiments indicate that lengths of the nuclear-division cycle of cultures formed by mixing exposed and control samples lie between those of control and exposed cultures. Indirect measurements of chromosomal numbers of this polyploid organism indicate no statistically significant difference between exposed and control nuclei. (Author)

A80-22994 **Models of long-range order in cerebral macromolecules - Effects of sub-ELF and of modulated VHF and UHF fields.** A. R. Sheppard, S. M. Bawin, and W. R. Adey (California, University, Los Angeles, Calif.). *Radio Science,* vol. 14, Nov.-Dec. 1979, Supplement, p. 141-145. 31 refs. NSF Grant No. GB-27740; Grant No. PHS-3-R01-FD-678-03; Contract No. N00014-75-1094.

Weak RF fields (450 MHz) that were sinusoidally modulated at 16 Hz increased the efflux of calcium ion from freshly isolated chick brain. The data demonstrate upper and lower bounds for power levels of incident fields at which the change of efflux is observed. These bounds, between 0.05 mW/sq cm and 2.0 mW/sq cm, constitute an amplitude window for the calcium-efflux effect, which is also characterized by a frequency window demonstrated in previous experiments. The mechanisms by which weak low-frequency fields - or weak high-frequency fields modulated at sub-ELF rates - interact with biological tissue derive from the properties of the biological components of neuronal membrane and from the unique dielectric properties of biological tissues in fields that oscillate at brain-wave frequencies. (Author)

A80-22995 # **Contraction of smooth muscle in a microwave field.** E. R. Whitcomb, C. F. Blackman, and C. M. Weil (U.S. Environmental Protection Agency, Health Effects Research Laboratory, Research Triangle Park, N.C.). *Radio Science,* vol. 14, Nov.-Dec. 1979, Supplement, p. 155-158. 7 refs.

Spontaneous contractions of smooth muscle were observed during microwave irradiation. Isolated gut segments of adult male albino rats were exposed to 1-GHz, continuous-wave radiation by means of a capacitive-plate exposure system. For stabilization, the gut segment was maintained initially at 7 C for one hour and then at 36 C for one hour in a modified Ringer's solution prior to irradiation. During recording of contractions the gut segment was suspended in a 10-ml plastic tube and was bathed by Ringer's solution (pH 7.5) at 36 C at a flow rate of 6 ml/min from a 500-ml reservoir. Contractions were measured by a strain gauge. Frequency distributions of 500 contractions each were made before and during a single exposure and were displayed as interval-histogram patterns. Four gut preparations were exposed to radiation at intensities that resulted in specific absorption rates of either 1.2, 2.3, or 6.9 mW/g. For each absorption rate the response patterns for the four gut preparations representing a before-exposure (control) condition were summed and compared with the summed response patterns of the same preparation during exposure. No effect of irradiation by electromagnetic energy on the rate of spontaneous contractions of smooth muscle was observed. (Author)

A80-22996 # **Operant behavior and rectal temperature of squirrel monkeys during 2.45-GHz microwave irradiation.** J. de Lorge (U.S. Navy, Naval Aerospace Medical Research Laboratory, Pensacola, Fla.). *Radio Science,* vol. 14, Nov.-Dec. 1979, Supplement, p. 217-225. 13 refs.

The paper examines the operant behavior and rectal temperature of squirrel monkeys during 2.45-GHz microwave irradiation. Four monkeys were exposed for 30 min during two-hour sessions, and three monkeys were exposed for 60 min during two-hour sessions. The animals were restrained in styrofoam chairs and the exposures were made in a microwave-anechoic chamber. The behavior of the monkeys in the observing-response task was disrupted only at power densities of 50 mW/sq cm and higher, and their behavior was not consistently perturbed until the rectal temperatures increased by more than 1 C. The rectal temperature was slightly elevated at 10 mW/sq cm, it was a monotonic function of the power density, and was markedly increased at power densities between 40 and 50 mW/sq cm. A.T.

A80-22997 # **Skilled visual-motor performance by monkeys in a 1.2-GHz microwave field.** D. M. Scholl and S. J. Allen (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Radio Science,* vol. 14, Nov.-Dec. 1979, Supplement, p. 247-252. 27 refs.

Three young adult rhesus monkeys (Macaca mulatta) were exposed to radio-frequency electromagnetic radiation (RFR) at average power densities of 10 and 20 mW/sq cm, which resulted in respective SARs of 0.8 and 1.6 W/kg. Exposure sessions took place at two-day intervals until completion of three 120-minute exposures at each power level; 1.2-GHz continuous-wave (CW) irradiation was centered on a subject's head with the E-field vector parallel to the horizontal plane of the cranium. The monkeys performed a compensatory visual-tracking task with alternating periods of work and rest of 1.5-minute duration before and during exposure to radiation. During a work period, the task required continuous visual vigilance and skilled motor performance. The animals were motivated by mild electrical stimulation to maintain a circular cursor within the center 15% of an oscilloscopic display. The cursor was driven off this safe on-target area by a complex sinusoidal track that covered 40% of the display. Control data were used to establish 95% simultaneous confidence limits for the adjusted root mean square (ARMS) of tracking errors. The ARMS values from exposure sessions showed no decrement relative to control data. It is concluded that the exposures at 10 and 20 mW/sq cm did not have deleterious effects upon the skilled performance of a moderately large primate. (Author)

A80-23047 * **Loudness enhancement and decrement in four paradigms.** R. Elmasian, R. Galambos, and A. Bernheim, Jr. (California, University, La Jolla, Calif.). *Acoustical Society of America, Journal,* vol. 67, Feb. 1980, p. 601-607. 35 refs. Grants No. NIH-MH-15828; No. NGR-05-009-198; No. NIH-NS-10482.

When one tone burst (the conditioner) preceeds another (the target) by 100 ms, target loudness is enhanced if the conditioner is more intense and decreased if it is less intense. We show here that similar loudness enhancements and decrements occur when the conditioner .follows the target. In all instances, monaural loudness enhancements (in which the conditioner and target are delivered to the same ear) are greater than the dichotic enhancements (in which the conditioner is presented contralaterally), but the decrements, which are smaller than the enhancements, are similar in magnitude. Loudness enhancements and decrements are similar to sequential loudness effects and central tendency effects; the major difference is the relatively very large increases in loudness obtainable in loudness enhancement experiments. We outline a mechanism to account for these loudness phenomena and suggest that this mechanism is responsible for similar perceptual effects that occur in other stimulus dimensions and modalities. (Author)

A80-23079 # **Physiological and hygienic aspects of the effects of high and low temperatures (Fiziologo-gigienicheskie aspekty deistviia vysokikh i nizkikh temperatur).** A. N. Azhaev. Moscow, Izdatel'stvo Nauka (Problemy Kosmicheskoi Biologii. Volume 38), 1979. 264 p. 725 refs. In Russian.

The work examines the effects of low and high temperature microclimates on animals and man. Attention is given to the influence of convective, radiative, and conductive heat transfer on body thermoregulation, the salt metabolism, the cardiovascular system, and the respiratory system. Ways to protect flight crews from extremes of heat and cold are discussed, and the design of thermoregulation systems is examined. Finally, a classification of the thermal states of the human body is presented. B.J.

A80-23208 **Aircrew stress in wartime operations.** Edited by E. J. Dearnaley (Manchester, Victoria University, Manchester, England) and P. B. Warr (Medical Research Council, Social and Applied Psychology Unit, Sheffield, England). London and New York, Academic Press, 1979. 230 p. $20.

Papers concerning the reactions of air crews to the stress associated with wartime operations during World War II are presented. Specific topics include the historical background to wartime psychological research in the Royal Air Force, neurosis precipitated by flight duties, the influence of psychological disorders on operational flight efficiency, fluctuations in navigator performance during bombing sorties, physical and psychological measures of the effects of operational stress on bomber crews, the relation of landing accidents to pilot fatigue, the psychological aspects of airsickness, and experimental studies of mental fatigue and pilot error. A.L.W.

A80-23209 **The historical background to wartime research in psychology in the Royal Air Force.** D. D. Reid. In: Aircrew stress in wartime operations. London and New York, Academic Press, 1979, p. 1-8. 8 refs.

A personal account of the circumstances in World War II leading to research by the Royal Air Force on the psychological and psychiatric aspects of operational flying during wartime is presented. Attention is given to the background of medical personnel in the psychology of flight crews and the morale and neurotic conditions of bomber crews encountered in the early years of the war. The prevention of pilot breakdown by the subsequent selection during training of persons not predisposed to psychological problems and the limitation of operational tours of duty are discussed, and preliminary results obtained concerning the effects of fatigue, anxiety and temperament on pilot efficiency during flight operations are indicated. It is concluded, however, that improvements in crew morale after 1942 were probably due as much to operational success in flight activities as to the efforts of the medical service. A.L.W.

A80-23210 **Clinical and statistical study of neurosis precipitated by flying duties.** C. P. Symonds and D. J. Williams. In: Aircrew stress in wartime operations. London and New York, Academic Press, 1979, p. 9-41. 17 refs.

The 2200 cases of psychological disorder in flying personnel resulting from flying duties encountered by Royal Air Force psychiatrists during the year ending February 9, 1943, are analyzed by patient flying hours, type of duty, aircraft, diagnosis and causal factors. It is shown that nearly half of all cases arose in pilots, with pilots, wireless operators, air gunners and navigators making up 96% of the total and pilots making up the bulk of cases in all commands except bomber. When normalized to man-years in commands, it is found that the breakdown rate was greatest in air gunners and in bomber command. The incidence of neurosis is found to be directly related to the danger of the flight duty and to the patients' predisposition to neurosis. The major single cause in all the disorders is found to have been fear, with fatigue, physical injury, illness, airsickness and exhaustion playing minor roles. Nearly 80% of the patients referred were diagnosed to be suffering from anxiety states, with lesser numbers attributed to hysteria, depression and fatigue. Of the patients seeing psychiatrists, 38% returned to flying, with a relapse rate of 5% within a year, while 56% of those for whom an intermediate period of ground duty or limited flying was recommended returned to flying. A.L.W.

A80-23211 **The influence of psychological disorder on efficiency in operational flying.** D. D. Reid. In: Aircrew stress in wartime operations. London and New York, Academic Press, 1979, p. 43-62. 13 refs.

The influence of psychological disorders on aircrew efficiencies during wartime operations is investigated. Two hundred members of bomber air crews were interviewed upon their arrival at an operational station, and estimates of their predisposition to neurosis or problems with operational flight were compared with their actual flight records after 30 operations. It is found that a large percentage of the group considered predisposed to psychological problems (69%) actually suffered mental breakdowns during the period of service, while those predisposed who did not break down were considerably more likely to end up as casualties (20%) than to survive their tours of duty (5%). The various types of neurotic disorders encountered and the circumstances leading to their expression are illustrated by case histories, and implications of psychological predispositions for the preselection and reassignment of persons suffering breakdowns are discussed. A.L.W.

A80-23212 **Fluctuations in navigator performance during operational sorties.** D. D. Reid. In: Aircrew stress in wartime operations. London and New York, Academic Press, 1979, p. 63-73.

The errors made by navigators engaged in night bomber sorties in the calculation and plotting of wind vectors are analyzed in order to investigate the possible influence of psychological factors on aircrew efficiency under wartime operational conditions. Fluctuations in navigator performance are compared with the times of occurrence of acute hazards along the routes to and from the targets and in regions where opposition was encountered. Considerable variations in navigator efficiency are found, with errors reaching a maximum during and after enemy opposition and falling on the route back to base. It is suggested that these fluctuations are due to the successive effects of anticipatory, acute and persistant anxiety, which are greater than the effects of fatigue. The results are used to explain variations observed between aircrew performances observed during training and operations, and the importance of selecting personnel who are stable under stress for key operational positions is emphasized. A.L.W.

A80-23213 **Some measures of the effect of operational stress on bomber crews.** D. D. Reid. In: Aircrew stress in wartime operations. London and New York, Academic Press, 1979, p. 75-88.

Physiological and psychological measurements of the effects of operational wartime stress on bomber crews are reported as part of an investigation of the optimal tour of duty for operational flying personnel. The mean weight of bomber crews is shown to decrease during the first third of a 30-mission tour, remaining at this decreased level to the end. This decrease is not explained by selective elimination, and it is suggested that it may be due to the anxiety associated with operational stress. Increases in the numbers of men reporting sick and suffering psychological disorders during the same period are also observed, and a period of relative stability in the latter period of the tour due to an adaptation to stress is indicated. It is concluded that the first tour of 30 missions is no longer than can be performed without significant deterioration in health, and the level of weight loss observed may provide a baseline against which to judge larger deviations when diagnosing anxiety states. A.L.W.

A80-23214 **An investigation of landing accidents in relation to fatigue.** A. B. Hill and G. O. Williams. In: Aircrew stress in wartime operations. London and New York, Academic Press, 1979, p. 89-108.

The effects of fatigue on pilot landing performance are investigated for the case of bomber pilots returning after sorties of different durations. Statistics on accidents occurring during landings which were not forced or due to enemy action, recorded from April 1940 to March 1942 at RAF Bomber Command after night operations of one to ten hours, were compared. A rather high accident rate is found for sorties of under two hours or greater than 10 hours, most likely due to the difficulties leading to the recall or return of the aircraft in the former case and pilot fatigue in the latter. Within the relatively long interval of two to ten hours, within which most flights were made, there is no evidence of increasing pilot fatigue having lead to increased landing accident rates, indicating that pilots have managed to overcome the effects of the fatigue observed in laboratory experiments sufficiently to avert reportable landing accidents. A.L.W.

A80-23215 **The psychological aspects of airsickness.** C. P. Symonds and D. J. Williams. In: Aircrew stress in wartime operations. London and New York, Academic Press, 1979, p. 109-134. 10 refs.

The influence of psychological factors in the suspension of aircrew from flight duties due to airsickness is investigated. Interviews of 120 men to be suspended from Flying Training Command or Bomber Command in the RAF during wartime operations were conducted in order to determine the nature of the disability, the patient's past history of motion sickness, psychiatric history and attitude toward flying. Neurosis was judged to be present in 7.5% of the cases interviewed, with a predisposition to neurosis recognized in 42.5% and contributing to the airsickness in half of those cases. In only three cases was poor morale judged to be the major contributing factor in the development of airsickness. Constitutional motion sickness was recognized in 84% of the cases. It is concluded that the cause of suspension for airsickness in most cases is motion sickness uncomplicated by psychological factors. Psychological factors may contribute to airsickness by lowering the physiological motion tolerance or reducing the ability or willingness to endure symptoms. It is recommended that a standard method for recording airsickness be adopted for all crew members during each phase of their training in order to facilitate judgments of flight fitness. A.L.W.

A80-23216 **An experimental study of mental fatigue.** G. C. Drew. In: Aircrew stress in wartime operations. London and New York, Academic Press, 1979, p. 135-177.

The changes in human behavior occurring in a situation expected to bring about mental fatigue are investigated. Pilot trainees were asked to perform a fixed set of maneuvers in a cockpit simulator, and the responses were scored. After two hours of testing, subjects reported the subjective malaise characteristic of fatigue, and significant deteriorations of side-slip, air speed, altitude and directional performance were observed. The deterioration is attributed to a general lowering of standards as the test progresses, an increase in the magnitude of the errors made, the disregard of relationships between actions, difficulties with the artificial horizon, and increasing irritability. Other effects observed include unreliability of pilot reports on what had occurred during the test, a growing awareness of physical discomfort, forgetting to monitor minor instruments, and the appearance of entirely abnormal and inappropriate responses. Means of preventing the development of mental fatigue in operational situations are suggested. A.L.W.

A80-23217 **Pilot error - Some laboratory experiments.** D. R. Davis (Medical Research Council, Applied Psychology Research Unit, Cambridge, England). In: Aircrew stress in wartime operations. London and New York, Academic Press, 1979, p. 179-218. 13 refs.

Results of a series of laboratory experiments on the nature and causes of pilot error are presented, and the theory is advanced that the tendencies responsible for the errors made in the tests are also responsible for flight errors which lead to accidents. The incidence of pilot errors was studied in the Cambridge Cockpit flight simulator under various conditions of noise, drugs and pilot instructions. The number of errors was observed generally to increase in the first half hour of the test, reach its maximum in the second half hour and then decline, with the duration and size of errors increasing as the test progressed. Errors were attributed to successive overaction, inattention, a specific end effect, preoccupation with one part of the task and perceptual disorganization. Performance was also affected by alcohol, amphetamine, noise, and special instructions describing the types of error to which pilots are liable. The errors encountered are explained as due to variations of anticipatory tension rather than fatigue, and are found to be correlated with the subsequent flight careers of the subjects. A.L.W.

A80-23745 **Deposition of hygroscopic atmospheric aerosol particles in the human respiratory tract.** G. Hänel (Frankfurt, Universität, Frankfurt am Main, West Germany) and J. Heyder (Gesellschaft für Strahlen- und Umweltforschung mbH, Frankfurt am Main, West Germany). *Staub - Reinhaltung der Luft,* vol. 40, Jan. 1980, p. 9-13. 8 refs.

The paper reports on a study in which the total and regional mass deposition and mass deposition rate of hygroscopic atmospheric aerosol particles in the human respiratory tract was calculated for mouth- and nose-breathing. It is assumed that the particles immediately grow to their terminal size when entering the respiratory tract. Among the conclusions is that when the growth of atmospheric particles in the respiratory tract due to water vapor condensation on the particles is neglected, the total mass deposition in under- and alveolar mass deposition is overestimated. M.E.P.

A80-23975 **Effects of exercise training on left ventricular function in normal subjects - A longitudinal study by radionuclide angiography.** S. K. Rerych, P. M. Scholz, D. C. Sabiston, Jr., and R. H. Jones (Duke University, Medical Center, Durham, N.C.). *American Journal of Cardiology,* vol. 45, Feb. 1980, p. 244-252. 39 refs. Grant No. NIH-HL-17670-03.

The influence of physical training on the performance of the left cardiac ventricle in normal subjects is investigated by means of the noninvasive technique of radionuclide angiography. The left ventricular ejection fraction, left ventricular end-diastolic volume, pulmonary transit time, pulmonary blood volume and total body blood volume of 18 normal athletes were determined at rest and during exercise before and after a six-month period of intensive training for competitive swimming. Total body blood volume is found to increase after training, while cardiac output at rest remained similar despite a decrease in heart rate and ejection fraction and an increase in end-diastolic volume. During maximal exercise, the cardiac output is observed to have increased after training due to an increased end-diastolic volume with a constant heart rate and ejection fraction. Individual variations are noted, and it is concluded that the increased cardiac output during maximal exercise results from the ability of the left ventricle to dilate from rest to exercise and to eject fully this further increase in end-diastolic volume at approximately the same heart rate. A.L.W.

A80-23993 # **System design features of the Space Shuttle remote manipulator.** P. Kumar, P. Truss, and C. G. Wagner-Bartak (Spar Aerospace, Ltd., Toronto, Canada). In: World Congress on the Theory of Machines and Mechanisms, 5th, Montreal, Canada, July 8-13, 1979, Proceedings. Volume 1. New York, American Society of Mechanical Engineers, 1979, p. 839-842. 7 refs.

The Space Shuttle Remote Manipulator (RMS) is an anthropomorphic, man-machine system primarily used for deploying and retrieving payloads (satellites, space modules) in orbit. The manipulator arm features a modularized design approach and the use of similar or common components. The data transfer between the various RMS interfaces is handled using a system of digital data busses. The system has been made 'instinctive' by the use of an appropriate control hierarchy which enables the astronaut/operator to simply move the manipulator end point without controlling the individual joints. Safety requirements have been met by incorporateing a back-up system to the principal control modes and a built-in scheme of fault detection and annunciation. The RMS is presently scheduled to be integrated into the orbital flight test program in 1979. (Author)

A80-23996 # **Recursive solution to the equations of motion of an N-link manipulator.** W. W. Armstrong (Montréal, Université, Montreal, Canada). In: World Congress on the Theory of Machines and Mechanisms, 5th, Montreal, Canada, July 8-13, 1979, Proceedings. Volume 2. New York, American Society of Mechanical Engineers, 1979, p. 1343-1346.

The equations of motion of a manipulator formed by a sequence of N rigid links, joined to each other and to a spacecraft or a terrestrial base by hinges which allow up to three rotational degrees of freedom, are solved by a recursive technique which does not involve operations on matrices larger than 3x3. This technique, which has also been generalized to the case of flexible links, has been programmed on a CYBER 173 computer for the development of the Shuttle Remote Manipulator System. (Author)

A80-24026 **Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings.** Edited by C. K. Bensel (U.S. Army, Clothing, Equipment and Materials Engineering Laboratory, Natick, Mass.). Santa Monica, Calif., Human Factors Society, Inc., 1979. 605 p. Members, $15.; nonmembers, $20.

The papers presented at this meeting cover such topics as models of muscle strength regulation, psychological and physiological reactions associated with repetitive tasks, computer systems, consumer products, environmental design, industrial economics, safety, both occupational and transportation, and training. V.P.

A80-24028 * **Operator Station Design System - A computer aided design approach to work station layout.** J. L. Lewis (NASA, Johnson Space Center, Houston, Tex.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 55-58.

The Operator Station Design System is resident in NASA's Johnson Space Center Spacecraft Design Division Performance Laboratory. It includes stand-alone minicomputer hardware and Panel Layout Automated Interactive Design and Crew Station Assessment of Reach software. The data base consists of the Shuttle Transportation System Orbiter Crew Compartment (in part), the Orbiter payload bay and remote manipulator (in part), and various anthropometric populations. The system is utilized to provide panel layouts, assess reach and vision, determine interference and fit problems early in the design phase, study design applications as a function of anthropometric and mission requirements, and to accomplish conceptual design to support advanced study efforts. (Author)

A80-24029 * **Man-machine analysis of translation and work tasks of Skylab films.** W. W. Hosler (General Dynamics Corp., Fort Worth, Tex.), J. G. Boelter (Texas, University, Odessa, Tex.), J. R. Morrow, Jr. (Houston, University, Houston, Tex.), and J. T. Jackson (NASA, Johnson Space Center, Spacecraft Design Div., Houston, Tex.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 59-62. Contract No. NAS9-15521.

An objective approach to determine the concurrent validity of computer-graphic models is real time film analysis. This technique was illustrated through the procedures and results obtained in an evaluation of translation of Skylab mission astronauts. The quantitative analysis was facilitated by the use of an electronic film analyzer, minicomputer, and specifically supportive software. The uses of this technique for human factors research are: (1) validation of theoretical operator models; (2) biokinetic analysis; (3) objective data evaluation; (4) dynamic anthropometry; (5) empirical time-line analysis; and (6) consideration of human variability. Computer assisted techniques for interface design and evaluation have the potential for improving the capability for human factors engineering. (Author)

A80-24031 * **Development of display design and command usage guidelines for Spacelab experiment computer applications.** D. W. Dodson and N. L. Shields, Jr. (Essex Corp., Huntsville, Ala.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 70-74. 9 refs. Contract No. NAS8-32991.

Individual Spacelab experiments are responsible for developing their CRT display formats and interactive command scenarios for payload crew monitoring and control of experiment operations via the Spacelab Data Display System (DDS). In order to enhance crew training and flight operations, it was important to establish some standardization of the crew/experiment interface among different experiments by providing standard methods and techniques for data presentation and experiment commanding via the DDS. In order to establish optimum usage guidelines for the Spacelab DDS, the capabilities and limitations of the hardware and Experiment Computer Operating System design had to be considered. Since the operating system software and hardware design had already been established, the Display and Command Usage Guidelines were constrained to the capabilities of the existing system design. Empirical evaluations were conducted on a DDS simulator to determine optimum operator/system interface utilization of the system capabilities. Display parameters such as information location, display density, data organization, status presentation and dynamic update effects were evaluated in terms of response times and error rates. (Author)

A80-24032 **The design and evaluation of complex systems - Application to a man-machine interface for aerial navigation.** D. B. Beringer (Illinois, University, Urbana, Ill.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 75-79. 9 refs.

Systematic and economic design and evaluation strategies were applied to a computer-generated 4-D aerial navigation system. During the evaluation each of 24 experienced instrument pilots received training in a PLATO-based digital flight simulator using either a keyboard entry/static map, keyboard entry/dynamic map, or touch entry/dynamic map system. Tasks performed during the execution of an area navigation course included continuous flight control, navigation data updating, digital data entry, and amended course plotting. Digital data entry training time was comparable for all three systems but the touch-map proved superior for the plotting tasks, greatly reducing training and task execution times while virtually eliminating errors. Subsequent performance evaluation showed that the touch-map reduced flight path tracking error, increased processing rates on a digit-cancelling secondary task, and increased the accuracy of manual plotting operations. It was concluded that a touch entry system could significantly reduce cockpit workload across a wide range of operational environments. (Author)

A80-24034 **Effect of pretraining criterion on flight simulator and secondary cognitive task performance.** M. Nataupsky, J. C. H. Schwank, E. B. Griggs, K. E. McKay, Jr., and S. D. Schmidt (U.S. Air Force Academy, Colorado Springs, Colo.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 305-309. 7 refs. Contract No. AMD/RDO-78-1.

Twenty-eight United States Air Force Academy cadets were trained in a GAT-1 flight simulator under one of four experimental groups. The groups were defined first by having heading information either provided by the normal heading indicator or by peripheral lights and second by their being trained on either a 5 deg or 10 deg heading deviation criterion. All cadets were subjected to four levels of a secondary cognitive task plus a control condition. There were no significant differences for either the main effect of heading indicator type or criterion level of training. The main effect of cognitive task difficulty level was significant for most measures. In addition, the heading indicator type by training criterion level interaction produced significant differences. Each significant interaction accounted for an average of 19% of the total variance. The study seems to indicate that training criteria are important independent variables in complex psychomotor/cognitive flight simulator tasks. (Author)

A80-24035 **Development and application of a task taxonomy for tactical flying.** R. P. Meyer, J. I. Laveson, G. L. Pape (Design Plus, St. Louis, Mo.), and B. J. Edwards (USAF, Human Resources Laboratory, Williams AFB, Ariz.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 315-319. Contract No. F33615-77-C-0020.

The data base for this taxonomy was obtained from the task analysis of sixteen basic fighter maneuvers. The next step was the development of nine classification rules designed to process these analyses into usable data for the taxonomic system. The taxonomic system allowed the task and skill information within the structure to be sorted, organized, and compared in a variety of combinations which can be useful to the training specialist. The taxonomic system thus permitted a number of applications. Basic skill comparisons were made across tasks and permitted the identification of skill criticality for specific training objectives. The frequency, complexity, and sequencing of specific skills required for various selected maneuvers were also compared and common elements identified. The system was also used to analyze the skills within a given group of tasks in order to design a single standard task which would contain a high percentage of skills identical to those of a given task group. (Author)

A80-24036 **Validation of an in flight performance measurement methodology - F-4 ground attack training evaluation.** B. J. Pierce, J. DeMaio (USAF, Human Resources Laboratory, Williams AFB, Ariz.), and D. Yates (USAF, Luke AFB, Ariz.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 320-323.

Validity and applicability were assessed for a performance measurement methodology developed to evaluate airborne performance on conventional weapon delivery maneuvers. The methodology provides an analysis of pilot performance using a stage-by-stage rating technique. Pilots assigned to an F-4 training squadron served as subjects. Results demonstrated that instructor pilot ratings of the individual stages of the delivery yield a reliable indicator of the quality of performance on that pass. The data address issues regarding which stages of the maneuver were most difficult, which improved most over training, and to what extent this improvement affected performance on the entire delivery. (Author)

A80-24037 **Air combat maneuvering performance measurement.** M. J. Kelly, J. C. Reed (USAF, Human Resources Laboratory, Williams AFB, Ariz.), A. L. Wooldridge, and R. T. Hennessy. In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 324-328.

Due to the complex, dynamic and fast-moving nature of the air combat task, performance assessment during air-to-air combat provides many unique measurement problems. A combined analytical and empirical technical approach was used to develop a candidate measurement structure and algorithm for the measurement of pilot performance during one-versus-one air combat maneuvering. Nearly all of 28 candidate measures were found to discriminate between high and low skilled pilots during free engagements on the Simulator for Air-to-Air Combat. Discriminant analyses provided a measurement algorithm consisting of 13 measures which accounted for 51% of the variance in the performance data and which predicted membership in high or low skill groups with 92% accuracy. (Author)

A80-24038 **The development of objective inflight performance assessment procedures.** J. M. Childs (Canyon Research Group, Inc., Fort Rucker, Ala.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 329-333. 5 refs.

The purpose of this research was to develop procedures for objectively evaluating Initial Entry Rotary Wing (IERW) student performance in flight. Maneuvers of the Basic Instrument phase were addressed. Descriptive inflight scoring procedures to assess absolute deviations of desired values from observed values at designated times, were developed. Desired values were determined on the basis of the rates specified in IERW training guides. Observed values were instrument indications of airspeed, altitude, or heating at those times. Four tolerance categories were incorporated into alternative six-point maneuver scoring algorithms designed to assess aircraft control precision. The criterion for acceptable proficiency was the maintenance of each sampled measure within standard IERW tolerance limits for each sampling point of a maneuver. Tests of the objective scoring procedures were conducted in the UH-1 flight simulator. (Author)

A80-24039 **Actual vs simulated equipment for aircraft maintenance training - Cost implications of the incremental vs the unique device.** R. E. Vesterwig and F. T. Eggemeier (USAF, Human Resources Laboratory, Wright-Patterson AFB, Ohio). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 334-338. 9 refs.

Life cycle cost estimates were developed for use of simulated test equipment vs actual test equipment in a maintenance training program of the type used for current advanced fighter aircraft. Previous lift cycle cost comparisons had not explicitly considered the cost implications of procurement and support of a unique training device vs an incremental device. This effort included the unique vs the incremental device factor. Total estimated fifteen year costs for simulated equipment trainers were significantly lower than comparable estimates for actual equipment trainers. The results indicate that the cost implications of a unique device vs an incremental device are important determinants of both acquisition and support cost estimates and should be considered fully in future life cycle costing efforts. (Author)

A80-24040 **The effect of image quality on search for static and dynamic targets - MTFA-performance correlations.** J. C. Gutmann, H. L. Snyder, W. W. Farley, and J. E. Evans, III (Virginia Polytechnic Institute and State University, Blacksburg, Va.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings.
Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 339-343. 6 refs.

This report contains the results of two experiments which investigated the effects of the quality of a televised image on eye movements and search-related measures. The first experimental search task involved having subjects perform an air-to-ground search during a simulated flight. The quality of the image presented was varied by either passing, low-pass filtering, or attenuating the video signal and by adding electrical white noise to the video signal. Low to moderate correlations between modulation transfer function area (MTFA) and performance measures generally indicated that as MTFA increases performance improves and fixation durations decrease. The search task of the second experiment consisted of having the subjects search for a designated letter or numeral across a televised picture of randomly positioned letters and numerals. The quality of the picture was varied by either passing, low-pass filtering, high-pass filtering, or attenuating the video signal and by adding electrical white noise to the video signal. Correlations between MTFA and performance measures indicated that increases in MTFA lead to decreases in search time and decreases in fixation duration. (Author)

A80-24041 **Operator visual workload shifts as a function of vehicle stability.** R. R. Simmons and K. A. Kimball (U.S. Army, Aeromedical Research Laboratory, Fort Rucker, Ala.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 352-356.

This research was initiated to compare the visual performance/workload of pilots during fixed wing and rotary wing flights. The corneal reflection technique was used to obtain the visual data. The results demonstrate that visual performance/workload of the pilots was different for each aircraft. Because the major difference between the aircraft was the aerodynamic stability, it was assumed that the visual workload was in fact a function of aircraft stability. The overall purpose of such research has been to provide information concerning pilots' visual requirements for safe mission accomplishment. (Author)

A80-24042 * **Evaluation of a pilot workload metric for simulated VTOL landing tasks.** R. A. North and K. Graffunder (Honeywell Systems and Research Center, Minneapolis, Minn.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings.
Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 357-361. Contract No. NAS1-15081.

A methodological approach to measuring workload was investigated for evaluation of new concepts in VTOL aircraft displays. Multivariate discriminant functions were formed from conventional flight performance and/or visual response variables to maximize detection of experimental differences. The flight performance variable discriminant showed maximum differentiation between crosswind conditions. The visual response measure discriminant maximized differences between fixed vs. motion base conditions and experimental displays. Physiological variables were used to attempt to predict the discriminant function values for each subject/condition/trial. The weights of the physiological variables in these equations showed agreement with previous studies. High muscle tension, light but irregular breathing patterns, and higher heart rate with low amplitude all produced higher scores on this scale and thus, represented higher workload levels. (Author)

A80-24043 **A review of literature relating to visual fatigue.** W. J. Smith (IBM Human Factors Center, San Jose, Calif.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings.
Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 362-366. 39 refs.

The design of workstations with visual displays has become the subject of considerable interest and concern during the past few years. One area of concern relates to the assumption that long term viewing of such displays at close focal distances may contribute to visual fatigue. A second is the effect on the human visual system of the frequent changes in surface illumination associated with display units used in combination with hard copy documents. As a consequence of these and other concerns, the popular press has published articles that have aroused the interest of various scientific organizations regarding the subject of these effects. This paper discusses a review of some of the literature regarding a limited aspect of this issue, namely the accommodation and pupillary systems as they relate to long term viewing of visual display units. (Author)

A80-24044 **Visual search and color coding.** R. C. Carter, Jr. (Pennsylvania State University, University Park, Pa.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 369-373. 10 refs.

Several experiments were conducted to investigate the effects on search time of display and personnel characteristics. Search time increased by an order of magnitude when the number of display items of the target's color increased from one to the display density. Items not of the target's color affected search time to the extent that their color was similar to that of the target. The similarity of the colors was found to be well represented by a color difference calculation. The distribution on the display of target-colored items also affected search time. Personnel characteristics, including several measures of ability and experience, were unrelated to search speed. (Author)

A80-24045 **The use of color-coded symbols in a highly dense situation display.** C. J. Kopala (USAF, Flight Dynamics Laboratory, Wright-Patterson AFB, Ohio). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 397-401. 11 refs.

The effectiveness of redundant color-coding for displays used by highly-loaded operators performing a series of complex tasks has never been clearly demonstrated. Pilot flight performance and threat recognition performance using two coding conditions for a threat display were compared in a simulated mission. One coding condition consisted of shape-coded symbols, the other of symbols that were both color- and shape-coded. Redundant color-coding was found to significantly reduce both response time and error rate. (Author)

A80-24046 **Peripheral vision and tracking performance under stress.** J. M. Bermudez, D. A. Harris, and J. C. H. Schwank. In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings.
Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 402-406. 7 refs. Contract No. AMD/RDO-78-1.

The complexity of modern aircraft systems places substantial information processing loads on the pilot, which are excerbated during emergency landings and other high-stress situations. Psychological and behavioral evidence for two human visual systems that may differ in susceptibility to psychological stress suggests the possibility of a natural stress-resistant information channel that could be used for information input during high-stress situations. It follows that the extreme peripheral visual fields could be a possible location for adjunct visual displays intended to orient the pilot's focal vision and attention to critical instrument displays during emergency situations. In the present paper, data are examined concerning the effects of three types of instrument display, used under varying levels of stress during a simulated instrument landing. Focal viewing was found to be more sensitive to information about pitch, whereas peripheral viewing was more sensitive to information about roll. V.P.

A80-24047 **Perturbation of induced rotation as an index of pattern structure.** F. Ward, T. Dingus, J. Dingus, R. Jones, and G. Palmer (Wright State University, Dayton, Ohio). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 407-410. 9 refs.

The paper deals with a methodology where the smoothness of induced rotation is used to quantify the organizational structure of geometric figures. Tests with human subjects showed that the amount of texturing has a strong effect on perceived rotation. For all presentation times, an increase in texture density produced a decrease in the threshold to detect perturbation of rotation for the planar rotation condition. For depth rotation, presentation times of 80 and 100 msec revealed the same effect. V.P.

A80-24048 **Prediction and quickening in perspective flight displays for curved landing approaches.** R. S. Jensen (Illinois, University, Champaign, Ill.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 498-502. 8 refs.

In an empirical test of various predictor and quickened display algorithms eighteen professional pilot-subjects made four curved-path landing approaches in a Gat-2 simulator using each of 14 dynamically different display configurations in a within-subject design. Results indicate that second- and third-order predictor displays provide the best lateral performance. Intermediate levels of prediction and quickening provide best vertical control. Predictor-quickening algorithms of increasing computational order significantly reduce aileron, rudder, and elevator control responses, reflecting successive reductions in cockpit workload. Whereas conventional crosspointer displays are not adequate for curved landing approaches, perspective displays with predictors and some vertical dimension quickening are highly effective. (Author)

A80-24049 **Utilization of energy maneuverability data in improving in-flight performance and performance in air combat maneuvering.** W. F. Moroney (U.S. Naval Postgraduate School, Monterey, Calif.), R. Pruitt (McDonnell Aircraft Co., St. Louis, Mo.), and C. Lau (U.S. Navy, Pacific Missile Test Center, Point Mugu, Calif.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 503-507.

Energy maneuverability (EM) has been defined as the ability to perform a change, or a combination of changes, in direction, altitude, and airspeed expressed in terms of energy and energy rate. In the present paper, two situations are described in which EM data were presented to pilots in an analog format on a helmet-mounted display in an effort to improve their ability to maximize the performance of their aircraft. From the tests, this new format may be expected to provide a better means for pilots to determine how well they have maximized aircraft performance. V.P.

A80-24050 **Data analysis methodology for day/night inflight tactical navigation.** E. M. Connelly, R. F. Comeau (Performance Measurement Associates, Inc., Vienna, Va.), G. L. Holman, and J. A. Bynum (U.S. Army, Army Research Institute, Fort Rucker, Ala.). In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 563-567. Grant No. DAHC19-77-C-0042.

Nap-of-the-earth helicopter navigation, both at night and during the day, is essential to the Army's mission. Navigation performance, defined as the probability of navigating along a prescribed route or route segment without deviation, is a function of many factors including map and terrain types. Determination of the effects of these factors is important information for predicting performance of Army navigators, identifying factors critical to navigation, evaluating the probability of navigation success along a route and developing training aids. The purpose of the research work reported here was to analyze NOE flight experiment data to develop that information. This paper contains results from analyses of helicopter NOE navigation data to determine the probability of navigation success along a route as a function of terrain type, to develop a means of determining route difficulty, and to develop a method of scoring student performance. (Author)

A80-24135 **Vector model for normal and dichromatic color vision.** S. L. Guth, T. Benzschawel (Indiana University, Bloomington, Ind.), and R. W. Massof (Johns Hopkins University, Baltimore, Md.). *Optical Society of America, Journal*, vol. 70, Feb. 1980, p. 197-212. 46 refs. NSF Grants No. GB-40516; No. BNS-77-17299.

The inclusion of cone mechanisms in a slightly revised version of an earlier model allows accounts of phenomena that involve receptor effects as well as dichromatic color vision. Intensity-dependent parameters that simulate the adaptation of receptors and opponent and nonopponent mechanisms are varied to predict a wide range of data for both normals and dichromats, including: (1) color matching; (2) the approximate apparent hue and saturation of the spectrum; (3) foveal spectral sensitivities obtained by flicker photometry and by detection in the dark and under conditions of achromatic or chromatic adaptation; (4) heterochromatic additivity failures in the dark-adapted and chromatically adapted eye; (5) approximate differences between brightness and luminance; and, (6) color and wavelength discrimination under varying adaptation conditions. (Author)

A80-24136 **Large color differences and the geometry of Munsell color space.** E. W. Farmer, R. M. Taylor, and A. J. Belyavin (RAF, Institute of Aviation Medicine, Farnborough, Hants, England). *Optical Society of America, Journal*, vol. 70, Feb. 1980, p. 243-245. 16 refs.

In the Munsell system, colors are rperesented as points, and color differences as the distances between points in a cylindrical space defined by a vertical axis of value (lightness) and radial and circular axes of chroma (saturation) and hue, respectively. The paper describes an experiment conducted to examine the psychological validity of this scheme and of the assumption that color space conforms to Euclidean geometry. Multidimensional scaling was applied to a set of colors, encompassing a wide range of variations in all three Munsell attributes. Twenty subjects judged the similarity of 153 color pairs, and subjective estimates were pooled to produce a single value for each color pair. The total negative variance was only 1.9% of the total positive variance, and the obtained three-dimensional configuration concurred with the postulated organization of Munsell color space. It was concluded that meaningful subjective estimates of color similarity can be obtained for samples widely separated in color space. However, it is noted that a weighting constant has to be introduced to control step-size inequality between attributes; the ratio of step sizes along the value and chroma axes was calculated to be 1:3.76. L.M.

A80-24222 * **Growth hormone control of glucose oxidation pathways in hypophysectomized rats.** D. D. Feller, E. D. Neville, L. C. Keil, and S. Ellis (NASA, Ames Research Center, Moffett Field, Calif.). *Physiological Chemistry and Physics*, vol. 11, no. 3, 1979, p. 205-215. 12 refs.

A80-24265 * **Optimal estimator model for human spatial orientation.** J. Borah (G & W Applied Science Laboratories, Waltham, Mass.), L. R. Young (MIT, Cambridge, Mass.), and R. E. Curry (NASA, Ames Research Center, Moffett Field, Calif.). In: Joint Automatic Control Conference, Denver, Colo., June 17-21, 1979, Proceedings. New York, American Institute of Chemical Engineers, 1979, p. 800-805. 17 refs. Contract No. F33615-76-C-0039.

A model is being developed to predict pilot dynamic spatial orientation in response to multisensory stimuli. Motion stimuli are first processed by dynamic models of the visual, vestibular, tactile, and proprioceptive sensors. Central nervous system function is then modeled as a steady-state Kalman filter which blends information from the various sensors to form an estimate of spatial orientation. Where necessary, this linear central estimator has been augmented with nonlinear elements to reflect more accurately some highly nonlinear human response characteristics. Computer implementation of the model has shown agreement with several important qualitative characteristics of human spatial orientation, and it is felt that with further modification and additional experimental data the model can be improved and extended. Possible means are described for extending the model to better represent the active pilot with varying skill and work load levels. (Author)

A80-24347 **Cardiograms: Theory and applications.** Edited by D. N. Ghista, E. Van Vollenhoven (Delft, Technische Hogeschool, Delft, Netherlands), W.-J. Yang, and H. Reul. Basel, S. Karger AG (Advances in Cardiovascular Physics. Volume 2), 1979. 168 p. $58.75.

The work focuses on the theory and application of magnetocardiography, phonocardiography and its instrumentation, and ballistocardiography. The electrocardiogram and magnetocardiogram are discussed along with the electric and magnetic heart vectors, the vector magnetocardiography instrumentation, and its clinical applications; phonocardiography, the nature of cardiovascular sound, the phonocardiograph, the different types of microphones, and the use of spectral phonocardiography are described; finally, the principles, simulation, and applications of ballistocardiography are analyzed together with its analog and digital models. A.T.

A80-24348 **The theory and application of magnetocardiography.** J. P. Wikswo, Jr., J. A. V. Malmivuo, W. H. Barry, M. C. Leifer, and W. M. Fairbank (Stanford University, Stanford, Calif.). In: Cardiograms: Theory and applications. Basel, S. Karger AG, 1979, p. 1-67. 85 refs. NSF Grant No. APR-72-03447-A04.

The similarities and differences between the electrocardiogram and magnetocardiogram which are recordings of the electric and magnetic fields associated with cardiac electrical activity are discussed. The information content of the two signals is assessed using the electric and magnetic heart vectors, showing that more information regarding the cardiac current source distribution can be obtained from measurement of these vectors than from either measurement alone. It is concluded that magnetocardiography can be a valuable addition to the existing clinical techniques. A.T.

A80-24349 **Phonocardiography - Analyses of instrumentation, and vibration of heart structures to determine their constitutive properties.** E. Van Vollenhoven, N. Suzumura, D. N. Ghista, J. Mazumdar, and T. Hearn (Delft, Technische Hogeschool, Delft, Netherlands; Nagoya Institute of Technology, Nagoya, Japan; U.S. Veterans Administration Hospital, Palo Alto, Calif.; Adelaide, University, Adelaide, Australia). In: Cardiograms: Theory and applications. Basel, S. Karger AG, 1979, p. 68-118. 59 refs.

The paper presents guidelines for standardization of phonocardiography which provides a record of the vibrations of the chest wall originating from the heart. It provides (1) the theory of contact and air microphones, (2) experimental methods of their calibration, and (3) mathematical models of vibrations of cardiac structures. For the overall frequency response of the phonocardiograph, the microphone frequency from the chest wall is combined with the frequency responses of filters and the recording unit to enable determination of the normal-pathological ranges of their constitutive properties. Finally, the constitutive properties of the left ventricular chamber and the mitral valve leaflet are derived in terms of their size parameters. A.T.

A80-24350 **Ballistocardiography - Principles, simulation, applications.** I. Tomak (Acadia University, Wolfville, Nova Scotia, Canada). In: Cardiograms: Theory and applications. Basel, S. Karger AG, 1979, p. 119-157. 32 refs.

The principle and applications of the ballistocardiogram (BCG) and of the air-supported equipment for its recording are described. A discussion of a time domain electrical analog of the blood circulation capable of BCG simulation is followed by a presentation of a frequency domain digital model of the same system. An analytical model is constructed which considers the effects of heart motion, varying blood volumes in the heart chambers, and the reaction forces due to the surrounding tissues. Finally, BCG applications are discussed and compared with other techniques. A.T.

A80-24492 * **Thermal history, chemical composition and relationship of comets to the origin of life.** W. M. Irvine (Massachusetts, University, Amherst, Mass.; Onsala Space Observatory, Goteborg, Sweden), S. B. Leschine, and F. P. Schloerb (Massachusetts, University, Amherst, Mass.). *Nature*, vol. 283, Feb. 21, 1980, p. 748, 749. 47 refs. Grant No. NGL-22-010-023.

The role of thermal processes in determining the chemical composition of comets is considered, and implications of possible cometary constituents for the origin and evolution of life on earth are discussed. It is shown that the inclusion of short-lived Al-26 from a nearby supernova explosion into cometary nuclei could lead to comets with surfaces cool enough to retain H2O and interiors warm enough for thermal processing to occur, with the production of complex organic molecules such as amino acids and nucleic acid bases. It is thus suggested that comets may have played a part in seeding the primitive earth with biological polymers capable of self-replication or of evolving towards that capability, and may even be responsible for the subsequent introduction of organic material capable of infecting already existing cells. A.L.W.

A80-24525 **Aviation medicine. Volume 1 - Physiology and human factors.** Edited by G. Dhenin (RAF, London, England). London, Tri-Med Books, Ltd., 1978. 790 p. $41.40.

The book discusses the physiological and psychological aspects of human responses to flight stresses and the principles used in the protection of man from the hostile environment of flight. Consideration is given to changes of pressure, long- and short-duration acceleration including vibration and temperature extremes encountered in flying. The effects of each stress on normal performance, human tolerances to each stress and the physiological and psychological procedures used to minimize the impairment of performance due to each stress are presented. The effects of flight on vision, hearing and spatial orientation are also discussed, and the effects of irregular sleep and work schedules are considered. The psychology of flight tasks and training is also examined, and the medical aspects of helicopter, VTOL and SST flight and manned space flight are indicated. A.L.W.

STAR ENTRIES

N80-16216*# National Inst. for Occupational Safety and Health, Cincinnati, Ohio.
WHOLE-BODY VIBRATION OF HEAVY EQUIPMENT OPERATORS
D. E. Wasserman, W. C. Asburry, and T. E. Doyle *In* Shock and Vibration Inform. Center The Shock and Vibration Bull., Pt. 2 Sep. 1979 p 47-68 refs

Avail: NTIS HC A10/MF A01 CSCL 05H

A vibration field study was made of workers operating track-type tractors, scrapers, motor graders, loaders, backhoes, compactors, skidders, and dump trucks. Vibration data were obtained from the vehicle floor and manseat interface, as well as from the operator's knee, shoulder, and head. The vibration spectrum analysis indicates that for the different types of machines little difference could be attributed to the experience or body mass of the operator and that most of the higher level vibration occurred below the 4 to 8 Hz human body resonance band, much of it at less than 1 Hz. K.L.

N80-16217*# Aerospace Medical Div. Aerospace Medical Research Labs. (6570th), Wright-Patterson AFB, Ohio.
RESEARCH RELATED TO THE EXPANSION AND IMPROVEMENT OF HUMAN VIBRATION EXPOSURE CRITERIA

Richard W. Shoenberger *In* Shock and Vibration Inform. Center The Shock and Vibration Bull., Pt. 2 Sep. 1979 p 69-79 refs

Avail: NTIS HC A10/MF A01 CSCL 05H

A psychophysical matching technique was used to investigate the perceived intensity of various types of vibration environments. Comparisons of sinusoidal and nonsinusoidal vibrations as well as comparisons of translational and angular vibrations were conducted. Results discriminate between alternate methods for evaluating the severity of nonsinusoidal vibrations and indicate relationships between translational and angular vibrations needed for the expansion of vibration criteria to include angular motions. K.L.

N80-16714* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
METHOD AND APPARATUS FOR ELIMINATING LUMINOL INTERFERENCE MATERIAL Patent
Eldon L. Jeffers (Boeing Aerospace Co., Houston, Tex.) and Richard R. Thomas, inventors (to NASA) (Boeing Aerospace Co., Houston, Tex.) Issued 27 Nov. 1979 10 p Filed 9 Feb. 1978 Supersedes N78-18674 (16 - 09, p 1197) Sponsored by NASA
(NASA-Case-MSC-16260-1; US-Patent-4,176,007;
US-Patent-Appl-SN-876440; US-Patent-Class-435-34;
US-Patent-Class-422-52; US-Patent-Class-23-927) Avail: US Patent and Trademark Office CSCL 06A

A method and apparatus for removing porphyrins from a fluid sample which are unrelated to the number of bacteria present in the sample and prior to combining the sample with luminol reagent to produce a light reaction is disclosed. The method involves a pre-incubation of the sample with a dilute concentration of hydrogen peroxide which inactivates the interfering soluble porphyrins. Further, by delaying taking a light measurement for a predetermined time period after combining the hydrogen peroxide-treated water sample with a luminol reagent, the luminescence produced by the reaction of the luminol reagent with ions present in the solution, being short lived, will have died out so that only porphyrins within the bacteria which have been released by rupturing the cells with the sodium hydroxide in the luminol reagent, will be measured. The measurement thus obtained can then be related to the concentration of live and dead bacteria in the fluid sample.

Official Gazette of the U.S. Patent and Trademark Office

N80-16715* National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.
METHOD FOR SEPARATING BIOLOGICAL CELLS Patent
Donald E. Brooks, inventor (to NASA) (Oregon Univ., Portland) Issued 1 Jan. 1980 5 p Filed 6 Mar. 1979 Supersedes N79-21743 (17 - 12, p 1616) Sponsored by NASA
(NASA-Case-MFS-23883-1; US-Patent-4,181,589;
US-Patent-Appl-SN-017888; US-Patent-Class-204-180R;
US-Patent-Class-204-299R; US-Patent-Class-424-12) Avail: US Patent and Trademark Office CSCL 06A

A method for separating biological cells by suspending a mixed cell population in a two-phase polymer system is described. The polymer system consists of droplet phases with different surface potentials for which the cell populations exhibit different affinities. The system is subjected to an electrostatic field of sufficient intensity to cause migration of the droplets with an attendant separation of cells.

Official Gazette of the U.S. Patent and Trademark Office

N80-16716 Michigan State Univ., East Lansing.
FACTORS INFLUENCING SPECIFIC GROWTH RATES AND SEASONAL ABUNDANCE OF EUTROPHIC LAKE PHYTOPLANKTON Ph.D. Thesis
Gary Frank Marx 1979 94 p
Avail: Univ. Microfilms Order No. 8001561

The seasonal succession of dominant phytoplankton populations and the daily concentrations of major nutrients in a central Michigan waste treatment basin were monitored over the 1977 growing season in order to study the factors controlling the growth of the various species. Carbon and light attenuation due to large algal standing crops, as well as the availability of dissolved organic substances, seemed to be the major factors controlling annual algal productivity. While a simple, kinetics based model was not be able to accurately predict the weekly specific growth rates of the various species, predictions of approximate periods of growth were quite accurate, making such a model of considerable value for practical use. Dissert. Abstr.

N80-16717 California Univ., Berkeley.
THEORETICAL STUDIES OF THE LIGHT REACTIONS IN PHOTOSYNTHESIS Ph.D. Thesis
Richard Adam Friesner 1979 193 p
Avail: Univ. Microfilms Order No. 8000347

Using magnetic resonance formalism and theoretical formulations to interpret electron paramagnetic resonance (EPR) spectra the light reactions of photosynthesis were studied. A general method of determining the orientational distribution function of a partially ordered ensemble of paramagnetic systems from its EPR lineshape is presented. A radical pair theory of spin polarization for systems of membrane bound radicals with anisotropic g tensors is developed, and used to explain the orientation dependence of the lineshape of the polarized signal. The electron transport cofactors involved in the photosynthetic light reactions in both green plants and photosynthetic bacteria are identified. Dissert. Abstr.

N80-16718*# National Aeronautics and Space Administration, Washington, D. C.
GLUCOSE METABOLISM IN DIFFERENT REGIONS OF THE RAT BRAIN UNDER HYPOKINETIC STRESS INFLUENCE
K. Konitzer (Acad. of Sci. of the Ger. Democratic Republic) and S. Voigt (Acad. of Sci. of the Ger. Democratic Republic) Jan. 1980 15 p refs Transl. into ENGLISH from Acta Biol. Med. Ger. (East Germany), v. 35, 1976 p 853-866 Transl. by Kanner (Leo) Associates, Redwood City, California
(NASA-TM-75949) Avail: NTIS HC A02/MF A01 CSCL 06C

Glucose metabolism in rats kept under long term hypokinetic stress was studied in 7 brain regions. Determination was made of the regional levels of glucose, lactate, glutamate, glutamine, aspartate, gamma-aminobutyrate and the incorporation of C-14 from plasma glucose into these metabolites, in glycogen and protein. From the content and activity data the regional glucose flux was approximated quantitatively. Under normal conditions the activity gradient cortex and frontal pole cerebellum, thalamus and mesencephalon, hypothalamus and pons and medulla is identical with that of the regional blood supply (measured with I131 serum albumin as the blood marker). Within the first days of immobilization a functional hypoxia occurred in all brain regions and the utilization of cycle amino acids for protein synthesis was strongly diminished. After the first week of stress the capillary volumes of all regions increased, aerobic glucose metabolism was enhanced (factors 1.3 - 2.0) and the incorporation of glucose C-14 via cycle amino acids into protein was considerably potentiated. The metabolic parameters normalized between the 7th and 11th week of stress. Blood supply and metabolic rate increased most in the hypothalamus. R.C.T.

N80-16719*# National Aeronautics and Space Administration, Washington, D. C.
MORPHOLOGICAL AND FUNCTIONAL MANIFESTATIONS OF RAT ADRENAL-CORTEX RESPONSE TO SODIUM BROMIDE ADMINISTRATION UNDER HYPODYNAMIC STRESS
L. T. Kirichek (Kharkov Med. Inst.) and V. I. Zholudeva (Kharkov Med. Inst.) Nov. 1979 12 p refs Transl. into ENGLISH from Farmakol. Toksikol. (USSR), v. 38, no. 6, Nov. - Dec. 1975 p 703-706 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-7593) Avail: NTIS HC A02/MF A01 CSCL 05C

Functional and morphological manifestations of adrenal cortex response to hypodynamia (2-hr immobilization on an operating table) under the influence of bromine preparations were studied. The sodium bromide was administered intraperitoneally in 100, 250, and 500 mg/kg doses once and repeatedly during ten days. The adrenal gland was evaluated functionally by ascorbic acid and cholesterol content and morphologically by coloring it with hematoxylin-eosin and Sudans for lipid revealing at freezing. Results are displayed in two tables and microphotographs. They are summarized as follows: the bromine weakens the functional state of the adrenal cortex in intact rats, causing changes similar to those under stress. During immobilization combined with preliminary bromine administration, a less pronounced stress reaction is noticeable. R.C.T.

N80-16720*# National Aeronautics and Space Administration, Washington, D. C.
CATECHOLAMINES AND MYOCARDIAL CONTRACTILE FUNCTION DURING HYPODYNAMIA AND WITH AN ALTERED THYROID HORMONE BALANCE
G. M. Pruss, V. I. Kuznetsov, and A. A. Zhilinskaya Jan. 1980 17 p refs Transl. into ENGLISH from Izv. Akad. Nauk SSSR, Ser. Biolhk. (USSR), no. 2, 1975, p 187-195 Original language document previously announced as A75-32600 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Vitebsk State Medical Inst. (USSR)
(Contract NASw-3199)
(NASA-TM-76000) Avail: NTIS HC A02/MF A01 CSCL 06C

The dynamics of catecholamine content and myocardial contractile function during hypodynamia were studied in 109 white rats whose motor activity was severely restricted for up to 30 days. During the first five days myocardial catecholamine content, contractile function, and physical load tolerance decreased. Small doses of thyroidin counteracted this tendency. After 15 days, noradrenalin content and other indices approached normal levels and, after 30 days, were the same as control levels, although cardiac functional reserve was decreased. Thyroidin administration after 15 days had no noticeable effect. A detailed table shows changes in 17 indices of myocardial contractile function during hypodynamia. K.L.

N80-16721# Louisiana State Univ. and A&M Coll., Baton Rouge. Dept. of Chemistry.
PHYSIO-CHEMICAL INVESTIGATION OF SOME AREAS OF FUNDAMENTAL SIGNIFICANCE TO BIOPHYSICS Annual Report, 1978 - 1979
S. P. McGlynn 7 Aug. 1979 151 p refs
(Contract EY-76-S-05-3018)
(ORO-3018-T1) Avail: NTIS HC A08/MF A01

Biographic titles and descriptions of graduate and postgraduate research efforts for the period 1978-1979 are presented. Work in progress includes analyzing the lowest-energy Rydberg transitions of the alkyl halides; decomposition of a spectroscopic signal S into a system of bands; luminescence of aqueous systems; a study of the effects of small molecules on hydrogen bonding via glass transitions in ethanol; Rydberg/intravalence mixing in the S2 state of azulene; ultraviolet photoelectron spectroscopy of carbonyls; and multi-photon processes. R.E.S.

N80-16722# Rochester Univ., N. Y. Dept. of Radiation Biology and Biophysics.
INFLUENCE OF X IRRADIATION AND DIET ON PITUITARY/THYROID FUNCTION IN THE RAT M.S. Thesis
I. G. Qassar 1979 59 p refs
(Contract EY-76-C-02-3490)
(UR-3490-1674) Avail: NTIS HC A04/MF A01

Rats were maintained on low iodine diet or treated with T sub 4. A significant increase in thyroid weight was observed in rats on low iodine diet whereas among rats on normal diet with thyroxine injections, the thyroid was lower in weight than thyroids of control animals. Pituitary weight increased significantly in rats on low iodine diet or T sub 4 treatment. Where PTU was administered to rats pretreated with either normal diet, normal diet plus T sub 4, or maintained on low iodine diet and then exposed to radiation (100 to 400R) to the neck, it was not possible to distinguish the effect of such local radiation on body growth. Contrary to low iodine treatment, administration of PTU did not result in any increase in pituitary weight in rats maintained on normal diet prior to radiation or in rats maintained on low iodine diet prior to radiation. There was, however, a significant increase in pituitary weight in rats injected with thyroxine prior to radiation (250R or 400R). DOE

N80-16723# Iowa Univ., Iowa City.
ANAEROBIC BIOLOGICAL TREATMENT OF LIQUID WASTES FROM PYROLYSIS PROCESSES Progress Report, 1 Apr. 1977 - 31 Mar. 1979
R. R. Dague 15 May 1979 61 p
(Contract EC-77-S-02-4455)
(COO-4455-2) Avail: NTIS HC A04/MF A01

Experimental work has shown that gas scrubber wastes from the pyrolysis process are high in organics that are toxic to anaerobic biological treatment systems. Carbon was evaluated as a method of pretreatment, co-treatment, or separate treatment for application to the pyrolysis wastes. Experiments with carbon adsorption indicates that wastes can be adsorbed to a high degree. Isotherms indicate an adsorptive capacity of between 0.60 and 0.86 grams of COD per gram of carbon. Suspended growth systems are also discussed. DOE

N80-16725* National Aeronautics and Space Administration. Pasadena Office, Calif.
APPARATUS FOR ENDOSCOPIC EXAMINATION Patent
Robert E. Frazer, inventor (to NASA) Issued 4 Dec. 1979 10 p Filed 17 Jun. 1977 Supersedes N79-19678 (17 - 10, p 1328)
(NASA-Case-NPO-14092-1; US-Patent-4,176,662;
US-Patent-Appl-SN-807597; US-Patent-Class-128-6;
US-Patent-Class-128-348; US-Patent-Class-128-DIG9;
US-Patent-Class-138-33; US-Patent-Class-138-103;
US-Patent-Class-138-133; US-Patent-Class-219-201;
US-Patent-Class-219-522) Avail: US Patent and Trademark Office CSCL 06B

An endoscope is having a propulsion mechanism and at least one transmitter at the distal end transmitting bursts of energy waves (radio frequency or ultrasonic) for tracking the position of the distal end through the use of two or more transducers on the anterior or lateral surfaces of a patient is described. The propulsion mechanism which consists of two radially expandable bladders separated by an axially expandable bellows with only the forward bladder attached to the distal end is discussed. Alternate mechanisms are reported. A sheath on the endoscope which includes material having a sharp melting point slightly above body temperature so that the sheath is made flexible at selected sections by applying current to separate heating wires in the sections of the sheath is described.

Official Gazette of the U.S. Patent and Trademark Office

N80-16726*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF GRAVITATION STRESS AND HYPOKINESIA ON BLOOD VESSELS OF THE TESTICLE

E. F. Palazhchenko (I. P. Pavlov First Leningrad Med. Inst.) Nov. 1979 14 p refs Transl. into ENGLISH from Arkh. Anat. Gistol. Embriol. (USSR), v. 64, no. 5, 1973 p 57-63 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75942) Avail: NTIS HC A02/MF A01 CSCL 06S

Rabbits were exposed to single maximum endurable stresses of cranio-caudal direction, hypokinesia for periods of one to eight weeks, and hypokinesia followed by gravitation stresses. The stresses caused dilatation of vessels, greater sinuosity, and occasional ruptures of the walls and extravasation. The greater part of the capillaries were dilated, the greatest part constricted. In hypokinesia there was an increasing atrophy of the testes. Significant results are reported. R.C.T.

N80-16727*# National Aeronautics and Space Administration, Washington, D. C.

THE SIGNIFICANCE OF ACTH FOR THE PROCESS OF FORMATION OF COMPLEX HEPARIN COMPOUNDS IN THE BLOOD DURING IMMOBILIZATION STRESS

B. A. Kudryashov (Moscow State Univ.), F. B. Shapiro (Moscow State Univ.), F. B. Lomovskaya (Moscow State Univ.), and L. A. Lyapina (Moscow State Univ.) Nov. 1979 14 p refs Transl. into ENGLISH from Fiziol. Zh. SSSR (USSR), v. 61, no. 2, 1975 p 244-250 Original language document was announced as A75-31019 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75946) Avail: NTIS HC A02/MF A01 CSCL 06S

Adrenocorticotropin (ACTH) was administered to rats at different times following adrenalectomy. Adrenocorticotropin caused a significant increase in the formation of heparin complexes even in the absence of stress factor. When ACTH secretion is blocked, immobilization stress is not accompanied by an increase in the process of complex formation. The effect of ACTH on the formation of heparin complexes was mediated through its stimulation of the adrenal cortex. R.C.T.

N80-16728*# National Aeronautics and Space Administration, Washington, D. C.

EFFECTS OF INGESTION OF COLD AND HOT WATER ON THE COURSE OF THERMAL CHANGES IN THE STOMACH AND INTESTINE

Ye. L. Batinkov Sep. 1979 12 p refs Transl. into ENGLISH from Fiziol. Zh. SSSR (USSR), v. 27, no. 1, 1939 p 108-114 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. Prep. by First Med. Clinic, Crimean Med. Inst. Imenistalin (USSR)
(NASw-3199)
(NASA-TM-75515) Avail: NTIS HC A02/MF A01 CSCL 06P

With the use of a thermocouple and mirror galvanometer, calibrated before the experiment and after each test, it was found that the normal temperature in the esophagus is 0.1-0.4 C higher than in the oral cavity, the temperature in the duodenum is somewhat less than in the stomach, but higher with cholecystitis, duodenitis or gastritis, the temperature in the normal stomach equals or is somewhat higher than in the esophagus, and that the temperature of distended stomachs frequently is lower than in the esophagus. It was found that hot water is retained in the stomach longer than cold water, and that both hot and cold water are allowed to pass into the duodenum when the water temperature becomes approximately equal to that of the surrounding organs. Author

N80-16729# Case Western Reserve Univ., Cleveland, Ohio. Dept. of Mathematics and Statistics.

EMPIRICAL BAYES ESTIMATION OF CRITICAL DOSAGES HAVING SMALLEST PREDICTIVE RISK

Ora Bialik and S. Zacks 15 Aug. 1979 20 p refs Prepared in cooperation with Pennsylvania Univ.
(Contract N00014-75-C-0529; NR Proj. 042-276)
(AD-A074376; TR-38) Avail: NTIS HC A02/MF A01 CSCL 12/1

An empirical Bayes procedure is developed for the estimation of critical dosages in the linear regression case. The empirical Bayes procedure provides consistant estimators of the prior parameters when a large number of independent repetitions of the experiment is available. The methodology is developed to analyze a large set of photodynamic bioassays, for the determination of critical air concentrations of benzo-soluble organic extracts. R.E.S.

N80-16730# IIT Research Inst., Chicago, Ill.

BIOLOGICAL EFFECTS OF HIGH-VOLTAGE ELECTRIC FIELDS. VOLUME 1: AN UPDATE Final Report

Jul. 1979 224 p refs
(EPRI Proj. 857-1)
(EPRI-EA-1123) Avail: NTIS HC A10/MF A01

Literature which has become available since mid-1974 on the subject of biological effects of power frequency electric fields was reviewed. Some 2000 new entries of both publications and research programs in progress were identified through a computer-aided literature search. Approximately 50 of these entries are discussed. The general findings of this update confirm the conclusion that it is highly improbable that electric fields from transmission lines have any significant biological effects on healthy individuals who encounter such fields in a normal way under ordinary conditions. However, further research is still needed in order to understand the nature and extent of any effects that could be harmful. DOE

N80-16731# Sinai Hospital, Detroit, Mich.

DEVELOPMENT OF PERCUTANEOUS ENERGY TRANSMISSION SYSTEMS Annual Report, 15 Aug. 1978 - 14 Aug. 1979

A. Kantrowitz, P. S. Freed, A. A. Ciarkowski, F. L. Vaughan (Michigan Univ.), J. I. VeShancey (Michigan Univ.), R. Gray (Michigan Univ.), R. Brabec (Michigan Univ.), and I. Bernstein (Michigan Univ.) 16 Apr. 1979 70 p refs Sponsored in part by National Heart and Lung Inst., Bethesda
(Contract N01-HV-8-2921)
(PB-299739/3; NIH-N01-HV-8-2921-1) Avail: NTIS HC A04/MF A01 CSCL 06B

The initial development of a percutaneous access device is presented. Selected materials were tested for their ability to support cell growth and nutrients were examined for optimizing cell growth and collagen production. To protect the tissue-implant seal from mechanical stresses, alternative surgical techniques were employed to implant a subcutaneous flange. After implanting a flange in a Yucatan miniature pig, forces were applied to the tissue-implant composite. Strain data indicate (1) good fibrotic bonding occurs between the tissue and the implant, and (2) stabilization of the flange with respect to the adjacent dermis. GRA

N80-16732# Saint Elizabeth's Hospital, Brighton, Mass.

DEVELOPMENT OF PRECUTANEOUS ENERGY TRANSMISSION Annual Progress Report, Aug. 1978 - Mar. 1979

Benedict D. T. Daly, Michael Szycher, Michael Worthington, Fred W. Quimby, and Roger G. Warren Apr. 1979 195 p refs
(Contract N01-HV-8-2919)
(PB-300518/6; NIH-N01-HV-8-2919-1) Avail: NTIS HC A09/MF A01 CSCL 06B

A composite percutaneous energy transmission system designed to transmit energy to intracorporeal blood pumps were developed. The system contains five basic components. A carbon coated titanium flange at the level of the skin to provide a non-reactive surface to promote superficial sinus development. Below this level is a porous polytetrafluoroethylene (PTFE) surface bonded to a polyurethane tube. This PTFE extends onto a radially rigid, vertically flexible polyurethane skirt. Below the skirt is a polyurethane tube with a preformed bend. The remainder of the skirt and tube are coated with Dacron fibrils. The PTFE is designed to promote collagen ingrowth to inhibit epithelial downgrowth. The Dacron velour promotes bonding in depper tissues. GRA

N80-16733# Joint Center for Graduate Study, Richland, Wash.
IMPLANTED ENERGY CONVERSION SYSTEM Annual Report, 1 May 1978 - 1 Mar. 1979
R. P. Johnston, A. Bennett, S. G. Emigh, D. H. Gray, J. R. Noble et al Aug. 1979 491 p refs
(Contract N01-HV-4-2901)
(PB80-101116; JCGS-7908/217; NIH-N01-HV-4-2901-6)
Avail: NTIS HC A21/MF A01 CSCL 06L

The JCGS thermal energy converter program objective is to develop clinically useful permanently implantable Stirling/hydraulic power sources to operate heart-assist or full-heart replacement blood pumps. The energy source is heat from an electric heater or from a radioisotope which could provide complete system implantability. Development has progressed through seven system configurations. Stirling Engine 5 has accumulated 6.3 years of operating time and has demonstrated 4.1 years of maintenance-free operation before failure. The short-stroke pump actuator/controller on accelerated life test has demonstrated 6.6 equivalent years of maintenance-free life without failure and accumulated a total of 16.5 equivalent years of operation. System 5 in-vivo test demonstrated circulation of all systemic blood flow throughout 175-hour test. System 6 complete power source demonstrated 15.5 percent efficiency, 1.2 liter volume, and 2.4 kg weight. System 7 engine module has demonstrated 20.1 percent efficiency with 0.2 liter volume and 0.7 kg weight. GRA

N80-16734# Federal Aviation Administration, Atlantic City, N.J. National Aviation Facilities Experimental Center.
MODELING PILOT RESPONSE DELAYS TO BEACON COLLISION AVOIDANCE SYSTEM COMMANDS Final Report, Jul. - Sep. 1977
B. Billmann, T. Morgan, and J. Windle Oct. 1979 34 p refs
(FAA Proj. 052-241-310)
(AD-A075946; FAA-RD-79-74; FAA-NA-79-19) Avail: NTIS HC A03/MF A01 CSCL 05/10

Pilot response delays to collision avoidance commands displayed in the cockpit of a General Aviation Trainer simulator were analyzed. For fixed geometries, velocities, and aircraft response rates, the separation at the point of closest approach between aircraft responsing to collision avoidance system (CAS) commands, is inversely related to the length of pilot delay in responding to the CAS command. The Gamma distribution was the best distribution for approximating the empirical data in terms of minimum error mean square, lack of bias, and uniformity of fit. K.L.

N80-16735 Texas Univ., Galveston.
A STUDY OF OCCUPATIONAL HEAT STRESS BY ANALYSIS OF ENVIRONMENTAL AND HUMAN FACTORS Ph.D. Thesis
David Jefferson Calley 1979 289 p
Avail: Univ. Microfilms Order No. 7927487

The environmental and physiological aspects related to workmen in a hot production process in the warm and humid Gulf Coast region of the United States are described. Heat stress and strain was investigated in terms of three heat stress indices, the heat stress index, the wet bulb globe temperature, and the wet globe temperature. Correlation coefficients between these indices are discussed. In addition, medical data and clinical chemistry of blood and urine among workmen with heat illness was investigated. Recommendations were made for prevention of heat illness and for the use of heat stress indices. Precautions were stated related to the work-rest ratios and the estimation and measurement of metabolism and allowable exposure times. Dissert. Abstr.

N80-16736 Ohio State Univ., Columbus.
PLANAR BIPED DYNAMICS AND CONTROL Ph.D. Thesis
Andrew Zbigniew Ceranowicz 1979 196 p
Avail: Univ. Microfilms Order No. 8001704

Linear feedback was used to control the motion of a mathematical biped model composed of five rigid links connected by ideal torque actuators at pin joints and constrained to move only in the sagittal plane. The equations of motion for the biped model and support equations, which describe the contact between the supporting surface and the feet of the biped, are presented. These equations can be solved simultaneously for the biped's accelerations and ground reaction forces once the dynamic state and control torques are known. For point feet and a hard flat horizontal support surface, there are nine possible sets of support equations, i.e., support phases. Finding the correct support phase for any control torques and dynamic state is discussed. These ideas were implemented in the simulation of walking which required the transition between three support phases. Dissert. Abstr.

N80-16737*# Ohio State Univ., Columbus. Human Performance Center and Aviation Psychology Lab.
MULTI-MODAL INFORMATION PROCESSING FOR VISUAL WORKLOAD RELIEF
Michael W. Burke, Richard D. Gilson, and Richard J. Jagacinski 1980 28 p refs
(Grant NsG-2179)
(NASA-CR-162720) Avail: NTIS HC A03/MF A01 CSCL 05H

The simultaneous performance of two single-dimensional compensatory tracking tasks, one with the left hand and one with the right hand, is discussed. The tracking performed with the left hand was considered the primary task and was performed with a visual display or a quickened kinesthetic-tactual (KT) display. The right-handed tracking was considered the secondary task and was carried out only with a visual display. Although the two primary task displays had afforded equivalent performance in a critical tracking task performed alone, in the dual-task situation the quickened KT primary display resulted in superior secondary visual task performance. Comparisons of various combinations of primary and secondary visual displays in integrated or separated formats indicate that the superiority of the quickened KT display is not simply due to the elimination of visual scanning. Additional testing indicated that quickening per se also is not the immediate cause of the observed KT superiority. R.E.S.

N80-16738*# General Technical Services, Inc., Upper Darby, Pa.
THERMODYNAMIC CONSIDERATIONS IN THE SUPPORT OF LIFE FOR LONG SPACE VOYAGES Final Report
A. S. Iberall and S. Z. Cardon Nov. 1979 89 p refs
(Contract NASw-3240)
(NASA-CR-162755) Avail: NTIS HC A05/MF A01 CSCL 06K

The essential requirements for the maintenance of life, particularly human life, on isolated space missions of long duration were investigated through the study of extended irreversible thermodynamics. The characterization of a four trophic level system was developed. Questions of stability are discussed. R.E.S.

N80-16739*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala. Structures and Propulsion Lab.
PROSTHETIC DEVICE FOR CORRECTION OF URINARY INCONTINENCE
Ray Helms Dec. 1979 22 p refs
(NASA-TM-78255) Avail: NTIS HC A02/MF A01 CSCL 06B

The development and current status of a prosthetic device for the correction of urinary incontinence is presented.

N80-16740# Monsanto Research Corp., Dayton, Ohio.
PHYSICAL TESTING OF POLYMERS FOR USE IN CIRCULATORY ASSIST DEVICES Annual Report, 1 Jun. 1978 - 31 May 1979
Carl R. McMillin, David L. Sheppard, and Thomas A. Orofino

Jul. 1979 48 p refs
(Contract N01-HV-7-2918)
(PB80-101546; MRC-DA-892; AR-1) Avail: NTIS HC A03/MF A01 CSCL 06L

Fatigue life comparisons of candidate elastomers for use in the artificial heart were made under various conditions. These include: (1) cyclical, progressively increasing, uniaxial strain in air, saline, and in-vitro blood media; (2) progressive uniaxial strain in the same media, with prior cut-growth initiation of samples; and (3) cyclical, biaxial strain in an air environment, accelerated by introduction of various stress concentrators in the samples. Materials evaluated were NBS butyl rubber, Upjohn Pellethane, Goodyear Hexsyn, and Thoratec Biomer. The order of ranking of fatigue lifetime was not the same for the tests cited, and the mode of failure differed for filled (butyl rubber, Hexsyn) and unfilled elastomers. GRA

N80-16741# Bureau of Radiological Health, Rockville, Md. Div. of Electronic Products.
EVALUATION OF COMMERCIALLY AVAILABLE LASER PROTECTIVE EYEWEAR Final Report
Kenneth R. Envall and Ross Murray, Jr. (Laser Effects Branch, USAF School of Aerospace Medicine) May 1979 102 p refs Prepared in cooperation with USAF School of Aerospace Medicine, Brooks AFB, Tex.
(PB80-103039; DHEW/PUB/FDA-79/8086; FDA/BRH-79/110) Avail: NTIS HC A06/MF A01 CSCL 06Q

Forty commercially available laser protective eyewear materials and ten representative frames were evaluated under non-stress and stress conditions. Parameters such as optical density, spectral transmission, luminous transmittance, refractive and prismatic effects haze, and impact resistance were determined and, where possible, compared to recommended criteria for occupational eye and face protection. In addition, all materials were subjected to shelf-life, environmental, and laser-induced damage tests to determine damage limits and characteristics. GRA

N80-17665 Michigan State Univ., East Lansing.
INTERACTION OF ELECTROMAGNETIC FIELDS WITH HETEROGENEOUS BIOLOGICAL SYSTEMS Ph.D. Thesis
Sutus Rukspollmuang 1979 207 p
Avail: Univ. Microfilms Order No. 8001585

The theoretical and experimental results of the induced electric field inside a biological system when it is irradiated by a non-ionized electromagnetic (EM) radiation are presented. A numerical method based on a tensor integral equation is outlined for estimating the induced EM heating. A phantom model of man which was constructed with thin plexiglass filled with phantom material, was irradiated by 500 to 3000 MHz EM waves in a microwave anechoic chamber. The distribution of the measured electric field was compared with the distribution of theoretical results obtained numerically from the tensor integral equation method. A quantitative agreement was obtained between experiment and theory. A study was also conducted to investigate effective methods of inducing hyperthermia in the tumors embedded in animal and human bodies by utilizing EM fields. Dissert. Abstr.

N80-17666*# National Aeronautics and Space Administration, Washington, D. C.
NEW STUDIES OF VENUS
L. V. Ksanfomaliti Feb. 1980 18 p Transl. into ENGLISH from Zemlya Vselennaya (USSR), no. 4, Jul. - Aug. 1979 p 5-14 Transl. by JPRS, Arlington, Va.
(NASA Order W-13183)
(NASA-TM-75931) Avail: NTIS HC A02/MF A01 CSCL 03B

The American and Russian 1978 Venus explorations are reported. Highlights of their accomplishments and subjects of study are discussed. Included are investigations of the surface pressure, temperature, composition, and mass of the Venusian atmosphere, along with cloud layer structure, greenhouse effect, and diurnal variations. M.M.M.

N80-17667*# National Aeronautics and Space Administration, Washington, D. C.
EFFECT OF GRAVITATIONAL OVERLOADS, HYPOKINESIA AND HYPODYNAMIA ON THE VESSELS OF THE PULMONARY BLOOD CIRCUIT
A. A. Kasimtsev Feb. 1980 13 p refs Transl. into ENGLISH from Arkh. Anat., Gistol. Embriol. (USSR), no. 2, 1973 p 82-90 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prepared by 1st Leningrad I. M. Pavlov Medical Inst.
(Contract NASw-3199)
(NASA-TM-75963) Avail: NTIS HC A02/MF A01 CSCL 06C

Vessels of the pulmonary circuit are studied under normal conditions, in exposure to single stress or continuous threshold endurable chestspine gravitational stresses, and one to eight weak hypokinesia and hypodynamic effects followed by stress. Examination methods include rentgenography and microrentgenography, clearing, and histology. In exposure to gravitational stress the distal portions of the arterial vessels of the 3 and 4 orders constrict, while all veins dilate. Sinuosity of all vessels is noted. The volume of the capillary bed increases and signs of perivascular edema occur. Due to hypokinesia and hypodynamia the arteries constricted and the arterial bed becomes poor. The veins of all orders dilate and the volume of the capillary bed increases. The changes grew greater the longer thd terms of hypodyamic effects. Successive combination of hypokinesia and hypodynamia and gravitational stresses cause more pronounced changes than separate effects of these two factors and result in great deformity of the vascular walls, including their rupture and penetration of formed elements beyond the limits of the vascular bed. M.G.

N80-17668*# National Aeronautics and Space Administration, Washington, D. C.
EFFECT OF GRAVITATIONAL ACCELERATION, HYPOKINESIA AND HYPODYNAMIA ON THE STRUCTURE OF THE INTESTINAL VASCULAR BED
M. V. Nikitin Feb. 1980 12 p refs Transl. into ENGLISH from Arkh. Anat., Gistol. Embriol. (USSR), no. 3, Mar. 1974 p 54-61 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prepared by 1st Leningrad I. P. Pavlov Medical Inst.
(Contract NASw-3199)
(NASA-TM-75972) Avail: NTIS HC A02/MF A01 CSCL 06C

A series of experiments comparing single and combined effects of hypokinesia and gravitational acceleration on morphology of intestinal blood vessels are discussed. Results indicate that hypokinesia has a whole body nonspecific effect reflected even in an organ whose activity shows little or no change due to hypokinesia. In early hypokinetic stages blood redistribution caused anorexia, intestinal atonia, and secretory disruption. Destructive changes from further exposure include aneurisms, varicoses, extravascular movement of blood elements, and vascular wall muscle fiber degeneration. The effect of acceleration is greatest in the ventrodorsal direction. Changes due to acceleration then hypokinesia are like those due to hypokinesia alone, changes due to acceleration before and after hypokinesia are like those due to acceleration. Adaptation raises acceleration tolerance but the effects do not survive four-week hypokinesia. M.G.

N80-17669*# National Aeronautics and Space Administration, Washington, D. C.
INFLUENCE OF MOBILITY RESTRICTION ON HABITUATION OF THE VESTIBULAR APPARATUS
G. I. Gorgiladze and G. S. Kazanskaya Feb. 1980 8 p refs Transl. into ENGLISH from Dokl. Akad. Nauk SSSR (USSR), v. 211, no. 4, 1 Aug. 1973 p 1005-1008 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75995) Avail: NTIS HC A02/MF A01 CSCL 06C

Test results presented indicate that 30-day hypokinesia did not affect the intensity of nystagmus: velocity of slow phase, total number of jerks, and duration of the reaction in animals were the same as before mobility restriction and did not differ from those of the control group. However, hypokinesia resulted in the disappearance of habituation of the vestibulary system to repeated angular accelerations. The known hypokinetic changes in the endocrine system were studied. It was concluded that reduction in adrenergic function may be the cause of disappearance of vestibular apparatus habituation during hypokinesia. M.M.M.

N80-17670*# National Aeronautics and Space Administration, Washington, D. C.

RNA CONTENT IN MOTOR AND SENSORY NEURONS AND SURROUNDING NEUROGLIA OF MOUSE SPINAL CORD UNDER CONDITIONS OF HYPODYNAMIA AND FOLLOWING NORMALIZATION

V. A. Brumberg and L. A. Pevzner Feb. 1980 15 p refs
(Contract NASw-3198)
(NASA-TM-76032) Avail: NTIS HC A02/MF A01 CSCL 06C

The differences in the dynamics of reparative processes in RNA metabolism within the neuron-neuroglia unit after the cessation of hyper- and hypodynamia is dicussed. The role of neuroglia is stressed in compensatory, reparative and trophic processes in the nervous system as well as the possibility in an adaptation at the cellular level. M.M.M.

N80-17671*# National Aeronautics and Space Administration, Washington, D. C.

DIFFERENTIATION AND RADIOSENSITIVITY OF HEMOPOIETIC STEM CELLS OF MICE DURING HYPOKINESIA

V. N. Shvets 1980 10 p refs Transl. into ENGLISH from Radiobi. (USSR), v. 19, no. 2, 1979 p 199-203 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76066) Avail: NTIS HC A02/MF A01 CSCL 06C

The potential for differentiation and radiosensitivity of the stem hemopoietic cells (KOE) under conditions of initial and later hypokinesia is examined. It is established that in the initial period of hypokinesia (3 days) when a stress reaction prevails, changes occur in the erythroid differentiation and radiosensitivity of KOE. This effect is associated with redistribution of T-lymphocytes that increase in number in the bone marrow of mice during hypokinesia. At later periods of hypokinesia (30 days) when changes in the organism are related to hypokinesia proper, differentiation and radiosensitivity of KOE were normalized. M.G.

N80-17672*# National Aeronautics and Space Administration, Washington, D. C.

DYNAMICS OF CHANGE IN RAT ARTERIAL PRESSURE UNDER CONDITIONS OF IMMOBILIZATION

Ye. A. Yumatov, Yu. G. Skotselyas, and L. I. Ivanona Feb. 1980 9 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), no. 3, 1979 p 22-26 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original Doc. prepared by USSR Academy of Medical Sciences, Moscow
(Contract NASw-3198)
(NASA-TM-76045) Avail: NTIS HC A02/MF A01 CSCL 06C

Emotional stress developed in immobilized rats was shown to be accompanied by changes in the regulation of arterial pressure and the frequency of cardiac contractions. A group of adapting rats displayed definite resistance to emotional stress, while a group of rats incapable of adapting to acute emotional stress died with characteristics of cardiovascular insufficiency. The mechanisms providing resistance to emotional stress in numerous conflict situations were analyzed. K.L.

N80-17673# Rhode Island Univ., Kingston. Graduate School of Oceanography.

BIOCHEMICAL CORRELATES OF SEASONAL CHANGE IN MARINE COMMUNITIES

H. Perry Jeffries May 1979 19 p refs Repr. from Am. Nat., v. 113, no. 5, May 1979 p 643-658
(Grant NOAA-04-80-MO1-147)
(PB-301380/2; Marine-Reprint-119; NOAA-79082402) Copyright. Avail: NTIS HC A02/MF A01 CSCL 06B

Changes in the fatty acid distributions of plankton and benthos in response to seasonal change are analyzed. It is found that as a temperate community matures and becomes more complex, so does its fatty acid composition. Chemical progression is most rapid during succession from winter-spring to summer-fall species groups, a period of reorganization among characteristic fatty acid sets. Increasing amounts of saturated acids seem to disclose a change in community structure, whereas an important polyunsaturate forms a locus around which these progressions take place. GRA

N80-17674# Joint Publications Research Service, Arlington, Va.

USSR REPORT: SPACE BIOLOGY AND AEROSPACE MEDICINE, VOLUME 14, NO. 6, 1979

O. G. Gazenko, ed. 31 Jan. 1980 114 p refs Transl. into ENGLISH of Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 90 p
(JPRS-75041) Avail: NTIS HC A06/MF A01

The biological and physiological effects of manned space flight are addressed. Specifically, the selection and training of cosmonauts, the evaluation and analysis of data to facilitate the transition from orbital to interplanetary flights, and research aimed at guaranteeing safety on long flights and reliability of the human component of the man spaceship system are considered. Space psychology and physiology, environmental problems and control, and telemetry are included.

N80-17675# Joint Publications Research Service, Arlington, Va.

SOME PHILOSOPHICAL ASPECTS OF THE PROBLEM OF MAN, THE BIOSPHERE AND SPACE

N. A. Agadzhanyan *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 1-8 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 1-9

Avail: NTIS HC A06/MF A01

Man environment interactions are considered in terms of the laws governing evolution and further development of the Universe. The emergence of a human society is seen as a qualitatively new stage in the evolution of organic matter. Progress in science and engineering is discussed in relation to the effect on the natural environment and on living beings. Space exploration is seen as an opportunity to evaluate man's role, position, and responsibility in the infinite Universe. J.M.S.

N80-17676# Joint Publications Research Service, Arlington, Va.

COMPOSITION OF INTESTINAL MICROFLORA OF COSMONAUTS BEFORE AND AFTER SPACE FLIGHTS

N. N. Lizko, V. M. Shilov, G. D. Syrykh, and V. I. Legenkov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 9-20 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 9-13

Avail: NTIS HC A06/MF A01

The composition of the intestinal microflora of 12 cosmonauts was studied before and after space missions of varying duration. Changes in the intestinal microbial coenosis were found prelaunch. The pattern of changes did not vary with an increase in space flight duration. The use of special prophylactic measures exerted a positive effect on intestinal microecology. Bifidobacteria and lactobacilli showed the greatest changes inflight. Therefore, it seems important to arrange preflight sanation of the intestinal microflora as a prophylactic method. Author

N80-17677# Joint Publications Research Service, Arlington, Va.

OBJECTIVES AND CONDITIONS OF PHYSIOLOGICAL EXPERIMENTS ON RATS CONDUCTED ABOARD THE COSMOS-936 BIOSATELLITE

Ye. A. Ilin, V. I. Korolkov, A. R. Kotovskaya, A. D. Noskin, V. A. Kondratyeva, A. A. Shipov, and I. I. Britvan *In its* USSR Rept.:

Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 21-26 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 18-22

Avail: NTIS HC A06/MF A01

Results of physiological studies of rats flown onboard the biosatellite Cosmos 936 are summarized. The satellite-borne experiments investigated the mechanisms of the physiological effects of weightlessness, and considered artificial gravity as an effective means of preventing the adverse effects of weightlessness. The feasibility of a control group that would be exposed to all space flight factors, with the exception of weightlessness, in order to differentiate between in the influence of weightlessness on physiological systems and the effects of other space flight factors was assessed. J.M.S.

N80-17678# Joint Publications Research Service, Arlington, Va.

SOME NEUROCHEMICAL CHARACTERISTICS OF RATS DURING FLIGHT ABOARD THE COSMOS-782 ARTIFICIAL SATELLITE AND AFTER RETURN TO EARTH

O. G. Gazenko, N. N. Demin, A. N. Panov, D. A. Rashevskaya, N. L. Rubinskaya, and R. A. Tigranyan *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 27-32 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 22-26

Avail: NTIS HC A06/MF A01

The brains of rats flown onboard the biosatellite Cosmos 782 were sampled immediately postflight and taken under neurochemical study. It was shown cytospectrophotometrically that the absolute content of RNA decreased by 20 percent in the cytoplasm of cerebellar Purkinje cells and remained unaltered in glial cells-satellites, and that the protein content did not change. In the frontal cortex (homogenates) the concentration of sulfhydryl groups decreased by 26 percent, activity of nonspecific cholinesterase by 30 percent and acetyl cholinesterase by 33 percent. The activity of the latter in the cerebellum also diminished. Author

N80-17679# Joint Publications Research Service, Arlington, Va.

EFFECTS OF MINIMAL GRAVITATIONAL LOADS ON FLUID-ELECTROLYTE METABOLISM AND RENAL FUNCTION OF MAN DURING PROLONGED IMMERSION

A. I. Grigoryev and Ye. B. Shulzhenko *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 33-39 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 27-31

Avail: NTIS HC A06/MF A01

It was demonstrated that renal excretion of fluid, osmotically active substances and electrolytes could be reduced, using low gravitational exposures (+Gz). The degree and duration of water and electrolyte retention were different with respect to the experimental time. The major physiological mechanisms of the changes in fluid-electrolyte metabolism were: a decrease in the glomerular filtration rate and a change in water and ion transport in renal tubules. Author

N80-17680# Joint Publications Research Service, Arlington, Va.

CREATINURIA IN MAN DURING PROLONGED HYPOKINESIA

S. A. Kamforina *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p40-44 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 32-35

Avail: NTIS HC A06/MF A01

A prolonged bed rest experiment of 94 days caused an increase in renal excretion of creatine during the first two months and a return to the pretest level during the third month. The bed rested test subjects who performed exercise showed a lower and delayed (by the 3rd month) increase in creatine excretion. Author

N80-17681# Joint Publications Research Service, Arlington, Va.

CHANGES IN THE NEUROMOTOR SYSTEM DURING 45 DAYS OF HYPOKINESIA

Ye. A. Shaposhnikov, P. I. Sidorov, and A. I. Kolomenskiy *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 45-51 refs Transl. into ENGLISH from Kosmich. Biol. Aviatkomich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 35-39

Avail: NTIS HC A06/MF A01

Neurological and electromyographic examinations of 12 test subjects during a 45 day bed rest study were carried out. Symptoms indicating changes in the suprasegmentary innervation were noted. Shortening of the duration of potentials was shown by needle electromyography. A decline in the threshold of H-reflex and a change in the frequency parameters of EMG were seen. These data suggest a change in the functional state of the central and peripheral motor neuron during prolonged hypokinesia. Prophylectic efficiency of muscle electrostimulation is discussed. Author

N80-17682# Joint Publications Research Service, Arlington, Va.

ELECTROSTIMULATION OF MUSCLES FOR THE PREVENTION OF NEUROMUSCULAR DISORDERS DURING 45-DAY ANTIORTHOSTATIC HYPOKINESIA

V. S. Georgiyevskiy, Ye. A. Ilinskaya, V. I. Matveyev, V. M. Mikhaylov, and V. I. Pervushin *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 52-57 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 40-44

Avail: NTIS HC A06/MF A01

Healthy test subjects exposed to a 45 day head down tilting (-6.5 deg) showed a decline of the tone and strength of certain muscle groups, a decrease of leg circumference, a deterioration of the walking pattern, and a reduction of exercise tolerance (provocative tests with bicycle ergometry pedalling at a moderate and maximum rate). Electrostimulation of muscles applied by the Tonus-2 equipment for 30 min twice a day, 6 days a week helped to reduce the level of hypokinesia induced disorders. Author

N80-17683# Joint Publications Research Service, Arlington, Va.

EFFECT OF VESTIBULAR STIMULI ON VISUAL TRACKING IN A LIMITED TRACKING AREA

V. I. Babiyak, Yu. N. Kholodov, and Yu. K. Yanov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 58-63 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov/Dec. 1979 p 49-48

Avail: NTIS HC A06/MF A01

The results of studying visual tracking of targets which moved with a constant amplitude of angular displacement are presented. The tracking was carried out during an interaction of vestibular and optic sensors. The tracking stability was related to the coincidence of the direction of vestibular and optic stimuli. J.M.S.

N80-17684# Joint Publications Research Service, Arlington, Va.

ROLE OF INTEROCEPTIVE AFFERENTATION IN FUNCTION OF THE CORTEX OF THE VISUAL ANALYZER

N. I. Pityk *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 64-71 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 48-53

Avail: NTIS HC A06/MF A01

The experiments on diplacin-immobilized rats showed that stimulation of gastric and rectal mechanoreceptors caused noticeable changes in the control and light-induced impulse activity of neurons of the optic cortex. The predominant pattern of cell reactions were tonic changes of impulsation. They included both stimulatory and inhibitory effects. The latter occurred mostly as a result of stimulation of gastric mechanoreceptors. Changes in the evoked activity of those neurons involved most frequently enhancement or inhibition of responses, contrasting and stabilization of short-latent responses, and then masking with neuronal noise. The functional importance of the changes in the control and evoked activities of neurons of the optic cortex during interoceptive effects as well as possible central pathways of their realization in the optic cortex is discussed. R.E.S.

N80-17686# Joint Publications Research Service, Arlington, Va.

EFFECT OF ACUTE HYPOXIA ON SPECIFIC AND NONSPECIFIC SYSTEMS OF THE RABBIT BRAIN

N. S. Akopyan and O. G. Baklavadzhyan *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 72-78 refs Transl into ENGLISH from Kosmich. Biol. Aviakosmich Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 53-57

Avail: NTIS HC A06/MF A01

Electrical activity of the brain under hypoxic activity was studied with the use of the EEG. At a simulated altitude of 8500-9000 m, an increase in the amplitude of the early positive and negative phase of the thalamic-cortical evoked potentials, and a slight prolongation of the latent period were seen. Changes in the reticulo-cortical and hypothalamo-cortical evoked potentials included a pronounced inhibition of their negative phase. In the EEG slow delta-waves increased gradually, becoming the major rhythm. The presence of EEG signs of the development of inhibitory processes in the cortex suggested that the changes in evoked potentials were also a result of inhibition of cortical neurons. Hypoxia-adapted rabbits tolerated acute hypoxia much better. They exhibited less pronounced changes in the electric manifestations of the function of specific and nonspecific projection systems of the brain. R.E.S.

N80-17686# Joint Publications Research Service, Arlington, Va.

STUDY OF BIOELECTRIC ACTIVITY OF NEURO-MUSCULAR AND SYMPATHETIC SYSTEMS DURING EXPOSURE TO A STEADY MAGNETIC FIELD

L. D. Klimovskaya and S. B. Krotova *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 79-84 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 58-61

Avail: NTIS HC A06/MF A01

The experiments on an isolated frog neuromuscular preparation showed that an exposure to stable magnetic fields of 1000-4000 Oe did not influence the time parameters, amplitude and pattern of the action potentials of the gastrocnemius muscle induced by ischiatic nerve simulation with single impulses. Similar results were obtained from an analysis of electric responses of the upper cervical sympathetic node to the stimulation of preganglionar fibers in in situ experiments on urethane anesthesized rabbits subjected to a total exposure of a stable magnetic field (500-3000 Oe). In addition, an exposure to a stable magnetic field of 4000 Oe brought about a decrease of the level of depression of the action potential of muscles after conditioning tetanus. R.E.S.

N80-17687# Joint Publications Research Service, Arlington, Va.

EFFECTS OF STRONG INFRALOW-FREQUENCY MAGNETIC FIELDS ON BONE MARROW CELL DIVISION

A. D. Strzhizhovskiy, G. V. Galaktionova, and P. A. Cheremnykh *In its* USSR Rept.: Space Biol and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 85-88 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 61-63

Avail: NTIS HC A06/MF A01

The effect of an infralow frequency field of 3-127 kOe applied for 1 hr on mitotic activity, frequency of chromosomal aberrations and number of bone marrow cells of mice was studied. The exposure of mice to fields of 3 and 8 kOe stimulated and to fields of 54 and 127 kOe inhibited mitotic activity. No increase in the frequency of aberrant mitoses in bone marrow cells was noted. The changes in the cell number were small (no more than 20 percent) and readily reversible. Author

N80-17688# Joint Publications Research Service, Arlington, Va.

PROGRAMMED CONTROL OF THE AUTOTROPHIC COMPONENT OF AN ECOLOGICAL SYSTEM THAT IS CLOSED WITH REGARD TO EXCHANGE OF GASES

A. S. Nasonov and V. S. Toroptsov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 89-95 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 63-68

Avail: NTIS HC A06/MF A01

The ecological system with closed gas exchange consisting of autotrophic and heterotrophic components located in different rooms was studied. The conditions of O2 and CO2 steady state with a periodically working autotrophic component were found. The stability of the steady-state was analyzed. Author

N80-17689# Joint Publications Research Service, Arlington, Va.

EFFECT OF CARBON MONOXIDE ON ANIMALS ADAPTED TO HYPOXIC HYPOXIA

V. V. Kustov and V. G. Litau *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 98-102 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 69-72

Avail: NTIS HC A06/MF A01

Experiments were conducted on 80 white male mice to investigate the development of carbon monoxide poisoning in animals adapted to hypoxic hypoxia. The following parameters were studied: body weight, hemoglobin and erythrocyte content of peripheral blood, blood catalase activity, blood peroxidase activity, and increment of carboxyhemoglobin. The results show that carbon monoxide in a concentration of 500 mg/cu m induces substantial changes in mice referable to several integral (body weight), hematological, and enzymatic parameters which are inherent in chronic carbon monoxide poisoning. R.E.S.

N80-17690# Joint Publications Research Service, Arlington, Va.

EFFECT OF STEADY MAGNETIC FIELD ON SOME ASPECTS OF ENERGY AND NITROGEN METABOLISM IN THE RAT CEREBRAL HEMISPHERES

Ye. A. Nosova and L. M. Kurkina *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 103-105 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 72-74

Avail: NTIS HC A06/MF A01

The effects of high intensity steady magnetic fields (SMF) on ammonia, glutamine, glutamic, aspratic and gamma-aminobutyric [GABA] acids were studied, as well as concentration levels of adenisine triphosphoric acid (ATP), phosphocreatine and lactic acid in the cerebral hemispheres of rats. Exposure of animals to SMF of 3000 Oe for 3 hours did not lead to reliable changes in levels of components of the glutamine-glutamic acid system, or in aspartic acid and GABA. The ATP content of brain tissue of rats exposed to SMF was reliably, though not markedly, decreased; phosphocreatine was unchanged, while lactic acid content was significantly increased. The decrease demonstrated in ATP content of the cerebral hemispheres to the bottom range of normal and increase in lactic acid to the top range of normal are indicative of greater activity of metabolic processes in the central nervous system of rats exposed to SMF, as compared to control animals. R.E.S.

N80-17691# Joint Publications Research Service, Arlington, Va.

EFFECT OF RHEOPOLYGLUCIN ON BLOOD CLOTTING FACTORS OF THE AORTA, MYOCARDIUM AND VENAE CAVAE DURING HYPOKINESIA

V. I. Inchina *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 106-110 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 74-76

Avail: NTIS HC A06/MF A01

The influence of low molecular dextrans on blood clotting and fibrinolytic peoperties of blood vessels and the myocardium under hypokinetic conditions was studied. The low molecular dextran used was rheopolyglucin. Constriction of the arteriolar lumen, dilatation of venules, appearance of recessed sacculations and increased capillary permeability were found in the myocardium of hypokinetic rabbits. These changes in the vascular wall, combined with demonstrated changes in the tissular system of hemostasis, lead to impairment of microcirculatory hemostasis. Rheopolyglucin, which normalizes the rheological properties of blood and diminishes aggregation of formed elements, improved microcirculation. However, complete restoration of circulation only occurred when capillaries were free of fibrin. R.E.S.

N80-17692# Joint Publications Research Service, Arlington, Va.

EFFECTS OF ACCELERATIONS ON THE EARLY STAGE OF RADIATION LESION IN ANIMALS

V. V. Antipov, D. N. Gavrilyuk, B. L. Razgovorov, and B. I. Davydov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 111-114 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), Vol. 14, No. 6, Nov./Dec. 1979 p 76-77

Avail: NTIS HC A06/MF A01

The influence of accelerations on the course of the body's primary reaction to the combined effect of accelerations and ionizing radiation was studied. The results of experiments on rats and dogs show that exposure to accelerations prior to radiation attenuates the primary reaction of both rats and dogs. Exposure to accelerations of irradiated animals induced effects in different directions: attenuation of gastro-intestinal tract disturbances at the early stage of radiation lesion in rats, and intensification of some manifestations of the primary reaction in dogs. R.E.S.

N80-17693# Joint Publications Research Service, Arlington, Va.

TEST IRRADIATION OF CHRONICALLY IRRADIATED DOGS FOR EVALUATION OF HEMOPOIETIC SYSTEM FUNCTION

T. Ye. Burkovskaya and B. A. Markelov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 115-119 refs Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 78-80

Avail: NTIS HC A06/MF A01

In order to determine the severity of lesion and state of compensatory mechanisms of the hemopoietic system, acute irradiation was used as a used functional load. Male mongrel dogs were kept in a Co gamma field for 6 years. The results show functional deficiency of myeloid hemopoiesis in dogs submitted to long term chronic radiation; this deficiency was not demonstratable in ordinary morphological examinations of blood and bone marrow. The obtained results are indicative of a reduction in the bone marrow reserve of mature granulocytes, and this is more marked in dogs preirradiated in a dose of 1130 rad, as well as disturbances in the system of postradiation renewal of granulocyctes. Repair and compensatory-adaptive capabilities remain at a rather high level in the erythroid system. R.E.S.

N80-17694# Joint Publications Research Service, Arlington, Va.

INSOLUBLE COLLAGEN CONTENT OF DOG TISSUES AFTER EXPOSURE TO LOW DOSES OF CHRONIC GAMMA RADIATION

Z. A. Vinogradova *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 6, 1979 (JPRS-75041) 31 Jan. 1980 p 120-122 Transl. into ENGLISH from Kosmich. Biol. Aviakosmich. Med. (Moscow), vol. 14, no. 6, Nov./Dec. 1979 p 80-82

Avail: NTIS HC A06/MF A01

The effect of chronic irradiation on metabolism of collagen proteins was studied by assaying the insoluble collagen content of animal tissues at different stages of a chronic experiment. The results show a decrease in insoluble collagen content of organs and tissues (lungs, aorta, liver, tendon, cartilage and skin) of irradiated dogs as the accreted dosage increased. The results also show age-related changes with respect to collegen content. R.E.S.

N80-17695*# North Carolina State Univ., Raleigh. Neuropsychology Lab.

AROUSAL FROM SLEEP: THE UNIQUENESS OF AN INDIVIDUAL'S RESPONSE AND THE PROBLEM OF NOISE CONTROL Final Report

T. E. LeVere 1979 48 p refs
(Grant NGL-34-002-095)
(NASA-CR-162747) Avail: NTIS HC A03/MF A01 CSCL 06P

The dynamic nature of sleep is reviewed. Research is then presented concerning two fundamental issues: (1) does an individual react differently to auditory sounds when asleep as compared to when the individual is awake and (2) does sleep disruption necessarily involve behavioral awakening? R.E.S.

N80-17696*# General Electric Co., Hudson Falls, N.Y. Space Division.

BIOMEDICAL SYSTEMS ANALYSIS PROGRAM Final Report

31 Dec. 1979 72 p refs
(Contract NAS9-15487)
(NASA-CR-160456; TIR-741-LSP-9025) Avail: NTIS HC A04/MF A01 CSCL 06B

Biomedical monitoring programs which were developed to provide a system analysis context for a unified hypothesis for adaptation to space flight are presented and discussed. A real-time system of data analysis and decision making to assure the greatest possible crew safety and mission success is described. Information about man's abilities, limitations, and characteristic reactions to weightless space flight was analyzed and simulation models were developed. The predictive capabilities of simulation models for fluid-electrolyte regulation, erythropoiesis regulation, and calcium regulation are discussed. R.E.S.

N80-17697*# National Aeronautics and Space Administration, Washington, D. C.

SPACE FLIGHT RESEARCH RELEVANT TO HEALTH, PHYSICAL EDUCATION, AND RECREATION: WITH PARTICULAR REFERENCE TO SKYLAB'S LIFE SCIENCE EXPERIMENTS Final Report

Wayne D. VanHuss (Michigan State Univ., East Lansing) and William W. Heusner (Michigan State Univ., East Lansing) Jun. 1979 56 p refs
(NASA-EP-148) Avail: NTIS MF A01; SOD HC EP1.19:148 CSCL 06P

Data collected in the Skylab program relating to physiological stresses is presented. Included are routine blood measures used in clinical medicine as research type endocrine analyses to investigate the metabolic/endocrine responses to weightlessness. The daily routine of physical exercise, coupled with appropriate dietary intake, sleep, work, and recreation periods were considered essential in maintaining the crew's health and well being. M.M.M.

N80-17698# Research Inst. of National Defence, Linkoeping (Sweden).

IMPROVED PILOT TRAINING THROUGH MODIFICATION OF SELECTION AND TRAINING PROCEDURES

Leif Carlstedt Mar. 1979 15 p refs In SWEDISH; ENGLISH summary
(FOA-C-55029-H7) Avail: NTIS HC A02/MF A01

Modifications in selection procedures and training environment for military basic flight students have improved the ratio of selected to passed from .40 to .80 during the past decade. Applicants are screened in six stages. Test and assessment data are examined using the conjunctive multiple cutoff method. The selection process is a synthesis of characterlogical and compositional models. Changes in the training environment may cause loss of validity in some tests results. Author (ESA)

N80-17699# Istituto Superiore di Sanita, Rome (Italy). Lab. delle Radiazioni.

PROPOSED NATIONAL EXPOSURE LIMITS FOR MICROWAVE AND RADIOFREQUENCY RADIATION

G. Campos Venuti, M. Grandolfo, and G. Mariutti 31 Jan. 1979 100 p refs In ITALIAN; ENGLISH summary Presented at the Conv. Naz. dell' Assoc. Ital. di Fis. Sanitaria e Protezione Contro le Radiazioni, Rome, 30-31 Oct. 1978
(ISS-P-79/2) Avail: NTIS HC A05/MF A01

At present in Italy no statutory requirements or recommendations are enforced with respect to maximum permissible levels of microwave and radio frequency radiation to which either the general public or workers may be exposed. After a brief survey of current scientific data, a rationale for adopting permissible levels in the frequency range 100 kHz to 300 gHz is presented. Comparisons with other national and international standards are made. Author (ESA)

N80-17700# Istituto Superiore di Sanita, Rome (Italy). Lab. delle Radiazioni.

INTERCOMPARISON OF ISS AND BIPM PRIMARY EXPOSURE STANDARDS FOR MEDIUM ENERGY X-RAYS

E. Casnati (Inst. di Fis. dell' Univ., Ferrara, Italy), L. Pugliani, and P. Salvadori 26 Feb. 1979 58 p refs
(ISS-R-79/3) Avail: NTIS HC A04/MF A01

The primary exposure standards of the Istituto Superiore di Sanita and the Bureau International des Poids et Measures in the medium energy X-ray range were compared. After a description of the X-ray qualities on which the comparison was based, how the quantities appearing in the exposure definition were evaluated is explained and the aspects typical of the phenomenological realization of the exposure unit are listed. The properties of the X-ray beam, the correction factors applied to the free-air chamber measurements for obtaining the unit of exposure, the peculiarities and response of the transfer cavity chamber, and the calibration of the latter are discussed. The final results of the comparison are shown then compared with results reported by other laboratories. Author (ESA)

N80-17701# National Technical Information Service, Springfield, Va.

THE TOXICOLOGY OF OZONE. A BIBLIOGRAPHY WITH ABSTRACTS Progress Report, 1964 - Nov. 1979

Elizabeth A. Harrison Nov. 1979 132 p Supersedes NTIS/PS-78/1120
(PB80-800881; NTIS/PS-78/1120) Avail: NTIS HC $30.00/MF $30.00 CSCL 06T

The studies cited cover the toxic effects of ozone on humans, animals, and plants. Although many reports cite the effects of ozone generated as a photochemical oxidant from air pollution, others simply look at the basic biological effects of ozone without discussing its source. The topics described include ozone's effects on forests and agricultural crops, industrial exposure, maximum exposure levels, effects on microorganisms, and physiological effects. This updated bibliography contains 126 abstracts, 41 of which are new entries to the previous edition. GRA

N80-17702# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).

THE SURVIVAL AND PROTECTION OF EQUIPMENT IN THE EVENT OF ACCIDENTAL IMMERSION IN COLD WATER

C. Boutelier Jan. 1979 125 p refs In FRENCH
(AGARD-AG-211-FR) Avail: NTIS HC A06/MF A01

The physiological reactions of the human body to thermal aggression and eventual pathological incidences and their treatment are described for airmen and designers of equipment designed for protecting pilots against cold water following accidental immersion. Topics covered include: (1) heat transfer from the human body in ambient cold by conduction, convection, evaporation, and radiation; (2) the physiological response to immersion - tolerance and acclimatization; (3) diagnosis and treatment of local and general effects of cold, including hypothermia; (4) the theoretical basis for protective clothing; (5) methods for evaluating protective clothing; and (6) the design and construction of anti-immersion equipment: wet suits, dry suits, life vests, and lifeboats. Transl. by A.R.H.

N80-17703# Research Inst. of National Defence, Linkoeping (Sweden).

COMPENSATORY AND CONJUNCTIVE PROCESSING OF TEST INFORMATION FOR PREDICTION OF RESULTS OF MILITARY FLIGHT TRAINING [KOMPENSATORISK OCH KONJUNKTIV BEHANDLING AV TESTINFORMATION FOER PREDIKTION AV RESULTAT PAA MILITAAR FLYGUTBILDNING]

Leif Carlstedt Mar. 1979 28 p refs In SWEDISH
(FOA-C-55025-H7) Avail: NTIS HC A03/MF A01

Data collected during aircraft pilot selection tests were analyzed by two different methods to determine the predictive ability of each to military flight training. The comparison was made using data from four groups using a compensatory and a conjunctive method. The conjunctive or cross validation method gave better predictions in three of the four groups, but the compensatory or regression analysis method gave better results in the fourth group. Author (ESA)

N80-17704# Research Inst. of National Defence, Linkoeping (Sweden).

STEPWISE PILOT SELECTION: PROCEDURE AND VALIDITY [STEGVIST URVAL AV FLYGFOERARE: PROCEDUR OCH VALIDITET]

Leif Carlstedt Mar. 1979 18 p refs In SWEDISH
(FOA-C-55026-H7) Avail: NTIS HC A02/MF A01

A graduated selection method used since 1970 to select Swedish military pilots is described and compared with previous practice. Formerly, all test data were weighted equally at all stages of the selection process, but now the data are quantified by an expectancy hypothesis at the beginning of the selection process. Also, the personality test defense mechanism test has been introduced as a selection instrument. Using the graduated or stepwise method has improved the selection rate from 45 to 56 men trained per 20 selected, to 41 men trained per 20 selected. Author (ESA)

N80-17705# Research Inst. of National Defence, Linkoeping (Sweden).

THE INFLUENCE OF THE CHANGE OF FLIGHT INSTRUCTION AND HIS ABILITY UPON THE PUPIL'S ADAPTATION TO FLYING [INVERKAN AV FLYGLAERARBYTGN OCH FLYGLAERARENS KVALITET PAA ELEVENS ANPASSNING TILL FLYGNING]

Leif Carlstedt Mar. 1979 20 p refs In SWEDISH
(FOA-C-55027-H8) Avail: NTIS HC A02/MF A01

The importance of the frequency of the changes of flight teacher and of his quality on the pupil's adaptation to flying is studied. It is shown that students having fewer than five flying tests with the same teacher during the 20 first flying hours are expected to fail more often than those who have more than five with the same teacher. The pupil's adaptation to flying (measured by a questionaire) is related to the improvements made at the beginning of the training period. In most cases students adapting well have had teachers rated as good in the flying school. Author (ESA)

N80-17706# Research Inst. of National Defence, Linkoeping (Sweden).
IMPROVED FLIGHT TRAINING METHODS [OPERATION KVALITETSHOEJNING AV FLYGFOERARPRODUKTIONEN]
Leif Carlstedt and F. Paul Johansson Mar. 1979 49 p refs
In SWEDISH
(FOA-C-55028-H8) Avail: NTIS HC A03/MF A01

The evolution of methods used in military pilot training is presented along with a discussion and evaluation of Swedish practices. An experiment is described in which the trainee group is given a distinctive name and exposed to a training cadre which was highly motivated at all levels of command. The long term project showed increases in pilot selection success ratio.
Author (ESA)

N80-17707# National Technical Information Service, Springfield, Va.
INFORMATION PROCESSING IN HUMANS, VOLUME 3. A BIBLIOGRAPHY WITH ABSTRACTS Progress Report, Nov. 1977 - Nov. 1979
Elizabeth A. Harrison Nov. 1979 123 p supersedes NTIS/PS-78/1154; NTIS/PS-77/1042; NTIS/PS-76/0947; NTIS/PS-75/858; NTIS/PS-75/087
(PB80-800931; NTIS/PS-78/1154; NTIS/PS-77/1042; NTIS/PS-76/0947; NTIS/PS-75/858; NTIS/PS-75/087) Avail: NTIS HC $30.00/MF $30.00 CSCL 05J

Psychophysiology, memory, visual evoked responses, psychoacoustics, neuroses, decision making and learning, as related to information processing in humans, are topics covered by the selected abstracts of research reports. This updated bibliography contains 118 abstracts, 64 of which are new entries to the previous edition.
GRA

N80-17708*# Grumman Aerospace Corp., Bethpage, N.Y.
MANNED REMOTE WORK STATION DEVELOPMENT ARTICLE, EXECUTIVE SUMMARY Final Report
1 Mar. 1979 69 p
(Contract NAS9-15507)
(NASA-CR-160462; NSS-MR-RP008) Avail: NTIS HC A04/MF A01 CSCL 05H

The mission requirements for the manned remote work station (MRWS) flight article and the manned remote work station open cherry picker development test article is defined. Considerations are given for the near, mid, and far term use of the MRWS with emphasis on its ultimate application, constructing the Solar Power Satellite.
R.C.T.

N80-17709*# Grumman Aerospace Corp., Bethpage, N.Y.
MANNED REMOTE WORK STATION DEVELOPMENT ARTICLE. VOLUME 1, BOOK 1: FLIGHT ARTICLE REQUIREMENTS. APPENDIX A: MISSION REQUIREMENTS Final Report
1 Mar. 1979 317 p
(Contract NAS9-15507)
(NASA-CR-160463; NSS-MR-RP008-Vol-1-Book-1) Avail: NTIS HC A14/MF A01 CSCL 05H

The requirements for several configurations of flight articles are presented. These requirements provide the basis to design manned remote work station development test articles and establish tests and simulation objectives for the resolution of development issues. Mission system and subsystem requirements for four MRWS configurations included: open cherry picker, closed cherry picker, crane turret, and free flyer.
R.C.T.

N80-17710*# Grumman Aerospace Corp., Bethpage, N.Y.
MANNED REMOTE WORK STATION DEVELOPMENT ARTICLE. VOLUME 1, BOOK 2, APPENDIX B: TRADE AND DESIGN DEFINITION STUDIES Final Report
1 Mar. 1979 201 p
(Contract NAS9-15507)
(NASA-CR-160464; NSS-MR-RP008-Vol-1-Book-2) Avail: NTIS HC A10/MF A01 CSCL 05H

System trades, evaluations, and selection were organized under the appropriate manned remote work station roles and subsystems. Those trades/evaluations that have an impact on simulator fidelity were given emphasis in terms of identifying alternate concepts, making a selection, and defining the system approach. Those trades that do not impact simulator fidelity have the issues delineated and future study requirements identified.
R.C.T.

N80-17711*# Grumman Aerospace Corp., Bethpage, N.Y.
MANNED REMOTE WORK STATION DEVELOPMENT ARTICLE. VOLUME 2: SIMULATION REQUIREMENTS. APPENDIX A: OPEN CHERRY PICKER DEVELOPMENT TEST ARTICLES SPECIFICATION Final Report
1 Mar. 1979 132 p
(Contract NAS9-15507)
(NASA-CR-160465; NSS-MR-RP008-Vol-2) Avail: NTIS HC A07/MF A01 CSCL 05H

A manned remote work station (MRWS) mission scenario, broken down into the three time phases was selected as the basis for analysis of the MRWS flight article requirements and concepts. The mission roles for the three time phases, supporting tradeoff and evaluation studies, was used to identify key issues requiring simulation. The MRWS is discussed in terms of its capability to perform such operations as support of Spacelab experiments, servicing and repair of satellites, and construction. Future considerations for the use of the MRWS are also given.
R.C.T.

N80-17712*# Grumman Aerospace Corp., Bethpage, N.Y.
MANNED REMOTE WORK STATION DEVELOPMENT ARTICLE. VOLUME 3: DEVELOPMENT TEST PLAN. APPENDIX A: MANUFACTURING REQUIREMENTS/SCHEDULE Final Report
1 Mar. 1979 180 p
(Contract NAS9-15507)
(NASA-CR-160466; NSS-MR-RP008-Vol-3) Avail: NTIS HC A09/MF A01 CSCL 05H

The tests and procedures for the manned remote work station (MRWS) open cherry picker (OCP) development test article (DTA) are described to validate systems requirements and performance specifications. A development test program is outlined to evaluate key design issues and man/machine interfaces when the MRWS OCP is used in a shuttle support role of satellite servicing and in orbit construction of large structures.
R.C.T.

N80-17713# Massachusetts Inst. of Tech., Cambridge. Lab. for Computer Science.
REFERENCE TREE NETWORKS: VIRTUAL MACHINE AND IMPLEMENTATION Ph.D. Thesis
Robert Hunter Halstead, Jr. 2 Jul. 1979 250 p refs
(Contract N00014-75-C-0661)
(AD-A076570; MIT/LCS/TR-222) Avail: NTIS HC A11/MF A01 CSCL 05/8

A current-technology computing machine may be roughly decomposed into a processor, a memory, and a data path connecting them. The interposition of this data path between processing and storage elements creates a bottleneck which inhibits progress at the high-performance end of the technological spectrum. Additionally, the monolithic nature of present-day processors resists incremental addition or removal of processing power. The research described here attacks the problem of constructing more powerful and more flexible computer systems along three fronts: the definition of a virtual machine providing for parallel computation using objects and object references, the development of a distributed implementation mechanism ('reference trees') supporting object management functions including garbage collection, and the investigation of scheduling algorithms and collection of performance results. A reference tree network using these concepts is composed of a multiple of independent small processors, yet operates as a coherent programming system. Programs and data spread automatically and transparently through the network to occupy underused resources. The modular structure of the network provides many parallel data paths as well as allowing for easy addition or removal of modules, thus addressing some of the problems discussed here. A prototype reference tree network, the Mu Net, is currently in operation.
GRA

best copy available

N80-17714# Human Resources Research Organization, Alexandria, Va.

EFFECTS OF FATIGUE FROM WEARING THE AN/PVS-5 NIGHT VISION GOGGLES ON SKILLS INVOLVED IN HELICOPTER OPERATIONS Technical Report, 13 May - 29 Dec. 1978

Garvin D. Chastain and Albert L. Kubala Jul. 1979 51 p refs (Contract MDA907-78-C-2017; DA Proj. 2Q7-63743-A-775) (AD-A075426; HUMRRO-FR-WD-TX-78-18; ARI-RR-1217) Avail: NTIS HC A04/MF A01 CSCL 06/17

Reviews of the literature on rotary wing flight and interviews with aviators were conducted to determine which helicopter tasks and maneuvers are performed most frequently and/or are the most critical. Those operations found to be most critical were analyzed into perceptual and psychomotor components, and a battery of perceptual and psychomotor tests was selected to measure these factors. Aviators were tested both before and after flying with the AN/PVS-5 goggles. Eye-hand coordination was marginally affected following flight, and reaction time to lights was significantly affected. GRA

N80-17715# National Aerospace Lab., Amsterdam (Netherlands). Flight Div.

THE VISUAL SCENE PERCEPTION PROCESS INVOLVED IN MANUAL APPROACH LANDING

P. H. Wewerinke 13 Oct. 1978 87 p refs
(Contract NIVR-1857)
(NLR-TR-78130-U) Avail: NTIS HC A05/MF A01

The outside scene is often an important source of information for manual control tasks. In the context of aircraft control the most importance example is the visual approach scene. Modeling the visual scene perception process on the basis of linear perspective geometry and relative motion cues is dealt with. Its impact on aircraft approach performance is investigated. Model predictions utilizing visual threshold data from baseline experiments and psychophysical literature of a variety of visual approach tasks are compared with the results of an experimental program. The results confirm that the visual scene may be assumed to provide a variety of cues among which the human operator has to divide his attention. Both the performance and workload results illustrate that the model provides a meaningful description of the outside world perception process with a useful predictive capability. Additional research, however, is warranted in order to be able to deal with the realistic, complex, time varying manual approach and landing situation. Author (ESA)

N80-17716# Massachusetts Inst. of Tech., Cambridge.

SUPERMAN: A SYSTEM FOR SUPERVISORY MANIPULATION AND THE STUDY OF HUMAN/COMPUTER INTERACTIONS M.S. Thesis

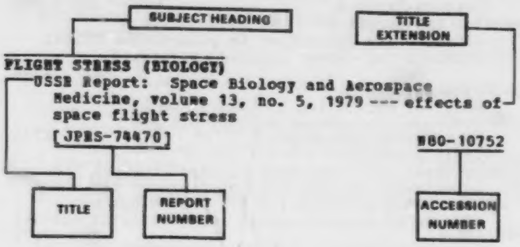
Thurston L. Brooks and Thomas B. Sheridan Jul. 1979 286 p refs
(Contract N00014-77-C-0256; Grant NOAA-04-7-158-44079) (PB-301290/3; MITSG-79/20; NOAA-79082405) Avail: NTIS HC A13/MF A01 CSCL 13J

The need for supervisory control of remote teleoperator vehicles in the ocean environment is considered and it is shown that computer controlled systems can increase the effectiveness of remote manipulation. A distinction is made between absolute tasks--tasks which have a known spatial relationship to the manipulator base prior to execution--and relative tasks-tasks which cannot be spatially defined prior to execution. Based on the mathematical and theoretical foundations described, a supervisory system was developed and demonstrated. GRA

SUBJECT INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 206)* **MAY 1980**

Typical Subject Index Listing


SUBJECT HEADING
TITLE EXTENSION
FLIGHT STRESS (BIOLOGY)
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979 --- effects of space flight stress
[JPRS-74470]
N80-10752
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABIOGENESIS
'Acetonitrile' - A plausible source of amino acids on the primitive earth
A80-21781

ABSORPTION CROSS SECTIONS
Part-body and multibody effects on absorption of radio-frequency electromagnetic energy by animals and by models of man
A80-22987

ACCELERATION STRESSES (PHYSIOLOGY)
Effect of gravitational overloads, hypokinesia and hypodynamia on the vessels of the pulmonary blood circuit
[NASA-TM-75963] N80-17667

Effect of gravitational acceleration, hypokinesia and hypodynamia on the structure of the intestinal vascular bed
[NASA-TM-75972] N80-17668

Effects of accelerations on the early stage of radiation lesion in animals
N80-17692

ACETYL COMPOUNDS
'Acetonitrile' - A plausible source of amino acids on the primitive earth
A80-21781

ACTIVITY CYCLES (BIOLOGY)
Residual nutational activity of the sunflower hypocotyl in simulated weightlessness
A80-21984

ADAPTATION
Effects of accelerations on the early stage of radiation lesion in animals
N80-17692

The influence of the change of flight instruction and his ability upon the pupil's adaptation to flying
[FOA-C-55027-H8] N80-17705

ADRENAL GLAND
Morphological and functional manifestations of rat adrenal-cortex response to sodium bromide administration under hypodynamic stress
[NASA-TM-75953] N80-16719

ADRENERGICS
The effect of propranolol on human psychomotor performance
A80-21550

ADRENOCORTICOTROPIN (ACTH)
The significance of ACTH for the process of formation of complex heparin compounds in the blood during immobilization stress
[NASA-TM-75946] N80-16727

AEROSOLS
Deposition of hygroscopic atmospheric aerosol particles in the human respiratory tract
A80-23745

AEROSPACE ENVIRONMENTS
Thermodynamic considerations in the support of life for long space voyages
[NASA-CR-162755] N80-16738

AEROSPACE MEDICINE
Physiological response to hyper- and hypogravity during rollercoaster flight
A80-21547

The effect of propranolol on human psychomotor performance
A80-21550

Trapped gas dysbarism requiring recompression therapy
A80-21551

Noninvasive measures of bone bending rigidity in the monkey /M. nemestrina/
A80-21988

Some problems of space medicine and international manned space flights
A80-22840

Linear summation of tilt illusion and tilt aftereffect
A80-22969

Additivity of fusional vergence and pursuit eye movements
A80-22970

Information used by the perceptual and oculomotor systems regarding the amplitude of saccadic and pursuit eye movements
A80-22971

Operant behavior and rectal temperature of squirrel monkeys during 2.45-GHz microwave irradiation
A80-22996

Physiological and hygienic aspects of the effects of high and low temperatures --- Russian book
A80-23079

The influence of psychological disorder on efficiency in operational flying
A80-23211

The psychological aspects of airsickness
A80-23215

An experimental study of mental fatigue
A80-23216

Pilot error - Some laboratory experiments
A80-23217

Aviation medicine. Volume 1 - Physiology and human factors --- Book
A80-24525

Effect of gravitational overloads, hypokinesia and hypodynamia on the vessels of the pulmonary blood circuit
[NASA-TM-75963] N80-17667

Effect of gravitational acceleration, hypokinesia and hypodynamia on the structure of the intestinal vascular bed
[NASA-TM-75972] N80-17668

USSR Report: Space Biology and Aerospace Medicine, volume 14, no. 6, 1979
[JPRS-75041] N80-17674

Biomedical systems analysis program
[NASA-CR-160456] N80-17696

AEROSPACE TECHNOLOGY TRANSFER
Prosthetic device for correction of urinary incontinence
[NASA-TM-78255] N80-16739

AIR NAVIGATION
The design and evaluation of complex systems - Application to a man-machine interface for aerial navigation
A80-24032

AIR POLLUTION
Deposition of hygroscopic atmospheric aerosol particles in the human respiratory tract
A80-23745

AIRBORNE/SPACEBORNE COMPUTERS
Development of display design and command usage guidelines for Spacelab experiment computer applications
A80-24031

AIRCRAFT ACCIDENT INVESTIGATION
The 1976 accident experience of civilian pilots with static physical defects
A80-21552

AIRCRAFT ACCIDENTS
An investigation of landing accidents in relation to fatigue
A80-23214

AIRCRAFT LANDING
An investigation of landing accidents in relation to fatigue
A80-23214
Evaluation of a pilot workload metric for simulated VTOL landing tasks
A80-24042

AIRCRAFT MAINTENANCE
Actual vs simulated equipment for aircraft maintenance training - Cost implications of the incremental vs the unique device
A80-24039

AIRCRAFT MANEUVERS
Development and application of a task taxonomy for tactical flying
A80-24035
Air combat maneuvering performance measurement
A80-24037
The development of objective inflight performance assessment procedures
A80-24038
Prediction and quickening in perspective flight displays for curved landing approaches
A80-24048
Utilization of energy maneuverability data in improving in-flight performance and performance in air combat maneuvering
A80-24049

AIRCRAFT PILOTS
The 1976 accident experience of civilian pilots with static physical defects
A80-21552
An experimental study of mental fatigue
A80-23216
Improved pilot training through modification of selection and training procedures
[FOA-C-55029-H7] N80-17698

AIRCRAFT STABILITY
Operator visual workload shifts as a function of vehicle stability
A80-24041

AIRCRAFT SURVIVABILITY
Utilization of energy maneuverability data in improving in-flight performance and performance in air combat maneuvering
A80-24049

ALGORITHMS
Prediction and quickening in perspective flight displays for curved landing approaches
A80-24048

AMINES
Blockade of the different enzymatic steps in the synthesis of brain amines and memory /CAR/ in hypobaric hypoxic rats treated and untreated with L. Dopa
A80-21542

AMINO ACIDS
'Acetonitrile' - A plausible source of amino acids on the primitive earth
A80-21781

ANAEROBES
Microbial sulfate reduction measured by an automated electrical impedance technique
A80-21982
Anaerobic biological treatment of liquid wastes from pyrolysis processes
[COO-4455-2] N80-16723

ANGIOGRAPHY
Effects of exercise training on left ventricular function in normal subjects - A longitudinal study by radionuclide angiography
A80-23975

ANGULAR ACCELERATION
Influence of mobility restriction on habituation of the vestibular apparatus
[NASA-TM-75995] N80-17669

ANNUAL VARIATIONS
Biochemical correlates of seasonal change in marine communities --- fatty acid composition
[PB-301380/2] N80-17673

APPROACH CONTROL
The visual scene perception process involved in manual approach landing
[NLR-TR-78130-U] N80-17715

APPROACH INDICATORS
Prediction and quickening in perspective flight displays for curved landing approaches
A80-24048

AQUEOUS SOLUTIONS
Method for separating biological cells --- suspended in aqueous polymer systems
[NASA-CASE-MFS-23883-1] N80-16715

ARTIFICIAL GRAVITY
Objectives and conditions of physiological experiments on rats conducted aboard the Cosmos-936 biosatellite --- physiological effects of weightlessness and artificial gravity
N80-17677

ATMOSPHERIC PRESSURE
Oxygenation and ambient air pressure influences on alcohol-induced nystagmus in rabbits
A80-21543

ATTITUDE (INCLINATION)
Linear summation of tilt illusion and tilt aftereffect
A80-22969

AUDITORY PERCEPTION
Loudness enhancement and decrement in four paradigms
A80-23047

AUDITORY SIGNALS
Loudness enhancement and decrement in four paradigms
A80-23047

AUDITORY STIMULI
Arousal from sleep: The uniqueness of an individual's response and the problem of noise control
[NASA-CR-162747] N80-17695

AUTOTROPHS
Programmed control of the autotrophic component of an ecological system that is closed with regard to exchange of gases
N80-17688

AZIMUTH
Perturbation of induced rotation as an index of pattern structure --- for visual stimuli
A80-24047

B

BACTERIA
Method and apparatus for eliminating luminol interference material
[NASA-CASE-MSC-16260-1] N80-16714

BACTERIOLOGY
Microbial sulfate reduction measured by an automated electrical impedance technique
A80-21982

BALLISTOCARDIOGRAPHY
Ballistocardiography - Principles, simulation, applications
A80-24350

BAROTRAUMA
Trapped gas dysbarism requiring recompression therapy
A80-21551

BAYES THEOREM
Empirical Bayes estimation of critical dosages having smallest predictive risk
[AD-A074376] N80-16729

BEACON COLLISION AVOIDANCE SYSTEM
Modeling pilot response delays to beacon collision avoidance system commands
[AD-A075946] N80-16734

BED REST
Creatinuria in man during prolonged hypokinesia
N80-17680

BEHAVIOR
Operant behavior and rectal temperature of squirrel monkeys during 2.45-GHz microwave irradiation
A80-22996

BENDING
  Noninvasive measures of bone bending rigidity in the monkey /M. nemestrina/ A80-21988
BIBLIOGRAPHIES
  The toxicology of ozone. A bibliography with abstracts [PB80-800881] N80-17701
  Information processing in humans, volume 3. A bibliography with abstracts [PB80-800931] N80-17707
BINOCULAR VISION
  Additivity of fusional vergence and pursuit eye movements A80-22970
BIOASSAY
  Method and apparatus for eliminating luminol interference material [NASA-CASE-MSC-16260-1] N80-16714
  Empirical Bayes estimation of critical dosages having smallest predictive risk [AD-A074376] N80-16729
BIOASTRONAUTICS
  Simulated weightlessness - Effects on bioenergetic balance A80-21544
  Residual mutational activity of the sunflower hypocotyl in simulated weightlessness A80-21984
  Thermodynamic considerations in the support of life for long space voyages [NASA-CR-162755] N80-16738
BIOCHEMISTRY
  Biochemical correlates of seasonal change in marine communities --- fatty acid composition [PB-301380/2] N80-17673
BIODYNAMICS
  Optimal estimator model for human spatial orientation A80-24265
  Planar biped dynamics and control N80-16736
BIOELECTRICITY
  Role of interoceptive afferentation in function of the cortex of the visual analyzer N80-17684
  Effect of acute hypoxia on specific and nonspecific systems of the rabbit brain N80-17685
  Study of bioelectric activity of neuro-muscular and sympathetic systems during exposure to a steady magnetic field N80-17686
BIOENGINEERING
  Development of percutaneous energy transmission systems [PB-299739/3] N80-16731
  Implanted energy conversion system [PB80-101116] N80-16733
  Physical testing of polymers for use in circulatory assist devices [PB80-101546] N80-16740
BIOINSTRUMENTATION
  Phonocardiography - Analyses of instrumentation, and vibration of heart structures to determine their constitutive properties A80-24349
BIOLOGICAL EFFECTS
  Extremely-low-frequency fields and the slime mold Physarum polycephalum - Evidence of depressed cellular function and of internuclear interaction A80-22993
  Models of long-range order in cerebral macromolecules - Effects of sub-ELF and of modulated VHF and UHF fields A80-22994
  Contraction of smooth muscle in a microwave field A80-22995
  Skilled visual-motor performance by monkeys in a 1.2-GHz microwave field A80-22997
  Biological effects of high-voltage electric fields. Volume 1: An update [EPRI-EA-1123] N80-16730
  Interaction of electromagnetic fields with heterogeneous biological systems N80-17665
  USSR Report: Space Biology and Aerospace Medicine, volume 14, no. 6, 1979 [JPRS-75041] N80-17674
  Objectives and conditions of physiological experiments on rats conducted aboard the Cosmos-936 biosatellite --- physiological effects of weightlessness and artificial gravity N80-17677
  Effects of strong infralow-frequency magnetic fields on bone marrow cell division N80-17687
  Effect of carbon monoxide on animals adapted to hypoxic hypoxia N80-17689
  Biomedical systems analysis program [NASA-CR-160456] N80-17696
  The toxicology of ozone. A bibliography with abstracts [PB80-800881] N80-17701
BIOLOGICAL EVOLUTION
  Thermal history, chemical composition and relationship of comets to the origin of life A80-24492
BIOMEDICAL DATA
  Cardiograms: Theory and applications --- Book A80-24347
  The theory and application of magnetocardiography A80-24348
  Ballistocardiography - Principles, simulation, applications A80-24350
  Biomedical systems analysis program [NASA-CR-160456] N80-17696
BIONICS
  A two-stage identification scheme for the determination of the parameters of a model of left heart and systemic circulation A80-22972
  Optimal estimator model for human spatial orientation A80-24265
  Ballistocardiography - Principles, simulation, applications A80-24350
  Planar biped dynamics and control N80-16736
  Interaction of electromagnetic fields with heterogeneous biological systems N80-17665
  Biomedical systems analysis program [NASA-CR-160456] N80-17696
BIOPHYSICS
  Noninvasive measures of bone bending rigidity in the monkey /M. nemestrina/ A80-21988
  Physio-chemical investigation of some areas of fundamental significance to biophysics [ORO-3018-T1] N80-16721
BIOSPHERE
  Some philosophical aspects of the problem of man, the biosphere and space N80-17675
BIOTECHNOLOGY
  Development of precutaneous energy transmission [PB-300518/8] N80-16732
  Physical testing of polymers for use in circulatory assist devices [PB80-101546] N80-16740
BLOOD CIRCULATION
  A two-stage identification scheme for the determination of the parameters of a model of left heart and systemic circulation A80-22972
BLOOD COAGULATION
  The significance of ACTH for the process of formation of complex heparin compounds in the blood during immobilization stress [NASA-TM-75946] N80-16727
  Effect of rheopolyglucin on blood clotting factors of the aorta, myocardium and venae cavae during hypokinesia N80-17691
BLOOD PUMPS
  Development of precutaneous energy transmission [PB-300518/8] N80-16732

BLOOD VESSELS
Permeability changes in cerebral, iridic, and retinal vessels during experimental decompression sickness in the rat
A80-21545
Effect of gravitation stress and hypokinesia on blood vessels of the testicle
[NASA-TM-75942] N80-16726
BODY KINEMATICS
Simulation of walking under conditions of weightlessness
A80-21094
BODY TEMPERATURE
Operant behavior and rectal temperature of squirrel monkeys during 2.45-GHz microwave irradiation
A80-22996
Effects of ingestion of cold and hot water on the course of thermal changes in the stomach and intestine
[NASA-TM-75515] N80-16728
BOMBER AIRCRAFT
Some measures of the effect of operational stress on bomber crews
A80-23213
BONES
Noninvasive measures of bone bending rigidity in the monkey /M. nemestrina/
A80-21988
BRAIN
Ecological physiology of the brain --- Russian book
A80-21421
Blockade of the different enzymatic steps in the synthesis of brain amines and memory /CAR/ in hypobaric hypoxic rats treated and untreated with L. Dopa
A80-21542
Heating of spherical versus realistic models of human and infrahuman heads by electromagnetic waves
A80-22989
Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength
A80-22992
Glucose metabolism in different regions of the rat brain under hypokinetic stress influence
[NASA-TM-75949] N80-16718
Some neurochemical characteristics of rats during flight aboard the Cosmos-782 artificial satellite and after return to Earth
N80-17678
Effect of acute hypoxia on specific and nonspecific systems of the rabbit brain
N80-17685
Effect of steady magnetic field on some aspects of energy and nitrogen metabolism in the rat cerebral hemispheres
N80-17690

C

CALCIUM
Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength
A80-22992
CARBOHYDRATE METABOLISM
Growth hormone control of glucose oxidation pathways in hypophysectomized rats
A80-24222
Glucose metabolism in different regions of the rat brain under hypokinetic stress influence
[NASA-TM-75949] N80-16718
CARBON MONOXIDE POISONING
Effect of carbon monoxide on animals adapted to hypoxic hypoxia
N80-17689
CARBONACEOUS CHONDRITES
Thermal history, chemical composition and relationship of comets to the origin of life
A80-24492
CARDIAC VENTRICLES
A two-stage identification scheme for the determination of the parameters of a model of left heart and systemic circulation
A80-22972
Effects of exercise training on left ventricular function in normal subjects - A longitudinal study by radionuclide angiography
A80-23975
CARDIOGRAMS
Cardiograms: Theory and applications --- Book
A80-24347
Phonocardiography - Analyses of instrumentation, and vibration of heart structures to determine their constitutive properties
A80-24349
CARDIOGRAPHY
Cardiograms: Theory and applications --- Book
A80-24347
CARDIOLOGY
Dynamics of change in rat arterial pressure under conditions of immobilization
[NASA-TM-76045] N80-17672
CARDIOVASCULAR SYSTEM
An ultrasonic plethysmograph for space flight applications
A80-21553
Cardiograms: Theory and applications --- Book
A80-24347
The theory and application of magnetocardiography
A80-24348
Phonocardiography - Analyses of instrumentation, and vibration of heart structures to determine their constitutive properties
A80-24349
Ballistocardiography - Principles, simulation, applications
A80-24350
Dynamics of change in rat arterial pressure under conditions of immobilization
[NASA-TM-76045] N80-17672
CASE HISTORIES
Trapped gas dysbarism requiring recompression therapy
A80-21551
CATABOLISM
Effect of steady magnetic field on some aspects of energy and nitrogen metabolism in the rat cerebral hemispheres
N80-17690
CATECHOLAMINE
Catecholamines and myocardial contractile function during hypodynamia and with an altered thyroid hormone balance
[NASA-TM-76000] N80-16720
CELLS (BIOLOGY)
Method for separating biological cells --- suspended in aqueous polymer systems
[NASA-CASE-MFS-23883-1] N80-16715
CEREBRAL CORTEX
Permeability changes in cerebral, iridic, and retinal vessels during experimental decompression sickness in the rat
A80-21545
CEREBRUM
Models of long-range order in cerebral macromolecules - Effects of sub-ELF and of modulated VHF and UHF fields
A80-22994
CHEMICAL COMPOSITION
Thermal history, chemical composition and relationship of comets to the origin of life
A80-24492
Some neurochemical characteristics of rats during flight aboard the Cosmos-782 artificial satellite and after return to Earth
N80-17678
CHEMICAL EVOLUTION
'Acetonitrile' - A plausible source of amino acids on the primitive earth
A80-21781
CHEMILUMINESCENCE
Method and apparatus for eliminating luminol interference material
[NASA-CASE-MSC-16260-1] N80-16714
CINEMATOGRAPHY
Man-machine analysis of translation and work tasks of Skylab films
A80-24029
CIRCULAR POLARIZATION
Circularly polarized 2450-MHz waveguide system for chronic exposure of small animals to microwaves
A80-22990

CIVIL AVIATION
The 1976 accident experience of civilian pilots with static physical defects
A80-21552
Aviation medicine. Volume 1 - Physiology and human factors --- Book
A80-24525
CLINICAL MEDICINE
The effect of propranolol on human psychomotor performance
A80-21550
Clinical and statistical study of neurosis precipitated by flying duties
A80-23210
Aviation medicine. Volume 1 - Physiology and human factors --- Book
A80-24525
Development of percutaneous energy transmission systems
[PB-299739/3] N80-16731
CLOSED ECOLOGICAL SYSTEMS
Thermodynamic considerations in the support of life for long space voyages
[NASA-CR-162755] N80-16738
Programmed control of the autotrophic component of an ecological system that is closed with regard to exchange of gases
N80-17688
COCKPITS
Bioman - An improved occupant-crew station compliance modeling system
A80-21549
CODING
Visual search and color coding
A80-24044
The use of color-coded symbols in a highly dense situation display
A80-24045
COGNITION
Effect of pretraining criterion on flight simulator and secondary cognitive task performance
A80-24034
COLD ACCLIMATIZATION
The survival and protection of equipment in the event of accidental immersion in cold water --- physiological effects and cold acclimitazation
[AGARD-AG-211-FR] N80-17702
COLD WATER
Effect of alcohol ingestion on man's thermoregulatory responses during cold water immersion
A80-21548
The survival and protection of equipment in the event of accidental immersion in cold water --- physiological effects and cold acclimitazation
[AGARD-AG-211-FR] N80-17702
COLLAGENS
Development of percutaneous energy transmission systems
[PB-299739/3] N80-16731
Insoluble collagen content of dog tissues after exposure to low doses of chronic gamma radiation
N80-17694
COLOR VISION
Vector model for normal and dichromatic color vision
A80-24135
Large color differences and the geometry of Munsell color space --- psychological experiment on vision scheme validity
A80-24136
COMBAT
Air combat maneuvering performance measurement
A80-24037
COMETS
Thermal history, chemical composition and relationship of comets to the origin of life
A80-24492
COMPENSATORY TRACKING
Skilled visual-motor performance by monkeys in a 1.2-GHz microwave field
A80-22997
COMPLEX SYSTEMS
The design and evaluation of complex systems - Application to a man-machine interface for aerial navigation
A80-24032
COMPUTER GRAPHICS
Man-machine analysis of translation and work tasks of Skylab films
A80-24029
Development of display design and command usage guidelines for Spacelab experiment computer applications
A80-24031
Perturbation of induced rotation as an index of pattern structure --- for visual stimuli
A80-24047
COMPUTER STORAGE DEVICES
Reference tree networks: Virtual machine and implementation
[AD-A076570] N80-17713
COMPUTERIZED DESIGN
Operator Station Design System - A computer aided design approach to work station layout
A80-24028
COMPUTERIZED SIMULATION
Bioman - An improved occupant-crew station compliance modeling system
A80-21549
Perturbation of induced rotation as an index of pattern structure --- for visual stimuli
A80-24047
CONDITIONING (LEARNING)
Loudness enhancement and decrement in four paradigms
A80-23047
CONFERENCES
Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings
A80-24026
COST ESTIMATES
Actual vs simulated equipment for aircraft maintenance training - Cost implications of the incremental vs the unique device
A80-24039
COUNTING
Development of Performance Evaluation Tests for Environmental Research /PETER/ - Complex counting test
A80-21546
CREATINE
Creatinuria in man during prolonged hypokinesia
N80-17680
CREATININE
Creatinuria in man during prolonged hypokinesia
N80-17680
CREW STATIONS
Bioman - An improved occupant-crew station compliance modeling system
A80-21549
CREW WORK STATIONS
Operator Station Design System - A computer aided design approach to work station layout
A80-24028

D

DATA PROCESSING
Data analysis methodology for day/night inflight tactical navigation
A80-24050
Reference tree networks: Virtual machine and implementation
[AD-A076570] N80-17713
DECOMPRESSION SICKNESS
Permeability changes in cerebral, iridic, and retinal vessels during experimental decompression sickness in the rat
A80-21545
Trapped gas dysbarism requiring recompression therapy
A80-21551
DESERTS
Training and acclimatization - Effects on responses to exercise in a desert environment
A80-21539
DIETS
Influence of x irradiation and diet on pituitary/thyroid function in the rat
[UR-3490-1674] N80-16722
DISPLAY DEVICES
Development of display design and command usage guidelines for Spacelab experiment computer applications
A80-24031

Visual search and color coding
A80-24044
The use of color-coded symbols in a highly dense situation display
A80-24045
Peripheral vision and tracking performance under stress
A80-24046
Prediction and quickening in perspective flight displays for curved landing approaches
A80-24048
Multi-modal information processing for visual workload relief
[NASA-CR-162720] N80-16737

DITCHING (LANDING)
The survival and protection of equipment in the event of accidental immersion in cold water --- physiological effects and cold acclimitazation
[AGARD-AG-211-FR] N80-17702

DIURESIS
Effects of minimal gravitational loads on fluid-electrolyte metabolism and renal function of man during prolonged immersion
N80-17679

DYNAMIC CONTROL
Simulation of walking under conditions of weightlessness
A80-21094
Programmed control of the autotrophic component of an ecological system that is closed with regard to exchange of gases
N80-17688

E

ECOLOGY
Ecological physiology of the brain --- Russian book
A80-21421

EDUCATION
The influence of the change of flight instruction and his ability upon the pupil's adaptation to flying
[FOA-C-55027-H8] N80-17705

ELASTOMERS
Physical testing of polymers for use in circulatory assist devices
[PB80-101546] N80-16740

ELECTRIC FIELDS
Biological effects of high-voltage electric fields. Volume 1: An update
[EPRI-EA-1123] N80-16730
Interaction of electromagnetic fields with heterogeneous biological systems
N80-17665

ELECTRIC POWER TRANSMISSION
Biological effects of high-voltage electric fields. Volume 1: An update
[EPRI-EA-1123] N80-16730

ELECTRIC STIMULI
Electrostimulation of muscles for the prevention of neuromuscular disorders during 45-day antiorthostatic hypokinesia
N80-17682

ELECTRICAL IMPEDANCE
Microbial sulfate reduction measured by an automated electrical impedance technique
A80-21982

ELECTROLYTES
Effects of minimal gravitational loads on fluid-electrolyte metabolism and renal function of man during prolonged immersion
N80-17679

ELECTROMAGNETIC ABSORPTION
Calorimetric measurements of microwave energy absorption by mice after simultaneous exposure of 18 animals
A80-22985
Part-body and multibody effects on absorption of radio-frequency electromagnetic energy by animals and by models of man
A80-22987
A geometrical-optics and an exact solution for internal fields in and energy absorption by a cylindrical model of man irradiated by an electromagnetic plane wave
A80-22988
Heating of spherical versus realistic models of human and infrahuman heads by electromagnetic waves
A80-22989
Circularly polarized 2450-MHz waveguide system for chronic exposure of small animals to microwaves
A80-22990

ELECTROMAGNETIC FIELDS
Extremely-low-frequency fields and the slime mold Physarum polycephalum - Evidence of depressed cellular function and of internuclear interaction
A80-22993

ELECTROMAGNETIC RADIATION
Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength
A80-22992
Interaction of electromagnetic fields with heterogeneous biological systems
N80-17665

ELECTRON PARAMAGNETIC RESONANCE
Theoretical studies of the light reactions in photosynthesis
N80-16717

ELECTROPHORESIS
Method for separating biological cells --- suspended in aqueous polymer systems
[NASA-CASE-MFS-23883-1] N80-16715

ENDOSCOPES
Apparatus for endoscopic examination --- analysis of the propulsion system configuration and transmitter
[NASA-CASE-NPO-14092-1] N80-16725

ENERGY TRANSFER
Development of percutaneous energy transmission systems
[PB-299739/3] N80-16731
Development of precutaneous energy transmission
[PB-300518/8] N80-16732

ENGLAND
The historical background to wartime research in psychology in the Royal Air Force
A80-23209

ENVIRONMENT EFFECTS
Factors influencing specific growth rates and seasonal abundance of eutrophic lake phytoplankton
N80-16716

ENVIRONMENT SIMULATION
Bioman - An improved occupant-crew station compliance modeling system
A80-21549

ENVIRONMENTAL TESTS
Development of Performance Evaluation Tests for Environmental Research /PETER/ - Complex counting test
A80-21546

ENZYME ACTIVITY
Blockade of the different enzymatic steps in the synthesis of brain amines and memory /CAR/ in hypobaric hypoxic rats treated and untreated with L. Dopa
A80-21542
The effects of long-term intoxication by the inhalation of gaseous HF on myocardial cell metabolism and serum cardiac enzyme levels in guinea pigs
A80-22124
Some neurochemical characteristics of rats during flight aboard the Cosmos-782 artificial satellite and after return to Earth
N80-17678

EQUATIONS OF MOTION
Recursive solution to the equations of motion of an N-link manipulator
A80-23996

ETHYL ALCOHOL
Oxygenation and ambient air pressure influences on alcohol-induced nystagmus in rabbits
A80-21543
Effect of alcohol ingestion on man's thermoregulatory responses during cold water immersion
A80-21548

EUCLIDEAN GEOMETRY
Large color differences and the geometry of Munsell color space --- psychological experiment on vision scheme validity
A80-24136

EUTROPHICATION
Factors influencing specific growth rates and seasonal abundance of eutrophic lake phytoplankton N80-16716

EVOKED RESPONSE (PSYCHOPHYSIOLOGY)
Information processing in humans, volume 3. A bibliography with abstracts [PB80-800931] N80-17707

EVOLUTION (DEVELOPMENT)
Some philosophical aspects of the problem of man, the biosphere and space N80-17675

EXOBIOLOGY
USSR Report: Space Biology and Aerospace Medicine, volume 14, no. 6, 1979 [JPRS-75041] N80-17674

EXPOSURE
Research related to the expansion and improvement of human vibration exposure criteria N80-16217

EXTREMELY LOW RADIO FREQUENCIES
Extremely-low-frequency fields and the slime mold Physarum polycephalum - Evidence of depressed cellular function and of internuclear interaction A80-22993

EYE MOVEMENTS
Additivity of fusional vergence and pursuit eye movements A80-22970

EYE PROTECTION
Evaluation of commercially available laser protective eyewear [PB80-103039] N80-16741

F

F-4 AIRCRAFT
Validation of an in flight performance measurement methodology - F-4 ground attack training evaluation A80-24036

FATIGUE (BIOLOGY)
Adapting to two orientations - Disinhibition in a visual aftereffect A80-22967
An experimental study of mental fatigue A80-23216
A review of literature relating to visual fatigue A80-24043

FATTY ACIDS
Biochemical correlates of seasonal change in marine communities --- fatty acid composition [PB-301380/2] N80-17673

FLIGHT
Effects of fatigue from wearing the AN/PVS-5 night vision goggles on skills involved in helicopter operations [AD-A075426] N80-17714

FLIGHT CONTROL
Utilization of energy maneuverability data in improving in-flight performance and performance in air combat maneuvering A80-24049

FLIGHT CREWS
Bioman - An improved occupant-crew station compliance modeling system A80-21549
Aircrew stress in wartime operations --- Book A80-23208
The historical background to wartime research in psychology in the Royal Air Force A80-23209
Clinical and statistical study of neurosis precipitated by flying duties A80-23210
The influence of psychological disorder on efficiency in operational flying A80-23211
Fluctuations in navigator performance during operational sorties A80-23212
Some measures of the effect of operational stress on bomber crews A80-23213
The psychological aspects of airsickness A80-23215

FLIGHT FATIGUE
An investigation of landing accidents in relation to fatigue A80-23214
An experimental study of mental fatigue A80-23216

FLIGHT FITNESS
The 1976 accident experience of civilian pilots with static physical defects A80-21552

FLIGHT SIMULATION
An investigation of landing accidents in relation to fatigue A80-23214
The design and evaluation of complex systems - Application to a man-machine interface for aerial navigation A80-24032

FLIGHT SIMULATORS
Effect of pretraining criterion on flight simulator and secondary cognitive task performance A80-24034
Prediction and quickening in perspective flight displays for curved landing approaches A80-24048

FLIGHT STRESS (BIOLOGY)
Physiological response to hyper- and hypogravity during rollercoaster flight A80-21547

FLIGHT TRAINING
Compensatory and conjunctive processing of test information for prediction of results of military flight training [FOA-C-55025-H7] N80-17703
Stepwise pilot selection: Procedure and validity [FOA-C-55026-H7] N80-17704
Improved flight training methods [FOA-C-55028-H8] N80-17706

G

GAS EXCHANGE
Programmed control of the autotrophic component of an ecological system that is closed with regard to exchange of gases N80-17688

GASTROINTESTINAL SYSTEM
Effects of ingestion of cold and hot water on the course of thermal changes in the stomach and intestine [NASA-TM-75515] N80-16728

GEOMETRICAL OPTICS
A geometrical-optics and an exact solution for internal fields in and energy absorption by a cylindrical model of man irradiated by an electromagnetic plane wave A80-22988

GLUCOSE
Growth hormone control of glucose oxidation pathways in hypophysectomized rats A80-24222
Glucose metabolism in different regions of the rat brain under hypokinetic stress influence [NASA-TM-75949] N80-16718

GOGGLES
Effects of fatigue from wearing the AN/PVS-5 night vision goggles on skills involved in helicopter operations [AD-A075426] N80-17714

GRAVITATIONAL EFFECTS
Physiological response to hyper- and hypogravity during rollercoaster flight A80-21547
Effect of gravitation stress and hypokinesia on blood vessels of the testicle [NASA-TM-75942] N80-16726
Effects of minimal gravitational loads on fluid-electrolyte metabolism and renal function of man during prolonged immersion N80-17679

GROWTH
Effect of carbon monoxide on animals adapted to hypoxic hypoxia N80-17689

H

HEAD (ANATOMY)
Heating of spherical versus realistic models of human and infrahuman heads by electromagnetic waves
A80-22989

HEAD-UP DISPLAYS
Utilization of energy maneuverability data in improving in-flight performance and performance in air combat maneuvering
A80-24049

HEALTH PHYSICS
Part-body and multibody effects on absorption of radio-frequency electromagnetic energy by animals and by models of man
A80-22987
Cardiograms: Theory and applications --- Book
A80-24347
The theory and application of magnetocardiography
A80-24348
Phonocardiography - Analyses of instrumentation, and vibration of heart structures to determine their constitutive properties
A80-24349
Ballistocardiography - Principles, simulation, applications
A80-24350
Influence of x irradiation and diet on pituitary/thyroid function in the rat
[UR-3490-1674] N80-16722
Biological effects of high-voltage electric fields. Volume 1: An update
[EPRI-EA-1123] N80-16730
Evaluation of commercially available laser protective eyewear
[PB80-103039] N80-16741
Interaction of electromagnetic fields with heterogeneous biological systems
N80-17665
Effects of accelerations on the early stage of radiation lesion in animals
N80-17692
Test irradiation of chronically irradiated dogs for evaluation of hemopoietic system function
N80-17693
Insoluble collagen content of dog tissues after exposure to low doses of chronic gamma radiation
N80-17694
Proposed national exposure limits for microwave and radiofrequency radiation
[ISS-P-79/2] N80-17699
Intercomparison of ISS and BIPM primary exposure standards for medium energy X-rays
[ISS-R-79/3] N80-17700

HEART DISEASES
Cardiograms: Theory and applications --- Book
A80-24347

HEART FUNCTION
Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position
A80-21540
A two-stage identification scheme for the determination of the parameters of a model of left heart and systemic circulation
A80-22972
Effects of exercise training on left ventricular function in normal subjects - A longitudinal study by radionuclide angiography
A80-23975
Catecholamines and myocardial contractile function during hypodynamia and with an altered thyroid hormone balance
[NASA-TM-76000] N80-16720

HEART IMPLANTATION
Implanted energy conversion system
[PB80-101116] N80-16733

HEART RATE
An evaluation of heart rate during activity of high psychological and physiological stress --- German thesis
A80-21851

HEAT ACCLIMATIZATION
Training and acclimatization - Effects on responses to exercise in a desert environment
A80-21539

HEAT MEASUREMENT
Calorimetric measurements of microwave energy absorption by mice after simultaneous exposure of 18 animals
A80-22985

HEAT TOLERANCE
A study of occupational heat stress by analysis of environmental and human factors
N80-16735

HELICOPTER PERFORMANCE
Data analysis methodology for day/night inflight tactical navigation
A80-24050

HELICOPTERS
Effects of fatigue from wearing the AN/PVS-5 night vision goggles on skills involved in helicopter operations
[AD-A075426] N80-17714

HEMATOPOIESIS
Differentiation and radiosensitivity of hemopoietic stem cells of mice during hypokinesia
[NASA-TM-76066] N80-17671

HEMATOPOIETIC SYSTEM
Differentiation and radiosensitivity of hemopoietic stem cells of mice during hypokinesia
[NASA-TM-76066] N80-17671
Test irradiation of chronically irradiated dogs for evaluation of hemopoietic system function
N80-17693

HEMODYNAMIC RESPONSES
Effect of gravitational overloads, hypokinesia and hypodynamia on the vessels of the pulmonary blood circuit
[NASA-TM-75963] N80-17667
Effect of gravitational acceleration, hypokinesia and hypodynamia on the structure of the intestinal vascular bed
[NASA-TM-75972] N80-17668

HEMOSTATICS
Effect of rheopolyglucin on blood clotting factors of the aorta, myocardium and venae cavae during hypokinesia
N80-17691

HEPARINS
The significance of ACTH for the process of formation of complex heparin compounds in the blood during immobilization stress
[NASA-TM-75946] N80-16727

HIGH TEMPERATURE
Physiological and hygienic aspects of the effects of high and low temperatures --- Russian book
A80-23079

HORMONES
Growth hormone control of glucose oxidation pathways in hypophysectomized rats
A80-24222

HUMAN BEHAVIOR
Arousal from sleep: The uniqueness of an individual's response and the problem of noise control
[NASA-CR-162747] N80-17695

HUMAN BEINGS
Effect of alcohol ingestion on man's thermoregulatory responses during cold water immersion
A80-21548

HUMAN BODY
Part-body and multibody effects on absorption of radio-frequency electromagnetic energy by animals and by models of man
A80-22987
A geometrical-optics and an exact solution for internal fields in and energy absorption by a cylindrical model of man irradiated by an electromagnetic plane wave
A80-22988
Heating of spherical versus realistic models of human and infrahuman heads by electromagnetic waves
A80-22989
Whole-body vibration of heavy equipment operators
N80-16216
Research related to the expansion and improvement of human vibration exposure criteria
N80-16217

HUMAN FACTORS ENGINEERING
Bioman - An improved occupant-crew station compliance modeling system
A80-21549

Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings A80-24026

A review of literature relating to visual fatigue A80-24043

A study of occupational heat stress by analysis of environmental and human factors N80-16735

HUMAN FACTORS LABORATORIES

Pilot error - Some laboratory experiments A80-23217

HUMAN PATHOLOGY

A two-stage identification scheme for the determination of the parameters of a model of left heart and systemic circulation A80-22972

HUMAN PERFORMANCE

Ecological physiology of the brain --- Russian book A80-21421

Multi-modal information processing for visual workload relief [NASA-CR-162720] N80-16737

Stepwise pilot selection: Procedure and validity [FOA-C-55026-H7] N80-17704

Information processing in humans, volume 3. A bibliography with abstracts [PB80-800931] N80-17707

HUMAN TOLERANCES

Physiological and hygienic aspects of the effects of high and low temperatures --- Russian book A80-23079

HYDROFLUORIC ACID

The effects of long-term intoxication by the inhalation of gaseous HF on myocardial cell metabolism and serum cardiac enzyme levels in guinea pigs A80-22124

HYGROSCOPICITY

Deposition of hygroscopic atmospheric aerosol particles in the human respiratory tract A80-23745

HYPERTENSION

Dynamics of change in rat arterial pressure under conditions of immobilization [NASA-TM-76045] N80-17672

HYPOBARIC ATMOSPHERES

Blockade of the different enzymatic steps in the synthesis of brain amines and memory /CAR/ in hypobaric hypoxic rats treated and untreated with L. Dopa A80-21542

HYPODYNAMIA

Noninvasive measures of bone bending rigidity in the monkey /M. nemestrina/ A80-21988

Morphological and functional manifestations of rat adrenal-cortex response to sodium bromide administration under hypodynamic stress [NASA-TM-75953] N80-16719

Catecholamines and myocardial contractile function during hypodynamia and with an altered thyroid hormone balance [NASA-TM-76000] N80-16720

Effect of gravitational overloads, hypokinesia and hypodynamia on the vessels of the pulmonary blood circuit [NASA-TM-75963] N80-17667

Effect of gravitational acceleration, hypokinesia and hypodynamia on the structure of the intestinal vascular bed [NASA-TM-75972] N80-17668

RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization [NASA-TM-76032] N80-17670

HYPOKINESIA

Glucose metabolism in different regions of the rat brain under hypokinetic stress influence [NASA-TM-75949] N80-16718

Effect of gravitation stress and hypokinesia on blood vessels of the testicle [NASA-TM-75942] N80-16726

Effect of gravitational overloads, hypokinesia and hypodynamia on the vessels of the pulmonary blood circuit [NASA-TM-75963] N80-17667

Effect of gravitational acceleration, hypokinesia and hypodynamia on the structure of the intestinal vascular bed [NASA-TM-75972] N80-17668

Influence of mobility restriction on habituation of the vestibular apparatus [NASA-TM-75995] N80-17669

Differentiation and radiosensitivity of hemopoietic stem cells of mice during hypokinesia [NASA-TM-76066] N80-17671

Creatinuria in man during prolonged hypokinesia N80-17680

Changes in the neuromotor system during 45 days of hypokinesia N80-17681

Electrostimulation of muscles for the prevention of neuromuscular disorders during 45-day antiorthostatic hypokinesia N80-17682

Effect of rheopolyglucin on blood clotting factors of the aorta, myocardium and venae cavae during hypokinesia N80-17691

HYPOTHERMIA

Effect of alcohol ingestion on man's thermoregulatory responses during cold water immersion A80-21548

HYPOXIA

Blockade of the different enzymatic steps in the synthesis of brain amines and memory /CAR/ in hypobaric hypoxic rats treated and untreated with L. Dopa A80-21542

Effect of acute hypoxia on specific and nonspecific systems of the rabbit brain N80-17685

Effect of carbon monoxide on animals adapted to hypoxic hypoxia N80-17689

I

IMAGE RESOLUTION

The effect of image quality on search for static and dynamic targets - MTFA-performance correlations A80-24040

IMMOBILIZATION

The significance of ACTH for the process of formation of complex heparin compounds in the blood during immobilization stress [NASA-TM-75946] N80-16727

Dynamics of change in rat arterial pressure under conditions of immobilization [NASA-TM-76045] N80-17672

IN-FLIGHT MONITORING

Validation of an in flight performance measurement methodology - F-4 ground attack training evaluation A80-24036

The development of objective inflight performance assessment procedures A80-24038

Utilization of energy maneuverability data in improving in-flight performance and performance in air combat maneuvering A80-24049

INDUSTRIAL SAFETY

A study of occupational heat stress by analysis of environmental and human factors N80-16735

INDUSTRIAL WASTES

Anaerobic biological treatment of liquid wastes from pyrolysis processes [COO-4455-2] N80-16723

INFORMATION THEORY

Reference tree networks: Virtual machine and implementation [AD-A076570] N80-17713

INTESTINES

Composition of intestinal microflora of cosmonauts before and after space flights N80-17676

IONIZING RADIATION

Intercomparison of ISS and BIPM primary exposure standards for medium energy X-rays [ISS-R-79/3] N80-17700

K

KALMAN FILTERS
Optimal estimator model for human spatial orientation
A80-24265

L

LASERS
Evaluation of commercially available laser protective eyewear
[PB80-103039] N80-16741

LEARNING THEORY
Comparison of two techniques for the development and maintenance of tracking behavior in monkeys
A80-21541
Information processing in humans, volume 3. A bibliography with abstracts
[PB80-800931] N80-17707

LIFE CYCLE COSTS
Actual vs simulated equipment for aircraft maintenance training - Cost implications of the incremental vs the unique device
A80-24039

LIFE SCIENCES
Space flight research relevant to health, physical education, and recreation: With particular reference to Skylab's life science experiments
[NASA-EP-148] N80-17697

LINEAR PREDICTION
Optimal estimator model for human spatial orientation
A80-24265

LINKAGES
Recursive solution to the equations of motion of an N-link manipulator
A80-23996

LONG TERM EFFECTS
Effects of minimal gravitational loads on fluid-electrolyte metabolism and renal function of man during prolonged immersion
N80-17679

LOUDNESS
Loudness enhancement and decrement in four paradigms
A80-23047

LOW TEMPERATURE
Physiological and hygienic aspects of the effects of high and low temperatures --- Russian book
A80-23079

M

MACHINERY
Whole-body vibration of heavy equipment operators
N80-16216

MAGNETIC FIELDS
Study of bioelectric activity of neuro-muscular and sympathetic systems during exposure to a steady magnetic field
N80-17686
Effects of strong infralow-frequency magnetic fields on bone marrow cell division
N80-17687
Effect of steady magnetic field on some aspects of energy and nitrogen metabolism in the rat cerebral hemispheres
N80-17690

MAGNETOCARDIOGRAPHY
The theory and application of magnetocardiography
A80-24348

MAN ENVIRONMENT INTERACTIONS
Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings
A80-24026
Some philosophical aspects of the problem of man, the biosphere and space
N80-17675

MAN MACHINE SYSTEMS
Bioman - An improved occupant-crew station compliance modeling system
A80-21549
System design features of the Space Shuttle remote manipulator
A80-23993
Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings
A80-24026
Operator Station Design System - A computer aided design approach to work station layout
A80-24028
Man-machine analysis of translation and work tasks of Skylab films
A80-24029
Development of display design and command usage guidelines for Spacelab experiment computer applications
A80-24031
The design and evaluation of complex systems - Application to a man-machine interface for aerial navigation
A80-24032
Peripheral vision and tracking performance under stress
A80-24046
Prediction and quickening in perspective flight displays for curved landing approaches
A80-24048
Utilization of energy maneuverability data in improving in-flight performance and performance in air combat maneuvering
A80-24049
Development of precutaneous energy transmission
[PB-300518/8] N80-16732
Multi-modal information processing for visual workload relief
[NASA-CR-162720] N80-16737
Physical testing of polymers for use in circulatory assist devices
[PB80-101546] N80-16740
Manned remote work station development article, executive summary
[NASA-CR-160462] N80-17708
Manned remote work station development article. Volume 1, book 1: Flight article requirements. Appendix A: Mission requirements
[NASA-CR-160463] N80-17709
Manned remote work station development article. Volume 1, book 2, appendix B: Trade and design definition studies
[NASA-CR-160464] N80-17710
Manned remote work station development article. Volume 2: Simulation requirements. Appendix A: Open cherry picker development test articles specification
[NASA-CR-160465] N80-17711
Manned remote work station development article. Volume 3: Development test plan. Appendix A: Manufacturing requirements/schedule
[NASA-CR-160466] N80-17712
Reference tree networks: Virtual machine and implementation
[AD-A076570] N80-17713
Superman: A system for supervisory manipulation and the study of human/computer interactions
[PB-301290/3] N80-17716

MANIPULATORS
System design features of the Space Shuttle remote manipulator
A80-23993
Recursive solution to the equations of motion of an N-link manipulator
A80-23996

MANNED SPACE FLIGHT
Some problems of space medicine and international manned space flights
A80-22840

MARINE BIOLOGY
Microbial sulfate reduction measured by an automated electrical impedance technique
A80-21982
Biochemical correlates of seasonal change in marine communities --- fatty acid composition
[PB-301380/2] N80-17673

MARROW
Effects of strong infralow-frequency magnetic fields on bone marrow cell division
N80-17687

MATHEMATICAL MODELS
  A geometrical-optics and an exact solution for internal fields in and energy absorption by a cylindrical model of man irradiated by an electromagnetic plane wave
    A80-22988
  Heating of spherical versus realistic models of human and infrahuman heads by electromagnetic waves
    A80-22989
  Planar biped dynamics and control
    N80-16736
  The visual scene perception process involved in manual approach landing
    [NLR-TR-78130-U] N80-17715
MECHANORECEPTORS
  Role of interoceptive afferentation in function of the cortex of the visual analyzer
    N80-17684
MEDICAL EQUIPMENT
  Physical testing of polymers for use in circulatory assist devices
    [PB80-101546] N80-16740
MEMORY
  Blockade of the different enzymatic steps in the synthesis of brain amines and memory /CAR/ in hypobaric hypoxic rats treated and untreated with L. Dopa
    A80-21542
  Information processing in humans, volume 3. A bibliography with abstracts
    [PB80-800931] N80-17707
MENTAL PERFORMANCE
  Multi-modal information processing for visual workload relief
    [NASA-CR-162720] N80-16737
METABOLISM
  Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position
    A80-21540
  Simulated weightlessness - Effects on bioenergetic balance
    A80-21544
METEOROLOGY
  Intercomparison of ISS and BIPM primary exposure standards for medium energy X-rays
    [ISS-R-79/3] N80-17700
METROLOGY
  Proposed national exposure limits for microwave and radiofrequency radiation
    [ISS-P-79/2] N80-17699
MICHIGAN
  Factors influencing specific growth rates and seasonal abundance of eutrophic lake phytoplankton
    N80-16716
MICROORGANISMS
  Composition of intestinal microflora of cosmonauts before and after space flights
    N80-17676
MICROWAVE FREQUENCIES
  Contraction of smooth muscle in a microwave field
    A80-22995
  Skilled visual-motor performance by monkeys in a 1.2-GHz microwave field
    A80-22997
MICROWAVE TRANSMISSION
  Calorimetric measurements of microwave energy absorption by mice after simultaneous exposure of 18 animals
    A80-22985
  Circularly polarized 2450-MHz waveguide system for chronic exposure of small animals to microwaves
    A80-22990
MICROWAVES
  Operant behavior and rectal temperature of squirrel monkeys during 2.45-GHz microwave irradiation
    A80-22996
  Proposed national exposure limits for microwave and radiofrequency radiation
    [ISS-P-79/2] N80-17699
MILITARY AVIATION
  Aircrew stress in wartime operations --- Book
    A80-23208
  The historical background to wartime research in psychology in the Royal Air Force
    A80-23209
  Clinical and statistical study of neurosis precipitated by flying duties
    A80-23210
  The influence of psychological disorder on efficiency in operational flying
    A80-23211
  Fluctuations in navigator performance during operational sorties
    A80-23212
  Some measures of the effect of operational stress on bomber crews
    A80-23213
  The psychological aspects of airsickness
    A80-23215
  An experimental study of mental fatigue
    A80-23216
  Pilot error - Some laboratory experiments
    A80-23217
  Development and application of a task taxonomy for tactical flying
    A80-24035
  Aviation medicine. Volume 1 - Physiology and human factors --- Book
    A80-24525
MILITARY OPERATIONS
  Air combat maneuvering performance measurement
    A80-24037
MILITARY PSYCHOLOGY
  Compensatory and conjunctive processing of test information for prediction of results of military flight training
    [FOA-C-55025-H7] N80-17703
MISSION PLANNING
  Manned remote work station development article. Volume 1, book 1: Flight article requirements. Appendix A: Mission requirements
    [NASA-CR-160463] N80-17709
MITOSIS
  Effects of strong infralow-frequency magnetic fields on bone marrow cell division
    N80-17687
MODULATION
  Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength
    A80-22992
MOLECULAR BIOLOGY
  Models of long-range order in cerebral macromolecules - Effects of sub-ELF and of modulated VHF and UHF fields
    A80-22994
  Physio-chemical investigation of some areas of fundamental significance to biophysics
    [ORO-3018-T1] N80-16721
MONKEYS
  Comparison of two techniques for the development and maintenance of tracking behavior in monkeys
    A80-21541
MOTION SICKNESS
  The psychological aspects of airsickness
    A80-23215
MUSCLES
  Contraction of smooth muscle in a microwave field
    A80-22995
MUSCULAR FUNCTION
  Contraction of smooth muscle in a microwave field
    A80-22995
  Changes in the neuromotor system during 45 days of hypokinesia
    N80-17681
  Electrostimulation of muscles for the prevention of neuromuscular disorders during 45-day antiorthostatic hypokinesia
    N80-17682
MYOCARDIUM
  The effects of long-term intoxication by the inhalation of gaseous HF on myocardial cell metabolism and serum cardiac enzyme levels in guinea pigs
    A80-22124
  Catecholamines and myocardial contractile function during hypodynamia and with an altered thyroid hormone balance
    [NASA-TM-76000] N80-16720

N

NAVIGATORS
Fluctuations in navigator performance during operational sorties
A80-23212

NEUROGLIA
RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization
[NASA-TM-76032] N80-17670

NEURONS
RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization
[NASA-TM-76032] N80-17670

NEUROPHYSIOLOGY
Ecological physiology of the brain --- Russian book
A80-21421
Role of interoceptive afferentation in function of the cortex of the visual analyzer
N80-17684
Effect of acute hypoxia on specific and nonspecific systems of the rabbit brain
N80-17685
Study of bioelectric activity of neuro-muscular and sympathetic systems during exposure to a steady magnetic field
N80-17686

NEUROSES
Clinical and statistical study of neurosis precipitated by flying duties
A80-23210

NIGHT FLIGHTS (AIRCRAFT)
Data analysis methodology for day/night inflight tactical navigation
A80-24050

NIGHT VISION
Effects of fatigue from wearing the AN/PVS-5 night vision goggles on skills involved in helicopter operations
[AD-A075426] N80-17714

NITRILES
'Acetonitrile' - A plausible source of amino acids on the primitive earth
A80-21781

NITROGEN METABOLISM
Effect of steady magnetic field on some aspects of energy and nitrogen metabolism in the rat cerebral hemispheres
N80-17690

NOISE POLLUTION
Arousal from sleep: The uniqueness of an individual's response and the problem of noise control
[NASA-CR-162747] N80-17695

NUTATION
Residual nutational activity of the sunflower hypocotyl in simulated weightlessness
A80-21984

NYSTAGMUS
Oxygenation and ambient air pressure influences on alcohol-induced nystagmus in rabbits
A80-21543

O

ONBOARD EQUIPMENT
Manned remote work station development article, executive summary
[NASA-CR-160462] N80-17708
Manned remote work station development article. Volume 1, book 1: Flight article requirements. Appendix A: Mission requirements
[NASA-CR-160463] N80-17709
Manned remote work station development article. Volume 1, book 2, appendix B: Trade and design definition studies
[NASA-CR-160464] N80-17710
Manned remote work station development article. Volume 2: Simulation requirements. Appendix A: Open cherry picker development test articles specification
[NASA-CR-160465] N80-17711
Manned remote work station development article. Volume 3: Development test plan. Appendix A: Manufacturing requirements/schedule
[NASA-CR-160466] N80-17712

OPERATOR PERFORMANCE
Development of Performance Evaluation Tests for Environmental Research /PETER/ - Complex counting test
A80-21546
Fluctuations in navigator performance during operational sorties
A80-23212

OPERATORS (PERSONNEL)
Whole-body vibration of heavy equipment operators
N80-16216

OPTICAL ILLUSION
Linear summation of tilt illusion and tilt aftereffect
A80-22969

OPTICAL TRACKING
Additivity of fusional vergence and pursuit eye movements
A80-22970
Information used by the perceptual and oculomotor systems regarding the amplitude of saccadic and pursuit eye movements
A80-22971
Effect of vestibular stimuli on visual tracking in a limited tracking area
N80-17683

OPTIMAL CONTROL
Optimal estimator model for human spatial orientation
A80-24265

ORGANIC CHEMISTRY
Thermal history, chemical composition and relationship of comets to the origin of life
A80-24492
Physio-chemical investigation of some areas of fundamental significance to biophysics
[ORO-3018-T1] N80-16721

ORIENTATION
Adapting to two orientations - Disinhibition in a visual aftereffect
A80-22967

ORTHOSTATIC TOLERANCE
An ultrasonic plethysmograph for space flight applications
A80-21553

OXIDATION
Growth hormone control of glucose oxidation pathways in hypophysectomized rats
A80-24222

OXYGEN TENSION
Oxygenation and ambient air pressure influences on alcohol-induced nystagmus in rabbits
A80-21543

OZONE
The toxicology of ozone. A bibliography with abstracts
[PB80-800881] N80-17701

P

PERFORMANCE PREDICTION
Data analysis methodology for day/night inflight tactical navigation
A80-24050

PERIPHERAL VISION
Peripheral vision and tracking performance under stress
A80-24046

PERMEABILITY
Permeability changes in cerebral, iridic, and retinal vessels during experimental decompression sickness in the rat
A80-21545

PHONOCARDIOGRAPHY
Phonocardiography - Analyses of instrumentation, and vibration of heart structures to determine their constitutive properties
A80-24349

PHOTORECEPTORS
Vector model for normal and dichromatic color vision
A80-24135

PHOTOSYNTHESIS
Theoretical studies of the light reactions in photosynthesis
N80-16717

PHYSICAL EXAMINATIONS
- The 1976 accident experience of civilian pilots with static physical defects A80-21552

PHYSICAL EXERCISE
- Training and acclimatization - Effects on responses to exercise in a desert environment A80-21539
- Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position A80-21540
- Effects of exercise training on left ventricular function in normal subjects - A longitudinal study by radionuclide angiography A80-23975

PHYSICAL FITNESS
- Space flight research relevant to health, physical education, and recreation: With particular reference to Skylab's life science experiments [NASA-EP-148] N80-17697

PHYSIOCHEMISTRY
- Physio-chemical investigation of some areas of fundamental significance to biophysics [ORC-3018-T1] N80-16721

PHYSIOLOGICAL EFFECTS
- Training and acclimatization - Effects on responses to exercise in a desert environment A80-21539
- Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position A80-21540
- Simulated weightlessness - Effects on bioenergetic balance A80-21544
- Physiological response to hyper- and hypogravity during rollercoaster flight A80-21547
- Effects of ingestion of cold and hot water on the course of thermal changes in the stomach and intestine [NASA-TM-75515] N80-16728
- USSR Report: Space Biology and Aerospace Medicine, volume 14, no. 6, 1979 [JPRS-75041] N80-17674
- Objectives and conditions of physiological experiments on rats conducted aboard the Cosmos-936 biosatellite --- physiological effects of weightlessness and artificial gravity N80-17677
- Changes in the neuromotor system during 45 days of hypokinesia N80-17681
- Electrostimulation of muscles for the prevention of neuromuscular disorders during 45-day antiorthostatic hypokinesia N80-17682
- Effect of acute hypoxia on specific and nonspecific systems of the rabbit brain N80-17685
- Study of bioelectric activity of neuro-muscular and sympathetic systems during exposure to a steady magnetic field N80-17686
- Effects of strong infralow-frequency magnetic fields on bone marrow cell division N80-17687
- Effect of steady magnetic field on some aspects of energy and nitrogen metabolism in the rat cerebral hemispheres N80-17690
- Effect of rheopolyglucin on blood clotting factors of the aorta, myocardium and venae cavae during hypokinesia N80-17691
- Effects of accelerations on the early stage of radiation lesion in animals N80-17692
- Test irradiation of chronically irradiated dogs for evaluation of hemopoietic system function N80-17693
- Insoluble collagen content of dog tissues after exposure to low doses of chronic gamma radiation N80-17694
- Arousal from sleep: The uniqueness of an individual's response and the problem of noise control [NASA-CR-162747] N80-17695
- Space flight research relevant to health, physical education, and recreation: With particular reference to Skylab's life science experiments [NASA-EP-148] N80-17697
- The survival and protection of equipment in the event of accidental immersion in cold water --- physiological effects and cold acclimitazation [AGARD-AG-211-FR] N80-17702

PHYSIOLOGICAL RESPONSES
- Some problems of space medicine and international manned space flights A80-22840
- Calorimetric measurements of microwave energy absorption by mice after simultaneous exposure of 18 animals A80-22985
- Part-body and multibody effects on absorption of radio-frequency electromagnetic energy by animals and by models of man A80-22987
- Circularly polarized 2450-MHz waveguide system for chronic exposure of small animals to microwaves A80-22990
- Models of long-range order in cerebral macromolecules - Effects of sub-ELF and of modulated VHF and UHF fields A80-22994

PILOT ERROR
- Pilot error - Some laboratory experiments A80-23217

PILOT PERFORMANCE
- An investigation of landing accidents in relation to fatigue A80-23214
- An experimental study of mental fatigue A80-23216
- Effect of pretraining criterion on flight simulator and secondary cognitive task performance A80-24034
- Development and application of a task taxonomy for tactical flying A80-24035
- Validation of an in flight performance measurement methodology - F-4 ground attack training evaluation A80-24036
- Air combat maneuvering performance measurement A80-24037
- The development of objective inflight performance assessment procedures A80-24038
- Operator visual workload shifts as a function of vehicle stability A80-24041
- Evaluation of a pilot workload metric for simulated VTOL landing tasks A80-24042
- The use of color-coded symbols in a highly dense situation display A80-24045
- Optimal estimator model for human spatial orientation A80-24265
- Modeling pilot response delays to beacon collision avoidance system commands [AD-A075946] N80-16734

PILOT SELECTION
- The 1976 accident experience of civilian pilots with static physical defects A80-21552
- Improved pilot training through modification of selection and training procedures [FOA-C-55029-H7] N80-17698
- Compensatory and conjunctive processing of test information for prediction of results of military flight training [FOA-C-55025-H7] N80-17703
- Stepwise pilot selection: Procedure and validity [FOA-C-55026-H7] N80-17704
- Improved flight training methods [FOA-C-55028-H8] N80-17706

PILOT TRAINING
- The design and evaluation of complex systems - Application to a man-machine interface for aerial navigation A80-24032
- Improved pilot training through modification of selection and training procedures [FOA-C-55029-H7] N80-17698

The influence of the change of flight instruction and his ability upon the pupil's adaptation to flying
[FOA-C-55027-H8] N80-17705
Improved flight training methods
[FOA-C-55028-H8] N80-17706

PIONEER VENUS 2 ENTRY PROBES
New studies of Venus --- vanera satellites 11 and 12 explorations ; pioneer venus 2 entry probes
[NASA-TM-75931] N80-17666

PITUITARY GLAND
Growth hormone control of glucose oxidation pathways in hypophysectomized rats
A80-24222
Influence of x irradiation and diet on pituitary/thyroid function in the rat
[UR-3490-1674] N80-16722

PLANKTON
Factors influencing specific growth rates and seasonal abundance of eutrophic lake phytoplankton
N80-16716

PLANTS (BOTANY)
Residual nutational activity of the sunflower hypocotyl in simulated weightlessness
A80-21984

PLETHYSMOGRAPHY
An ultrasonic plethysmograph for space flight applications
A80-21553

POLYMERS
Method for separating biological cells --- suspended in aqueous polymer systems
[NASA-CASE-MFS-23883-1] N80-16715

PORPHYRINS
Method and apparatus for eliminating luminol interference material
[NASA-CASE-MSC-16260-1] N80-16714

PRESSURE EFFECTS
Oxygenation and ambient air pressure influences on alcohol-induced nystagmus in rabbits
A80-21543

PRIMITIVE EARTH ATMOSPHERE
'Acetonitrile' - A plausible source of amino acids on the primitive earth
A80-21781

PRODUCTION MANAGEMENT
Manned remote work station development article. Volume 3: Development test plan. Appendix A: Manufacturing requirements/schedule
[NASA-CR-160466] N80-17712

PRODUCTIVITY
Factors influencing specific growth rates and seasonal abundance of eutrophic lake phytoplankton
N80-16716

PROPULSION SYSTEM CONFIGURATIONS
Apparatus for endoscopic examination --- analysis of the propulsion system configuration and transmitter
[NASA-CASE-NPO-14092-1] N80-16725

PROSTHETIC DEVICES
Prosthetic device for correction of urinary incontinence
[NASA-TM-78255] N80-16739

PROTECTION
The survival and protection of equipment in the event of accidental immersion in cold water --- physiological effects and cold acclimitazation
[AGARD-AG-211-FR] N80-17702

PROTEIN METABOLISM
Insoluble collagen content of dog tissues after exposure to low doses of chronic gamma radiation
N80-17694

PROTEINS
Some neurochemical characteristics of rats during flight aboard the Cosmos-782 artificial satellite and after return to Earth
N80-17678

PSYCHOACOUSTICS
Loudness enhancement and decrement in four paradigms
A80-23047

PSYCHOLOGICAL EFFECTS
Aircrew stress in wartime operations --- Book
A80-23208
The historical background to wartime research in psychology in the Royal Air Force
A80-23209
Fluctuations in navigator performance during operational sorties
A80-23212
Some measures of the effect of operational stress on bomber crews
A80-23213

PSYCHOLOGICAL FACTORS
The influence of psychological disorder on efficiency in operational flying
A80-23211
The psychological aspects of airsickness
A80-23215

PSYCHOLOGICAL TESTS
Development of Performance Evaluation Tests for Environmental Research /PETER/ - Complex counting test
A80-21546
Loudness enhancement and decrement in four paradigms
A80-23047
Large color differences and the geometry of Munsell color space --- psychological experiment on vision scheme validity
A80-24136

PSYCHOLOGY
Aviation medicine. Volume 1 - Physiology and human factors --- Book
A80-24525

PSYCHOMETRICS
Compensatory and conjunctive processing of test information for prediction of results of military flight training
[FOA-C-55025-H7] N80-17703

PSYCHOMOTOR PERFORMANCE
The effect of propranolol on human psychomotor performance
A80-21550
Effects of fatigue from wearing the AN/PVS-5 night vision goggles on skills involved in helicopter operations
[AD-A075426] N80-17714

PSYCHOPHYSIOLOGY
An evaluation of heart rate during activity of high psychological and physiological stress --- German thesis
A80-21851

PULMONARY CIRCULATION
Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position
A80-21540

PURSUIT TRACKING
Comparison of two techniques for the development and maintenance of tracking behavior in monkeys
A80-21541

PYROLYSIS
Anaerobic biological treatment of liquid wastes from pyrolysis processes
[COO-4455-2] N80-16723

R

RADIANT HEATING
Heating of spherical versus realistic models of human and infrahuman heads by electromagnetic waves
A80-22989

RADIATION DOSAGE
Calorimetric measurements of microwave energy absorption by mice after simultaneous exposure of 18 animals
A80-22985
A geometrical-optics and an exact solution for internal fields in and energy absorption by a cylindrical model of man irradiated by an electromagnetic plane wave
A80-22988
Circularly polarized 2450-MHz waveguide system for chronic exposure of small animals to microwaves
A80-22990
Effects of accelerations on the early stage of radiation lesion in animals
N80-17692
Proposed national exposure limits for microwave and radiofrequency radiation
[ISS-P-79/2] N80-17699
Intercomparison of ISS and BIPM primary exposure standards for medium energy X-rays
[ISS-R-79/3] N80-17700

RADIATION EFFECTS
Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength A80-22992
Models of long-range order in cerebral macromolecules - Effects of sub-ELF and of modulated VHF and UHF fields A80-22994
Contraction of smooth muscle in a microwave field A80-22995
Operant behavior and rectal temperature of squirrel monkeys during 2.45-GHz microwave irradiation A80-22996
Influence of x irradiation and diet on pituitary/thyroid function in the rat [UR-3490-1674] N80-16722
Test irradiation of chronically irradiated dogs for evaluation of hemopoietic system function N80-17693
Insoluble collagen content of dog tissues after exposure to low doses of chronic gamma radiation N80-17694

RADIO FREQUENCIES
Models of long-range order in cerebral macromolecules - Effects of sub-ELF and of modulated VHF and UHF fields A80-22994

RADIO FREQUENCY HEATING
Calorimetric measurements of microwave energy absorption by mice after simultaneous exposure of 18 animals A80-22985
Part-body and multibody effects on absorption of radio-frequency electromagnetic energy by animals and by models of man A80-22987

RADIO WAVES
Proposed national exposure limits for microwave and radiofrequency radiation [ISS-P-79/2] N80-17699

RADIOACTIVE ISOTOPES
Effects of exercise training on left ventricular function in normal subjects - A longitudinal study by radionuclide angiography A80-23975

RADIOBIOLOGY
A geometrical-optics and an exact solution for internal fields in and energy absorption by a cylindrical model of man irradiated by an electromagnetic plane wave A80-22988
Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength A80-22992
Extremely-low-frequency fields and the slime mold Physarum polycephalum - Evidence of depressed cellular function and of internuclear interaction A80-22993
Models of long-range order in cerebral macromolecules - Effects of sub-ELF and of modulated VHF and UHF fields A80-22994
Contraction of smooth muscle in a microwave field A80-22995
Operant behavior and rectal temperature of squirrel monkeys during 2.45-GHz microwave irradiation A80-22996
Skilled visual-motor performance by monkeys in a 1.2-GHz microwave field A80-22997

REACTION KINETICS
Theoretical studies of the light reactions in photosynthesis N80-16717

RECREATION
Space flight research relevant to health, physical education, and recreation: With particular reference to Skylab's life science experiments [NASA-EP-148] N80-17697

RECURSIVE FUNCTIONS
Recursive solution to the equations of motion of an N-link manipulator A80-23996

REGRESSION ANALYSIS
Empirical Bayes estimation of critical dosages having smallest predictive risk [AD-A074376] N80-16729

REMOTE HANDLING
Recursive solution to the equations of motion of an N-link manipulator A80-23996
Manned remote work station development article, executive summary [NASA-CR-160462] N80-17708
Manned remote work station development article. Volume 1, book 1: Flight article requirements. Appendix A: Mission requirements [NASA-CR-160463] N80-17709
Manned remote work station development article. Volume 1, book 2, appendix B: Trade and design definition studies [NASA-CR-160464] N80-17710
Manned remote work station development article. Volume 2: Simulation requirements. Appendix A: Open cherry picker development test articles specification [NASA-CR-160465] N80-17711
Manned remote work station development article. Volume 3: Development test plan. Appendix A: Manufacturing requirements/schedule [NASA-CR-160466] N80-17712

REMOTE MANIPULATOR SYSTEM
Superman: A system for supervisory manipulation and the study of human/computer interactions [PB-301290/3] N80-17716

RENAL FUNCTION
Effects of minimal gravitational loads on fluid-electrolyte metabolism and renal function of man during prolonged immersion N80-17679

RESPIRATION
The effects of long-term intoxication by the inhalation of gaseous HF on myocardial cell metabolism and serum cardiac enzyme levels in guinea pigs A80-22124

RESPIRATORY RATE
Extremely-low-frequency fields and the slime mold Physarum polycephalum - Evidence of depressed cellular function and of internuclear interaction A80-22993

RESPIRATORY SYSTEM
Deposition of hygroscopic atmospheric aerosol particles in the human respiratory tract A80-23745

RETINA
Permeability changes in cerebral, iridic, and retinal vessels during experimental decompression sickness in the rat A80-21545

RETINAL ADAPTATION
Adapting to two orientations - Disinhibition in a visual aftereffect A80-22967

RHEOLOGY
Effect of rheopolyglucin on blood clotting factors of the aorta, myocardium and venae cavae during hypokinesia N80-17691

RIBONUCLEIC ACIDS
RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization [NASA-TM-76032] N80-17670
Some neurochemical characteristics of rats during flight aboard the Cosmos-782 artificial satellite and after return to Earth N80-17678

ROTARY WING AIRCRAFT
The development of objective inflight performance assessment procedures A80-24038

ROTATION
Perturbation of induced rotation as an index of pattern structure --- for visual stimuli A80-24047

S

SACCADIC EYE MOVEMENTS
Information used by the perceptual and oculomotor systems regarding the amplitude of saccadic and pursuit eye movements
A80-22971

SAFETY DEVICES
Evaluation of commercially available laser protective eyewear
[PB80-103039] N80-16741

SEARCHING
The effect of image quality on search for static and dynamic targets - MTFA-performance correlations
A80-24040
Visual search and color coding
A80-24044

SENSORIMOTOR PERFORMANCE
Skilled visual-motor performance by monkeys in a 1.2-GHz microwave field
A80-22997
Multi-modal information processing for visual workload relief
[NASA-CR-162720] N80-16737
RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization
[NASA-TM-76032] N80-17670

SKIN (ANATOMY)
Development of percutaneous energy transmission systems
[PB-299739/3] N80-16731
Development of precutaneous energy transmission
[PB-300518/8] N80-16732

SKYLAB PROGRAM
Man-machine analysis of translation and work tasks of Skylab films
A80-24029
Space flight research relevant to health, physical education, and recreation: With particular reference to Skylab's life science experiments
[NASA-SP-148] N80-17697

SLEEP
Arousal from sleep: The uniqueness of an individual's response and the problem of noise control
[NASA-CR-162747] N80-17695

SODIUM BROMIDES
Morphological and functional manifestations of rat adrenal-cortex response to sodium bromide administration under hypodynamic stress
[NASA-TM-75953] N80-16719

SPACE FLIGHT STRESS
An ultrasonic plethysmograph for space flight applications
A80-21553
Some problems of space medicine and international manned space flights
A80-22840
USSR Report: Space Biology and Aerospace Medicine, volume 14, no. 6, 1979
[JPRS-75041] N80-17674
Composition of intestinal microflora of cosmonauts before and after space flights
N80-17676
Some neurochemical characteristics of rats during flight aboard the Cosmos-782 artificial satellite and after return to Earth
N80-17678
Changes in the neuromotor system during 45 days of hypokinesia
N80-17681

SPACE LABORATORIES
Space flight research relevant to health, physical education, and recreation: With particular reference to Skylab's life science experiments
[NASA-SP-148] N80-17697

SPACE PERCEPTION
Optimal estimator model for human spatial orientation
A80-24265

SPACE SHUTTLE ORBITERS
Operator Station Design System - A computer aided design approach to work station layout
A80-24028
Manned remote work station development article, executive summary
[NASA-CR-160462] N80-17708
Manned remote work station development article. Volume 1, book 1: Flight article requirements. Appendix A: Mission requirements
[NASA-CR-160463] N80-17709
Manned remote work station development article. Volume 1, book 2, appendix B: Trade and design definition studies
[NASA-CR-160464] N80-17710
Manned remote work station development article. Volume 2: Simulation requirements. Appendix A: Open cherry picker development test articles specification
[NASA-CR-160465] N80-17711
Manned remote work station development article. Volume 3: Development test plan. Appendix A: Manufacturing requirements/schedule
[NASA-CR-160466] N80-17712

SPACE SHUTTLES
System design features of the Space Shuttle remote manipulator
A80-23993

SPACEBORNE EXPERIMENTS
Development of display design and command usage guidelines for Spacelab experiment computer applications
A80-24031

SPACECRAFT CONTROL
System design features of the Space Shuttle remote manipulator
A80-23993

SPACECRAFT DESIGN
System design features of the Space Shuttle remote manipulator
A80-23993
Operator Station Design System - A computer aided design approach to work station layout
A80-24028

SPACECRAFT ENVIRONMENTS
Biomedical systems analysis program
[NASA-CR-160456] N80-17696

SPACECREWS
Man-machine analysis of translation and work tasks of Skylab films
A80-24029

SPACELAB
Development of display design and command usage guidelines for Spacelab experiment computer applications
A80-24031

SPINAL CORD
RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization
[NASA-TM-76032] N80-17670

STANDARDS
Research related to the expansion and improvement of human vibration exposure criteria
N80-16217

STATISTICAL ANALYSIS
Clinical and statistical study of neurosis precipitated by flying duties
A80-23210

STRESS (PHYSIOLOGY)
An evaluation of heart rate during activity of high psychological and physiological stress --- German thesis
A80-21851
Peripheral vision and tracking performance under stress
A80-24046
Glucose metabolism in different regions of the rat brain under hypokinetic stress influence
[NASA-TM-75949] N80-16718
Morphological and functional manifestations of rat adrenal-cortex response to sodium bromide administration under hypodynamic stress
[NASA-TM-75953] N80-16719
Effect of gravitation stress and hypokinesia on blood vessels of the testicle
[NASA-TM-75942] N80-16726
A study of occupational heat stress by analysis of environmental and human factors
N80-16735

Effects of fatigue from wearing the AN/PVS-5 night vision goggles on skills involved in helicopter operations
[AD-A075426] N80-17714

STRESS (PSYCHOLOGY)
An evaluation of heart rate during activity of high psychological and physiological stress --- German thesis
A80-21851
Aircrew stress in wartime operations --- Book
A80-23208
The historical background to wartime research in psychology in the Royal Air Force
A80-23209
Fluctuations in navigator performance during operational sorties
A80-23212
Some measures of the effect of operational stress on bomber crews
A80-23213
Peripheral vision and tracking performance under stress
A80-24046

SULFATES
Microbial sulfate reduction measured by an automated electrical impedance technique
A80-21982

SUPINE POSITION
Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position
A80-21540

SURVIVAL
The survival and protection of equipment in the event of accidental immersion in cold water --- physiological effects and cold acclimatization
[AGARD-AG-211-FR] N80-17702

SWEDEN
Stepwise pilot selection: Procedure and validity
[FOA-C-55026-H7] N80-17704

T

TACAN
Data analysis methodology for day/night inflight tactical navigation
A80-24050

TARGET RECOGNITION
The effect of image quality on search for static and dynamic targets - MTFA-performance correlations
A80-24040
Visual search and color coding
A80-24044

TASK COMPLEXITY
Development of Performance Evaluation Tests for Environmental Research /PETER/ - Complex counting test
A80-21546
Effect of pretraining criterion on flight simulator and secondary cognitive task performance
A80-24034

TASKS
Development and application of a task taxonomy for tactical flying
A80-24035

TAXONOMY
Development and application of a task taxonomy for tactical flying
A80-24035

TELEOPERATORS
System design features of the Space Shuttle remote manipulator
A80-23993

TEMPERATURE EFFECTS
Physiological and hygienic aspects of the effects of high and low temperatures --- Russian book
A80-23079

TERRAIN FOLLOWING AIRCRAFT
Data analysis methodology for day/night inflight tactical navigation
A80-24050

TEST EQUIPMENT
Actual vs simulated equipment for aircraft maintenance training - Cost implications of the incremental vs the unique device
A80-24039

TESTES
Effect of gravitation stress and hypokinesia on blood vessels of the testicle
[NASA-TM-75942] N80-16726

THERMAL ABSORPTION
Calorimetric measurements of microwave energy absorption by mice after simultaneous exposure of 18 animals
A80-22985

THERMAL ENERGY
Implanted energy conversion system
[PB80-101116] N80-16733

THERMODYNAMIC PROPERTIES
Thermal history, chemical composition and relationship of comets to the origin of life
A80-24492

THERMODYNAMICS
Thermodynamic considerations in the support of life for long space voyages
[NASA-CR-162755] N80-16738

THERMOREGULATION
Effect of alcohol ingestion on man's thermoregulatory responses during cold water immersion
A80-21548
Physiological and hygienic aspects of the effects of high and low temperatures --- Russian book
A80-23079

THYROID GLAND
Catecholamines and myocardial contractile function during hypodynamia and with an altered thyroid hormone balance
[NASA-TM-76000] N80-16720
Influence of x irradiation and diet on pituitary/thyroid function in the rat
[UR-3490-1674] N80-16722

TIME LAG
Modeling pilot response delays to beacon collision avoidance system commands
[AD-A075946] N80-16734

TISSUES (BIOLOGY)
Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength
A80-22992

TOLERANCES (PHYSIOLOGY)
Ecological physiology of the brain --- Russian book
A80-21421

TOXIC HAZARDS
The effects of long-term intoxication by the inhalation of gaseous HF on myocardial cell metabolism and serum cardiac enzyme levels in guinea pigs
A80-22124

TOXICOLOGY
The toxicology of ozone. A bibliography with abstracts
[PB80-800881] N80-17701

TRACKING (POSITION)
Peripheral vision and tracking performance under stress
A80-24046

TRAINING ANALYSIS
Improved pilot training through modification of selection and training procedures
[FOA-C-55029-H7] N80-17698
Compensatory and conjunctive processing of test information for prediction of results of military flight training
[FOA-C-55025-H7] N80-17703

TRAINING DEVICES
Actual vs simulated equipment for aircraft maintenance training - Cost implications of the incremental vs the unique device
A80-24039

TRAINING EVALUATION
Effect of pretraining criterion on flight simulator and secondary cognitive task performance
A80-24034
Validation of an in flight performance measurement methodology - F-4 ground attack training evaluation
A80-24036
Air combat maneuvering performance measurement
A80-24037
The development of objective inflight performance assessment procedures
A80-24038

TRANSMITTERS
Apparatus for endoscopic examination --- analysis of the propulsion system configuration and transmitter [NASA-CASE-NPO-14092-1] N80-16725

U

ULTRASONIC TESTS
An ultrasonic plethysmograph for space flight applications A80-21553

UNDERWATER VEHICLES
Superman: A system for supervisory manipulation and the study of human/computer interactions [PB-301290/3] N80-17716

UNITS OF MEASUREMENT
Intercomparison of ISS and BIPM primary exposure standards for medium energy X-rays [ISS-R-79/3] N80-17700

URINE
Creatinuria in man during prolonged hypokinesia N80-17680

UROLOGY
Prosthetic device for correction of urinary incontinence [NASA-TM-78255] N80-16739

V

VECTOR ANALYSIS
Vector model for normal and dichromatic color vision A80-24135

VENERA SATELLITES
New studies of Venus --- venera satellites 11 and 12 explorations ; pioneer venus 2 entry probes [NASA-TM-75931] N80-17666

VENUS (PLANET)
New studies of Venus --- venera satellites 11 and 12 explorations ; pioneer venus 2 entry probes [NASA-TM-75931] N80-17666

VENUS ATMOSPHERE
New studies of Venus --- venera satellites 11 and 12 explorations ; pioneer venus 2 entry probes [NASA-TM-75931] N80-17666

VERTICAL TAKEOFF AIRCRAFT
Evaluation of a pilot workload metric for simulated VTOL landing tasks A80-24042

VESTIBULAR NYSTAGMUS
Influence of mobility restriction on habituation of the vestibular apparatus [NASA-TM-75995] N80-17669

VESTIBULAR TESTS
Effect of vestibular stimuli on visual tracking in a limited tracking area N80-17683

VIBRATION
Whole-body vibration of heavy equipment operators N80-16216
Research related to the expansion and improvement of human vibration exposure criteria N80-16217

VISION
Adapting to two orientations - Disinhibition in a visual aftereffect A80-22967

VISUAL ACUITY
Large color differences and the geometry of Munsell color space --- psychological experiment on vision scheme validity A80-24136

VISUAL CONTROL
The visual scene perception process involved in manual approach landing [NLR-TR-78130-U] N80-17715

VISUAL DISCRIMINATION
Perturbation of induced rotation as an index of pattern structure --- for visual stimuli A80-24047

VISUAL FIELDS
Peripheral vision and tracking performance under stress A80-24046

VISUAL PERCEPTION
Linear summation of tilt illusion and tilt aftereffect A80-22969
Information used by the perceptual and oculomotor systems regarding the amplitude of saccadic and pursuit eye movements A80-22971
Role of interoceptive afferentation in function of the cortex of the visual analyzer N80-17684
The visual scene perception process involved in manual approach landing [NLR-TR-78130-U] N80-17715

VISUAL STIMULI
Additivity of fusional vergence and pursuit eye movements A80-22970
Perturbation of induced rotation as an index of pattern structure --- for visual stimuli A80-24047
Effect of vestibular stimuli on visual tracking in a limited tracking area N80-17683

VISUAL TASKS
Skilled visual-motor performance by monkeys in a 1.2-GHz microwave field A80-22997
The effect of image quality on search for static and dynamic targets - MTFA-performance correlations A80-24040
Operator visual workload shifts as a function of vehicle stability A80-24041
A review of literature relating to visual fatigue A80-24043
Visual search and color coding A80-24044
The use of color-coded symbols in a highly dense situation display A80-24045

W

WALKING
Simulation of walking under conditions of weightlessness A80-21094
Planar biped dynamics and control N80-16736

WARFARE
Aircrew stress in wartime operations --- Book A80-23208
The historical background to wartime research in psychology in the Royal Air Force A80-23209

WASTE TREATMENT
Anaerobic biological treatment of liquid wastes from pyrolysis processes [COO-4455-2] N80-16723

WATER TEMPERATURE
Effects of ingestion of cold and hot water on the course of thermal changes in the stomach and intestine [NASA-TM-75515] N80-16728

WAVEGUIDES
Circularly polarized 2450-MHz waveguide system for chronic exposure of small animals to microwaves A80-22990

WEAPONS DELIVERY
Validation of an in flight performance measurement methodology - F-4 ground attack training evaluation A80-24036

WEIGHTLESSNESS
Some problems of space medicine and international manned space flights A80-22840
Objectives and conditions of physiological experiments on rats conducted aboard the Cosmos-936 biosatellite --- physiological effects of weightlessness and artificial gravity N80-17677

WEIGHTLESSNESS SIMULATION
Simulation of walking under conditions of weightlessness A80-21094
Simulated weightlessness - Effects on bioenergetic balance A80-21544

Residual nutational activity of the sunflower hypocotyl in simulated weightlessness
A80-21984

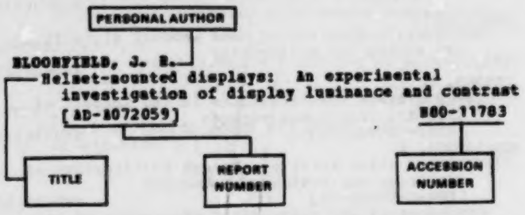
WORKLOADS (PSYCHOPHYSIOLOGY)
Operator visual workload shifts as a function of vehicle stability
A80-24041
Evaluation of a pilot workload metric for simulated VTOL landing tasks
A80-24042

blank page

PERSONAL AUTHOR INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 206)* **MAY 1980**

Typical Personal Author Index Listing


PERSONAL AUTHOR
BLOOMFIELD, J. R.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059]
N80-11783
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ADEY, W. R.
Models of long-range order in cerebral macromolecules - Effects of sub-ELF and of modulated VHF and UHF fields
A80-22994

AESCHLEMAN, S. E.
Comparison of two techniques for the development and maintenance of tracking behavior in monkeys
A80-21541

AGADZHANYAN, N. A.
Some philosophical aspects of the problem of man, the biosphere and space
N80-17675

AKOPYAN, N. S.
Effect of acute hypoxia on specific and nonspecific systems of the rabbit brain
N80-17685

ALLEN, S. J.
Calorimetric measurements of microwave energy absorption by mice after simultaneous exposure of 18 animals
A80-22985

Skilled visual-motor performance by monkeys in a 1.2-GHz microwave field
A80-22997

ANTIPOV, V. V.
Effects of accelerations on the early stage of radiation lesion in animals
N80-17692

ARMSTRONG, W. W.
Recursive solution to the equations of motion of an N-link manipulator
A80-23996

ASBURRY, W. C.
Whole-body vibration of heavy equipment operators
N80-16216

AZHAEV, A. N.
Physiological and hygienic aspects of the effects of high and low temperatures
A80-23079

B

BABIYAK, V. I.
Effect of vestibular stimuli on visual tracking in a limited tracking area
N80-17683

BAKLAVADZHYAN, O. G.
Effect of acute hypoxia on specific and nonspecific systems of the rabbit brain
N80-17685

BALDRIGHI, G.
Physiological response to hyper- and hypogravity during rollercoaster flight
A80-21547

BARANSKI, S.
Some problems of space medicine and international manned space flights
A80-22840

BARRY, W. H.
The theory and application of magnetocardiography
A80-24348

BASON, R.
Trapped gas dysbarism requiring recompression therapy
A80-21551

BATINKOV, Y. L.
Effects of ingestion of cold and hot water on the course of thermal changes in the stomach and intestine
[NASA-TM-75515] N80-16728

BAULK, K.
Effect of alcohol ingestion on man's thermoregulatory responses during cold water immersion
A80-21548

BAWIN, S. M.
Models of long-range order in cerebral macromolecules - Effects of sub-ELF and of modulated VHF and UHF fields
A80-22994

BELETSKII, V. V.
Simulation of walking under conditions of weightlessness
A80-21094

BELYAVIN, A. J.
Large color differences and the geometry of Munsell color space
A80-24136

BENANE, S. G.
Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength
A80-22992

BENNETT, A.
Implanted energy conversion system
[PB80-101116] N80-16733

BENSEL, C. K.
Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings
A80-24026

BENZSCHAWEL, T.
Vector model for normal and dichromatic color vision
A80-24135

BERINGER, D. B.
The design and evaluation of complex systems - Application to a man-machine interface for aerial navigation
A80-24032

BERMUDEZ, J. M.
Peripheral vision and tracking performance under stress
A80-24046

BERNHEIM, A., JR.
Loudness enhancement and decrement in four paradigms
A80-23047

BERNSTEIN, I.
Development of percutaneous energy transmission systems
[PB-299739/3] N80-16731

BHAGAT, P. K.
An ultrasonic plethysmograph for space flight applications
A80-21553

BIALIK, G.
Empirical Bayes estimation of critical dosages having smallest predictive risk
[AD-A074376] N80-16729

BILLMANN, B.
Modeling pilot response delays to beacon collision avoidance system commands
[AD-A075946] N80-16734

BITTNER, A. C., JR.
Development of Performance Evaluation Tests for Environmental Research /PETER/ - Complex counting test
A80-21546

BLACKMAN, C. F.
Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength
A80-22992
Contraction of smooth muscle in a microwave field
A80-22995

BOELTER, J. G.
Man-machine analysis of translation and work tasks of Skylab films
A80-24029

BOISMARE, F.
Blockade of the different enzymatic steps in the synthesis of brain amines and memory /CAR/ in hypobaric hypoxic rats treated and untreated with L. Dopa
A80-21542

BOOZE, C. F.
The 1976 accident experience of civilian pilots with static physical defects
A80-21552

BORAH, J.
Optimal estimator model for human spatial orientation
A80-24265

BOURBON, P.
The effects of long-term intoxication by the inhalation of gaseous HF on myocardial cell metabolism and serum cardiac enzyme levels in guinea pigs
A80-22124

BOUTELIER, C.
The survival and protection of equipment in the event of accidental immersion in cold water
[AGARD-AG-211-FR] N80-17702

BOWMAN, D.
An ultrasonic plethysmograph for space flight applications
A80-21553

BRABEC, R.
Development of percutaneous energy transmission systems
[PB-299739/3] N80-16731

BRITVAN, I. I.
Objectives and conditions of physiological experiments on rats conducted aboard the Cosmos-936 biosatellite
N80-17677

BROADHURST, A. D.
The effect of propranolol on human psychomotor performance
A80-21550

BROOKS, D. E.
Method for separating biological cells
[NASA-CASE-MFS-23883-1] N80-16715

BROOKS, T. L.
Superman: A system for supervisory manipulation and the study of human/computer interactions
[PB-301290/3] N80-17716

BROWN, A. H.
Residual nutational activity of the sunflower hypocotyl in simulated weightlessness
A80-21984

BRUMBERG, V. A.
RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization
[NASA-TM-76032] N80-17670

BURKE, M. W.
Multi-modal information processing for visual workload relief
[NASA-CR-162720] N80-16737

BURKOVSKAYA, T. Y.
Test irradiation of chronically irradiated dogs for evaluation of hemopoietic system function
N80-17693

BYNUM, J. A.
Data analysis methodology for day/night inflight tactical navigation
A80-24050

C

CALLEY, D. J.
A study of occupational heat stress by analysis of environmental and human factors
N80-16735

CANN, C.
Noninvasive measures of bone bending rigidity in the monkey /M. nemestrina/
A80-21988

CARDON, S. Z.
Thermodynamic considerations in the support of life for long space voyages
[NASA-CR-162755] N80-16738

CARLSTEDT, L.
Improved pilot training through modification of selection and training procedures
[FOA-C-55029-H7] N80-17698
Compensatory and conjunctive processing of test information for prediction of results of military flight training
[FOA-C-55025-H7] N80-17703
Stepwise pilot selection: Procedure and validity
[FOA-C-55026-H7] N80-17704
The influence of the change of flight instruction and his ability upon the pupil's adaptation to flying
[FOA-C-55027-H8] N80-17705
Improved flight training methods
[FOA-C-55028-H8] N80-17706

CARTER, R. C., JR.
Visual search and color coding
A80-24044

CASNATI, E.
Intercomparison of ISS and BIPM primary exposure standards for medium energy X-rays
[ISS-R-79/3] N80-17700

CERANOWICZ, A. Z.
Planar biped dynamics and control
N80-16736

CHAPMAN, D. K.
Residual nutational activity of the sunflower hypocotyl in simulated weightlessness
A80-21984

CHASTAIN, G. D.
Effects of fatigue from wearing the AN/PVS-5 night vision goggles on skills involved in helicopter operations
[AD-A075426] N80-17714

CHEN, K.-M.
Heating of spherical versus realistic models of human and infrahuman heads by electromagnetic waves
A80-22989

CHEREMNYKH, P. A.
Effects of strong infralow-frequency magnetic fields on bone marrow cell division
N80-17687

CHESTUKHIN, V. V.
Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position
A80-21540

CHILDS, J. M.
The development of objective inflight performance assessment procedures
A80-24038

CIARKOWSKI, A. A.
Development of percutaneous energy transmission systems
[PB-299739/3] N80-16731

CLARK, J. W., JR.
A two-stage identification scheme for the determination of the parameters of a model of left heart and systemic circulation
A80-22972

COLE, J. S.
A two-stage identification scheme for the determination of the parameters of a model of left heart and systemic circulation
A80-22972

CONRAD, R. F.
Data analysis methodology for day/night inflight tactical navigation
A80-24050

CONNELLY, E. M.
Data analysis methodology for day/night inflight tactical navigation
A80-24050

CONSTABLE, S. H.
Training and acclimatization - Effects on responses to exercise in a desert environment
A80-21539

CRONNOVER, J. C.
Simulated weightlessness - Effects on bioenergetic balance
A80-21544

CURRY, R. E.
Optimal estimator model for human spatial orientation
A80-24265

D

DAGUE, R. R.
Anaerobic biological treatment of liquid wastes from pyrolysis processes
[COO-4455-2] N80-16723

DALY, H. D. T.
Development of precutaneous energy transmission
[PB-300518/8] N80-16732

DANDREA, J. A.
Part-body and multibody effects on absorption of radio-frequency electromagnetic energy by animals and by models of man
A80-22987

DAULERIO, L. A.
Bioman - An improved occupant-crew station compliance modeling system
A80-21549

DAVIS, D. R.
Pilot error - Some laboratory experiments
A80-23217

DAVYDOV, B. I.
Effects of accelerations on the early stage of radiation lesion in animals
N80-17692

DE LORGE, J.
Operant behavior and rectal temperature of squirrel monkeys during 2.45-GHz microwave irradiation
A80-22996

DEARNALEY, E. J.
Aircrew stress in wartime operations
A80-23208

DEMAIO, J.
Validation of an in flight performance measurement methodology - F-4 ground attack training evaluation
A80-24036

DEMIN, N. N.
Some neurochemical characteristics of rats during flight aboard the Cosmos-782 artificial satellite and after return to Earth
N80-17678

DHENIN, G.
Aviation medicine. Volume 1 - Physiology and human factors
A80-24525

DILLE, J. R.
The 1976 accident experience of civilian pilots with static physical defects
A80-21552

DINGUS, J.
Perturbation of induced rotation as an index of pattern structure
A80-24047

DINGUS, T.
Perturbation of induced rotation as an index of pattern structure
A80-24047

DODSON, D. W.
Development of display design and command usage guidelines for Spacelab experiment computer applications
A80-24031

DOYLE, T. E.
Whole-body vibration of heavy equipment operators
N80-16216

DREW, G. C.
An experimental study of mental fatigue
A80-23216

DURNEY, C. H.
A geometrical-optics and an exact solution for internal fields in and energy absorption by a cylindrical model of man irradiated by an electromagnetic plane wave
A80-22988

E

EDWARDS, B. J.
Development and application of a task taxonomy for tactical flying
A80-24035

EGGEMEIER, F. T.
Actual vs simulated equipment for aircraft maintenance training - Cost implications of the incremental vs the unique device
A80-24039

EGOROV, A. D.
Some problems of space medicine and international manned space flights
A80-22840

EICHINGER, D. C.
Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength
A80-22992

ELDER, J. A.
Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength
A80-22992

ELLIS, S.
Growth hormone control of glucose oxidation pathways in hypophysectomized rats
A80-24222

ELMASIAN, R.
Loudness enhancement and decrement in four paradigms
A80-23047

ENIGH, S. G.
Implanted energy conversion system
[PB80-101116] N80-16733

ENVALL, K. R.
Evaluation of commercially available laser protective eyewear
[PB80-103039] N80-16741

ETHEREDGE, J.
Trapped gas dysbarism requiring recompression therapy
A80-21551

EVANS, J. R., III
The effect of image quality on search for static and dynamic targets - MTFA-performance correlations
A80-24040

F

FAIRBANK, W. M.
The theory and application of magnetocardiography
A80-24348

FARLEY, W. W.
The effect of image quality on search for static and dynamic targets - MTFA-performance correlations
A80-24040

FARRER, E. W.
Large color differences and the geometry of Munsell color space
A80-24136

FELLER, D. D.
Growth hormone control of glucose oxidation pathways in hypophysectomized rats
A80-24222

FRAZER, R. E.
Apparatus for endoscopic examination
[NASA-CASE-NPO-14092-1] N80-16725

FREED, P. S.
Development of percutaneous energy transmission systems
[PB-299739/3] N80-16731

FRIESNER, R. A.
Theoretical studies of the light reactions in photosynthesis
N80-16717

FRISCH, G. D.
Bioman - An improved occupant-crew station compliance modeling system
A80-21549

G

GALAKTIONOVA, G. V.
Effects of strong infralow-frequency magnetic fields on bone marrow cell division
N80-17687

GALAMBOS, R.
Loudness enhancement and decrement in four paradigms
A80-23047

GANDHI, O. P.
Part-body and multibody effects on absorption of radio-frequency electromagnetic energy by animals and by models of man
A80-22987

GAVRILYUK, D. N.
Effects of accelerations on the early stage of radiation lesion in animals
N80-17692

GAZENKO, O. G.
Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position
A80-21540
USSR Report: Space Biology and Aerospace Medicine, volume 14, no. 6, 1979
[JPRS-75041] N80-17674
Some neurochemical characteristics of rats during flight aboard the Cosmos-782 artificial satellite and after return to Earth
N80-17678

GEORGIYEVSKIY, V. S.
Electrostimulation of muscles for the prevention of neuromuscular disorders during 45-day antiorthostatic hypokinesia
N80-17682

GHISTA, D. N.
Cardiograms: Theory and applications
A80-24347
Phonocardiography - Analyses of instrumentation, and vibration of heart structures to determine their constitutive properties
A80-24349

GILSON, R. D.
Multi-modal information processing for visual workload relief
[NASA-CR-162720] N80-16737

GOODMAN, E. M.
Extremely-low-frequency fields and the slime mold Physarum polycephalum - Evidence of depressed cellular function and of internuclear interaction
A80-22993

GORGILADZE, G. I.
Influence of mobility restriction on habituation of the vestibular apparatus
[NASA-TM-75995] N80-17669

GRAFFUNDER, K.
Evaluation of a pilot workload metric for simulated VTOL landing tasks
A80-24042

GRAHAM, T.
Effect of alcohol ingestion on man's thermoregulatory responses during cold water immersion
A80-21548

GRANDOLFO, M.
Proposed national exposure limits for microwave and radiofrequency radiation
[ISS-P-79/2] N80-17699

GRAY, D. H.
Implanted energy conversion system
[PB80-101116] N80-16733

GRAY, R.
Development of percutaneous energy transmission systems
[PB-299739/3] N80-16731

GREENEBAUM, B.
Extremely-low-frequency fields and the slime mold Physarum polycephalum - Evidence of depressed cellular function and of internuclear interaction
A80-22993

GRIGGS, E. B.
Effect of pretraining criterion on flight simulator and secondary cognitive task performance
A80-24034

GRIGORYEV, A. I.
Effects of minimal gravitational loads on fluid-electrolyte metabolism and renal function of man during prolonged immersion
N80-17679

GUROVSKII, N. N.
Some problems of space medicine and international manned space flights
A80-22840

GUTH, S. L.
Vector model for normal and dichromatic color vision
A80-24135

GUTMANN, J. C.
The effect of image quality on search for static and dynamic targets - MTFA-performance correlations
A80-24040

GUY, A. W.
Circularly polarized 2450-MHz waveguide system for chronic exposure of small animals to microwaves
A80-22990

H

HAAN, A. L.
Training and acclimatization - Effects on responses to exercise in a desert environment
A80-21539

HAENEL, G.
Deposition of hygroscopic atmospheric aerosol particles in the human respiratory tract
A80-23745

HAGMANN, M. J.
Part-body and multibody effects on absorption of radio-frequency electromagnetic energy by animals and by models of man
A80-22987

HALSTEAD, R. H., JR.
Reference tree networks: Virtual machine and implementation
[AD-A076570] N80-17713

HARRIS, D. A.
Peripheral vision and tracking performance under stress
A80-24046

HARRISON, E. A.
The toxicology of ozone. A bibliography with abstracts
[PB80-800881] N80-17701
Information processing in humans, volume 3. A bibliography with abstracts
[PB80-800931] N80-17707

HEARN, T.
Phonocardiography - Analyses of instrumentation, and vibration of heart structures to determine their constitutive properties
A80-24349

HEINO, M.
Permeability changes in cerebral, iridic, and retinal vessels during experimental decompression sickness in the rat
A80-21545

HELMS, R.
Prosthetic device for correction of urinary incontinence
[NASA-TM-78255] N80-16739

HENNESSY, R. T.
Air combat maneuvering performance measurement
A80-24037

HEUSNER, W. W.
Space flight research relevant to health, physical education, and recreation: With particular reference to Skylab's life science experiments
[NASA-EP-148] N80-17697

HEYDER, J.
Deposition of hygroscopic atmospheric aerosol particles in the human respiratory tract
A80-23745

HILL, A. B.
An investigation of landing accidents in relation to fatigue
A80-23214

HOLMAN, G. L.
Data analysis methodology for day/night inflight tactical navigation
A80-24050

HOSLER, W. W.
Man-machine analysis of translation and work tasks of Skylab films
A80-24029

HOUSE, D. E.
Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength
A80-22992

HOWARD, W. H.
Noninvasive measures of bone bending rigidity in the monkey /M. nemestrina/
A80-21988

HURT, W. D.
Calorimetric measurements of microwave energy absorption by mice after simultaneous exposure of 18 animals
A80-22985

I

IBERALL, A. S.
Thermodynamic considerations in the support of life for long space voyages
[NASA-CR-162755] N80-16738

ILIN, Y. A.
Objectives and conditions of physiological experiments on rats conducted aboard the Cosmos-936 biosatellite
N80-17677

ILINSKAYA, Y. A.
Electrostimulation of muscles for the prevention of neuromuscular disorders during 45-day antiorthostatic hypokinesia
N80-17682

INCHINA, V. I.
Effect of rheopolyglucin on blood clotting factors of the aorta, myocardium and venae cavae during hypokinesia
N80-17691

IRVINE, W. M.
Thermal history, chemical composition and relationship of comets to the origin of life
A80-24492

IVANONA, L. I.
Dynamics of change in rat arterial pressure under conditions of immobilization
[NASA-TM-76045] N80-17672

J

JACKSON, J. T.
Man-machine analysis of translation and work tasks of Skylab films
A80-24029

JAGACINSKI, R. J.
Multi-modal information processing for visual workload relief
[NASA-CR-162720] N80-16737

JEFFERS, E. L.
Method and apparatus for eliminating luminol interference material
[NASA-CASE-MSC-16260-1] N80-16714

JEFFRIES, H. P.
Biochemical correlates of seasonal change in marine communities
[PB-301380/2] N80-17673

JENSEN, R. S.
Prediction and quickening in perspective flight displays for curved landing approaches
A80-24048

JOHANSSON, F. P.
Improved flight training methods
[FOA-C-55028-H8] N80-17706

JOHNSON, C. C.
A geometrical-optics and an exact solution for internal fields in and energy absorption by a cylindrical model of man irradiated by an electromagnetic plane wave
A80-22988

JOHNSTON, R. P.
Implanted energy conversion system
[PB80-101116] N80-16733

JONES, R.
Perturbation of induced rotation as an index of pattern structure
A80-24047

JONES, R. H.
Effects of exercise training on left ventricular function in normal subjects - A longitudinal study by radionuclide angiography
A80-23975

JORDAN, D. P.
Simulated weightlessness - Effects on bioenergetic balance
A80-21544

JORDAN, J. P.
Simulated weightlessness - Effects on bioenergetic balance
A80-21544

K

KADABA, M. P.
An ultrasonic plethysmograph for space flight applications
A80-21553

KAKURIN, L. I.
Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position
A80-21540

KAMFORINA, S. A.
Creatinuria in man during prolonged hypokinesia
N80-17680

KANTOLA, I.
Permeability changes in cerebral, iridic, and retinal vessels during experimental decompression sickness in the rat
A80-21545

KANTROWITZ, A.
Development of percutaneous energy transmission systems
[PB-299739/3] N80-16731

KASIMTSEV, A. A.
Effect of gravitational overloads, hypokinesia and hypodynamia on the vessels of the pulmonary blood circuit
[NASA-TM-75963] N80-17667

KATKOV, V. E.
Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position
A80-21540

KAZANSKAYA, G. S.
Influence of mobility restriction on habituation of the vestibular apparatus
[NASA-TM-75995] N80-17669

KEIL, L. C.
Growth hormone control of glucose oxidation pathways in hypophysectomized rats
A80-24222

KELLY, M. J.
Air combat maneuvering performance measurement
A80-24037

KENNEDY, R. S.
Development of Performance Evaluation Tests for Environmental Research /PETER/ - Complex counting test
A80-21546

KHOLODOV, Y. M.
Effect of vestibular stimuli on visual tracking in a limited tracking area
N80-17683

KIMBALL, K. A.
Operator visual workload shifts as a function of vehicle stability
A80-24041

KIRICHEK, L. T.
Morphological and functional manifestations of rat adrenal-cortex response to sodium bromide administration under hypodynamic stress
[NASA-TM-75953] N80-16719

KLIMOVSKAYA, L. D.
Study of bioelectric activity of neuro-muscular and sympathetic systems during exposure to a steady magnetic field
N80-17686

KOLOMENSKII, A. I.
Changes in the neuromotor system during 45 days of hypokinesia
N80-17681

KONDRATYEVA, V. A.
Objectives and conditions of physiological experiments on rats conducted aboard the Cosmos-936 biosatellite
N80-17677

KONIKOVA, N. S.
Simulation of walking under conditions of weightlessness
A80-21094

KONITZER, K.
Glucose metabolism in different regions of the rat brain under hypokinetic stress influence
[NASA-TM-75949] N80-16718

KOPALA, C. J.
The use of color-coded symbols in a highly dense situation display
A80-24045

KOROLKOV, V. I.
Objectives and conditions of physiological experiments on rats conducted aboard the Cosmos-936 biosatellite
N80-17677

KOTOVSKAIA, A. R.
Objectives and conditions of physiological experiments on rats conducted aboard the Cosmos-936 biosatellite
N80-17677

KROTOVA, S. B.
Study of bioelectric activity of neuro-muscular and sympathetic systems during exposure to a steady magnetic field
N80-17686

KSANFOMALITI, L. V.
New studies of Venus
[NASA-TM-75931] N80-17666

KUDALA, A. L.
Effects of fatigue from wearing the AN/PVS-5 night vision goggles on skills involved in helicopter operations
[AD-A075426] N80-17714

KUDRYASHOV, B. A.
The significance of ACTH for the process of formation of complex heparin compounds in the blood during immobilization stress
[NASA-TM-75946] N80-16727

KUMAR, P.
System design features of the Space Shuttle remote manipulator
A80-23993

KURKINA, L. N.
Effect of steady magnetic field on some aspects of energy and nitrogen metabolism in the rat cerebral hemispheres
N80-17690

KURTENBACH, W.
Adapting to two orientations - Disinhibition in a visual aftereffect
A80-22967
Linear summation of tilt illusion and tilt aftereffect
A80-22969

KUSTOV, V. V.
Effect of carbon monoxide on animals adapted to hypoxic hypoxia
N80-17689

KUZNETSOV, V. I.
Catecholamines and myocardial contractile function during hypodynamia and with an altered thyroid hormone balance
[NASA-TM-76000] N80-16720

L

LAFFERTY, J. F.
An ultrasonic plethysmograph for space flight applications
A80-21553

LAITINEN, L. A.
Permeability changes in cerebral, iridic, and retinal vessels during experimental decompression sickness in the rat
A80-21545

LAU, C.
Utilization of energy maneuverability data in improving in-flight performance and performance in air combat maneuvering
A80-24049

LAWSON, J. I.
Development and application of a task taxonomy for tactical flying
A80-24035

LE PONCIN-LAFITTE, M.
Blockade of the different enzymatic steps in the synthesis of brain amines and memory /CAR/ in hypobaric hypoxic rats treated and untreated with L. Dopa
A80-21542

LEGENKOV, V. I.
Composition of intestinal microflora of cosmonauts before and after space flights
N80-17676

LEHTO, V.-P.
Permeability changes in cerebral, iridic, and retinal vessels during experimental decompression sickness in the rat
A80-21545

LEIFER, M. C.
The theory and application of magnetocardiography
A80-24348

LESCHINE, S. B.
Thermal history, chemical composition and relationship of comets to the origin of life
A80-24492

LETHOSALO, J.
Permeability changes in cerebral, iridic, and retinal vessels during experimental decompression sickness in the rat
A80-21545

LEVERE, T. E.
Arousal from sleep: The uniqueness of an individual's response and the problem of noise control
[NASA-CR-162747] N80-17695

LEWIS, J. L.
Operator Station Design System - A computer aided design approach to work station layout
A80-24028

LING, R. Y. S.
A two-stage identification scheme for the determination of the parameters of a model of left heart and systemic circulation
A80-22972

LITAU, V. G.
Effect of carbon monoxide on animals adapted to hypoxic hypoxia
N80-17689

LIZKO, N. N.
Composition of intestinal microflora of cosmonauts before and after space flights
N80-17676

LOMOVSKAIA, F. B.
The significance of ACTH for the process of formation of complex heparin compounds in the blood during immobilization stress
[NASA-TM-75946] N80-16727

LYAPINA, L. A.
The significance of ACTH for the process of formation of complex heparin compounds in the blood during immobilization stress
[NASA-TM-75946] N80-16727

M

MAGNUSSEN, S.
Adapting to two orientations - Disinhibition in a visual aftereffect
A80-22967
Linear summation of tilt illusion and tilt aftereffect
A80-22969

MALMIVUO, J. A. V.
The theory and application of magnetocardiography
A80-24348

MARIUTTI, G.
Proposed national exposure limits for microwave and radiofrequency radiation
[ISS-P-79/2] N80-17699

MARKELOV, B. A.
Test irradiation of chronically irradiated dogs for evaluation of hemopoietic system function
N80-17693

MARRON, M. T.
Extremely-low-frequency fields and the slime mold Physarum polycephalum - Evidence of depressed cellular function and of internuclear interaction
A80-22993

MARX, G. F.
Factors influencing specific growth rates and seasonal abundance of eutrophic lake phytoplankton
N80-16716

MASSOF, R. W.
Vector model for normal and dichromatic color vision
A80-24135

MASSOUDI, H.
A geometrical-optics and an exact solution for internal fields in and energy absorption by a cylindrical model of man irradiated by an electromagnetic plane wave
A80-22988

MATVEYEV, V. I.
Electrostimulation of muscles for the prevention of neuromuscular disorders during 45-day antiorthostatic hypokinesia
N80-17682

MAZUMDAR, J.
Phonocardiography - Analyses of instrumentation, and vibration of heart structures to determine their constitutive properties
A80-24349

MCCOY, D. F.
Comparison of two techniques for the development and maintenance of tracking behavior in monkeys
A80-21541

MCDOUGALL, J. A.
Circularly polarized 2450-MHz waveguide system for chronic exposure of small animals to microwaves
A80-22990

MCGLYNN, S. P.
Physio-chemical investigation of some areas of fundamental significance to biophysics
[ORO-3018-T1] N80-16721

MCKAY, K. E., JR.
Effect of pretraining criterion on flight simulator and secondary cognitive task performance
A80-24034

MCMILLIN, C. R.
Physical testing of polymers for use in circulatory assist devices
[PB80-101546] N80-16740

MELKANI, D. D.
'Acetonitrile' - A plausible source of amino acids on the primitive earth
A80-21781

MEYER, R. P.
Development and application of a task taxonomy for tactical flying
A80-24035

MIKHAILOV, V. M.
Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position
A80-21540

MIKHAYLOV, V. M.
Electrostimulation of muscles for the prevention of neuromuscular disorders during 45-day antiorthostatic hypokinesia
N80-17682

MILLER, J. M.
Additivity of fusional vergence and pursuit eye movements
A80-22970
Information used by the perceptual and oculomotor systems regarding the amplitude of saccadic and pursuit eye movements
A80-22971

MORGAN, T.
Modeling pilot response delays to beacon collision avoidance system commands
[AD-A075946] N80-16734

MORONEY, W. F.
Utilization of energy maneuverability data in improving in-flight performance and performance in air combat maneuvering
A80-24049

MORROW, J. R., JR.
Man-machine analysis of translation and work tasks of Skylab films
A80-24029

MURRAY, R., JR.
Evaluation of commercially available laser protective eyewear
[PB80-103039] N80-16741

N

NALLAN, G. B.
Comparison of two techniques for the development and maintenance of tracking behavior in monkeys
A80-21541

NASONOV, A. S.
Programmed control of the autotrophic component of an ecological system that is closed with regard to exchange of gases
N80-17688

NATAUPSKY, M.
Effect of pretraining criterion on flight simulator and secondary cognitive task performance
A80-24034

NESVETOV, V. N.
Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position
A80-21540

NEVILLE, E. D.
Growth hormone control of glucose oxidation pathways in hypophysectomized rats
A80-24222

NIKITIN, M. V.
Effect of gravitational acceleration, hypokinesia and hypodynamia on the structure of the intestinal vascular bed
[NASA-TM-75972] N80-17668

NOBLE, J. R.
Implanted energy conversion system
[PB80-101116] N80-16733

NORTH, R. A.
Evaluation of a pilot workload metric for simulated VTOL landing tasks
A80-24042

NOSKIN, A. D.
Objectives and conditions of physiological experiments on rats conducted aboard the Cosmos-936 biosatellite
N80-17677

NOSOVA, Y. A.
Effect of steady magnetic field on some aspects of energy and nitrogen metabolism in the rat cerebral hemispheres
N80-17690

O

ODKVIST, L. M.
Oxygenation and ambient air pressure influences on alcohol-induced nystagmus in rabbits
A80-21543

ONO, H.
Additivity of fusional vergence and pursuit eye movements
A80-22970

OOSTERVELD, W. J.
Oxygenation and ambient air pressure influences on alcohol-induced nystagmus in rabbits
A80-21543

OREMLAND, R. S.
Microbial sulfate reduction measured by an automated electrical impedance technique
A80-21982

OROFINO, T. A.
Physical testing of polymers for use in circulatory assist devices
[PB80-101546] N80-16740

P

PACE, G. M.
Comparison of two techniques for the development and maintenance of tracking behavior in monkeys
A80-21541

PALAZHCHENKO, E. F.
Effect of gravitation stress and hypokinesia on blood vessels of the testicle
[NASA-TM-75942] N80-16726

PALMER, G.
Perturbation of induced rotation as an index of pattern structure
A80-24047

PANOV, A. N.
Some neurochemical characteristics of rats during flight aboard the Cosmos-782 artificial satellite and after return to Earth N80-17678

PANT, A. K.
'Acetonitrile' - A plausible source of amino acids on the primitive earth A80-21781

PAPE, G. L.
Development and application of a task taxonomy for tactical flying A80-24035

PATHAK, H. D.
'Acetonitrile' - A plausible source of amino acids on the primitive earth A80-21781

PERVUSHIN, V. I.
Electrostimulation of muscles for the prevention of neuromuscular disorders during 45-day antiorthostatic hypokinesia N80-17682

PEVZNER, L. A.
RNA content in motor and sensory neurons and surrounding neuroglia of mouse spinal cord under conditions of hypodynamia and following normalization
[NASA-TM-76032] N80-17670

PHILIPP, U.
An evaluation of heart rate during activity of high psychological and physiological stress A80-21851

PHILLIBERT, C.
The effects of long-term intoxication by the inhalation of gaseous HF on myocardial cell metabolism and serum cardiac enzyme levels in guinea pigs A80-22124

PIERCE, B. J.
Validation of an in flight performance measurement methodology - F-4 ground attack training evaluation A80-24036

PITYK, N. I.
Role of interoceptive afferentation in function of the cortex of the visual analyzer N80-17684

POEY, J.
The effects of long-term intoxication by the inhalation of gaseous HF on myocardial cell metabolism and serum cardiac enzyme levels in guinea pigs A80-22124

PRUETT, R. C.
A two-stage identification scheme for the determination of the parameters of a model of left heart and systemic circulation A80-22972

PRUITT, R.
Utilization of energy maneuverability data in improving in-flight performance and performance in air combat maneuvering A80-24049

PROSS, G. N.
Catecholamines and myocardial contractile function during hypodynamia and with an altered thyroid hormone balance
[NASA-TM-76000] N80-16720

PUGLIANI, L.
Intercomparison of ISS and BIPM primary exposure standards for medium energy X-rays
[ISS-R-79/3] N80-17700

Q

QASSAR, I. G.
Influence of x irradiation and diet on pituitary/thyroid function in the rat
[UR-3490-1674] N80-16722

QUIMBY, F. W.
Development of precutaneous energy transmission
[PB-300518/8] N80-16732

R

RAPIN, J. R.
Blockade of the different enzymatic steps in the synthesis of brain amines and memory /CAR/ in hypobaric hypoxic rats treated and untreated with L. Dopa A80-21542

RASHEVSKAYA, D. A.
Some neurochemical characteristics of rats during flight aboard the Cosmos-782 artificial satellite and after return to Earth N80-17678

RAZGOVOROV, B. L.
Effects of accelerations on the early stage of radiation lesion in animals N80-17692

REED, J. C.
Air combat maneuvering performance measurement A80-24037

REID, D. D.
The historical background to wartime research in psychology in the Royal Air Force A80-23209
The influence of psychological disorder on efficiency in operational flying A80-23211
Fluctuations in navigator performance during operational sorties A80-23212
Some measures of the effect of operational stress on bomber crews A80-23213

RERYCH, S. K.
Effects of exercise training on left ventricular function in normal subjects - A longitudinal study by radionuclide angiography A80-23975

REUL, H.
Cardiograms: Theory and applications A80-24347

RIOUFOL, C.
The effects of long-term intoxication by the inhalation of gaseous HF on myocardial cell metabolism and serum cardiac enzyme levels in guinea pigs A80-22124

RUBINSKAYA, N. L.
Some neurochemical characteristics of rats during flight aboard the Cosmos-782 artificial satellite and after return to Earth N80-17678

RUKSPOLLMUANG, S.
Heating of spherical versus realistic models of human and infrahuman heads by electromagnetic waves A80-22989
Interaction of electromagnetic fields with heterogeneous biological systems N80-17665

S

SABISTON, D. C., JR.
Effects of exercise training on left ventricular function in normal subjects - A longitudinal study by radionuclide angiography A80-23975

SALVADORI, P.
Intercomparison of ISS and BIPM primary exposure standards for medium energy X-rays
[ISS-R-79/3] N80-17700

SAOUTHI, H.
The effects of long-term intoxication by the inhalation of gaseous HF on myocardial cell metabolism and serum cardiac enzyme levels in guinea pigs A80-22124

SCHATTE, C. L.
Simulated weightlessness - Effects on bioenergetic balance A80-21544

SCHLOERB, F. P.
Thermal history, chemical composition and relationship of comets to the origin of life A80-24492

SCHMIDT, S. D.
Effect of pretraining criterion on flight simulator and secondary cognitive task performance
A80-24034

SCHOLL, D. M.
Skilled visual-motor performance by monkeys in a 1.2-GHz microwave field
A80-22997

SCHOLZ, P. M.
Effects of exercise training on left ventricular function in normal subjects - A longitudinal study by radionuclide angiography
A80-23975

SCHWANK, J. C. H.
Effect of pretraining criterion on flight simulator and secondary cognitive task performance
A80-24034

Peripheral vision and tracking performance under stress
A80-24046

SHAPIRO, F. B.
The significance of ACTH for the process of formation of complex heparin compounds in the blood during immobilization stress
[NASA-TM-75946] N80-16727

SHAPOSHNIKOV, Y. A.
Changes in the neuromotor system during 45 days of hypokinesia
N80-17681

SHEPPARD, A. R.
Models of long-range order in cerebral macromolecules - Effects of sub-ELF and of modulated VHF and UHF fields
A80-22994

SHEPPARD, D. L.
Physical testing of polymers for use in circulatory assist devices
[PB80-101546] N80-16740

SHERIDAN, T. B.
Superman: A system for supervisory manipulation and the study of human/computer interactions
[PB-301290/3] N80-17716

SHIELDS, N. L., JR.
Development of display design and command usage guidelines for Spacelab experiment computer applications
A80-24031

SHILOV, V. M.
Composition of intestinal microflora of cosmonauts before and after space flights
N80-17676

SHIPOV, A. A.
Objectives and conditions of physiological experiments on rats conducted aboard the Cosmos-936 biosatellite
N80-17677

SHOENBERGER, R. W.
Research related to the expansion and improvement of human vibration exposure criteria
N80-16217

SHULZHENKO, Y. B.
Effects of minimal gravitational loads on fluid-electrolyte metabolism and renal function of man during prolonged immersion
N80-17679

SHUMAKOV, V. I.
Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position
A80-21540

SHVETS, V. N.
Differentiation and radiosensitivity of hemopoietic stem cells of mice during hypokinesia
[NASA-TM-76066] N80-17671

SIDOROV, P. I.
Changes in the neuromotor system during 45 days of hypokinesia
N80-17681

SILVERMAN, M. P.
Microbial sulfate reduction measured by an automated electrical impedance technique
A80-21982

SIMMONS, J. B., II
Simulated weightlessness - Effects on bioenergetic balance
A80-21544

SIMMONS, R. R.
Operator visual workload shifts as a function of vehicle stability
A80-24041

SKOTSELYAS, Y. G.
Dynamics of change in rat arterial pressure under conditions of immobilization
[NASA-TM-76045] N80-17672

SMITH, W. J.
A review of literature relating to visual fatigue
A80-24043

SNYDER, H. L.
The effect of image quality on search for static and dynamic targets - MTFA-performance correlations
A80-24040

SRINIVASAN, R.
A two-stage identification scheme for the determination of the parameters of a model of left heart and systemic circulation
A80-22972

STEELE, C. R.
Noninvasive measures of bone bending rigidity in the monkey /M. nemestrina/
A80-21988

STEINBACH, M. J.
Additivity of fusional vergence and pursuit eye movements
A80-22970

STRZHIZHOVSKII, A. D.
Effects of strong infralow-frequency magnetic fields on bone marrow cell division
N80-17687

SUZUMURA, N.
Phonocardiography - Analyses of instrumentation, and vibration of heart structures to determine their constitutive properties
A80-24349

SYKES, H. A.
Simulated weightlessness - Effects on bioenergetic balance
A80-21544

SYMONDS, C. P.
Clinical and statistical study of neurosis precipitated by flying duties
A80-23210

The psychological aspects of airsickness
A80-23215

SYRYKH, G. D.
Composition of intestinal microflora of cosmonauts before and after space flights
N80-17676

SZYCHER, M.
Development of precutaneous energy transmission
[PB-300518/8] N80-16732

T

TAYLOR, R. M.
Large color differences and the geometry of Munsell color space
A80-24136

TERVO, T.
Permeability changes in cerebral, iridic, and retinal vessels during experimental decompression sickness in the rat
A80-21545

THOMAS, R. R.
Method and apparatus for eliminating luminol interference material
[NASA-CASE-MSC-16260-1] N80-16714

THUERLER, R.
Physiological response to hyper- and hypogravity during rollercoaster flight
A80-21547

TIGRANYAN, R. A.
Some neurochemical characteristics of rats during flight aboard the Cosmos-782 artificial satellite and after return to Earth
N80-17678

TOMEK, I.
Ballistocardiography - Principles, simulation, applications
A80-24350

TOROPTSOV, V. S.
Programmed control of the autotrophic component of an ecological system that is closed with regard to exchange of gases
N80-17688

TROSHIN, A. Z.
Central circulation and metabolism of the healthy man during postural exposures and arm exercise in the head-down position
A80-21540

TRUSS, P.
System design features of the Space Shuttle remote manipulator
A80-23993

V

VAN VOLLENHOVEN, E.
Cardiograms: Theory and applications
A80-24347
Phonocardiography - Analyses of instrumentation, and vibration of heart structures to determine their constitutive properties
A80-24349

VANHUSS, W. D.
Space flight research relevant to health, physical education, and recreation: With particular reference to Skylab's life science experiments
[NASA-EP-148] N80-17697

VASILEVSKII, N. N.
Ecological physiology of the brain
A80-21421

VAUGHAN, F. L.
Development of percutaneous energy transmission systems
[PB-299739/3] N80-16731

VENUTI, G. C.
Proposed national exposure limits for microwave and radiofrequency radiation
[ISS-P-79/2] N80-17699

VESHANCKY, J. I.
Development of percutaneous energy transmission systems
[PB-299739/3] N80-16731

VESTERWIG, R. E.
Actual vs simulated equipment for aircraft maintenance training - Cost implications of the incremental vs the unique device
A80-24039

VINOGRADOVA, Z. A.
Insoluble collagen content of dog tissues after exposure to low doses of chronic gamma radiation
N80-17694

VOGEL, H.
Physiological response to hyper- and hypogravity during rollercoaster flight
A80-21547

VOIGT, S.
Glucose metabolism in different regions of the rat brain under hypokinetic stress influence
[NASA-TM-75949] N80-16718

VON BAUMGARTEN, R. J.
Physiological response to hyper- and hypogravity during rollercoaster flight
A80-21547

W

WAGNER-BARTAK, C. G.
System design features of the Space Shuttle remote manipulator
A80-23993

WALLACE, J.
Circularly polarized 2450-MHz waveguide system for chronic exposure of small animals to microwaves
A80-22990

WARD, F.
Perturbation of induced rotation as an index of pattern structure
A80-24047

WARR, P. B.
Aircrew stress in wartime operations
A80-23208

WARREN, R. G.
Development of precutaneous energy transmission
[PB-300518/8] N80-16732

WASSERMAN, D. E.
Whole-body vibration of heavy equipment operators
N80-16216

WEIL, C. M.
Induction of calcium-ion efflux from brain tissue by radio-frequency radiation - Effects of modulation frequency and field strength
A80-22992

Contraction of smooth muscle in a microwave field
A80-22995

WELLS, C. L.
Training and acclimatization - Effects on responses to exercise in a desert environment
A80-21539

WEWERINKE, P. H.
The visual scene perception process involved in manual approach landing
[NLR-TR-78130-U] N80-17715

WHITCOMB, E. R.
Contraction of smooth muscle in a microwave field
A80-22995

WIKSWO, J. P., JR.
The theory and application of magnetocardiography
A80-24348

WILLIAMS, D. J.
Clinical and statistical study of neurosis precipitated by flying duties
A80-23210
The psychological aspects of airsickness
A80-23215

WILLIAMS, G. O.
An investigation of landing accidents in relation to fatigue
A80-23214

WILSON, T.
Trapped gas dysbarism requiring recompression therapy
A80-21551

WINDLE, J.
Modeling pilot response delays to beacon collision avoidance system commands
[AD-A075946] N80-16734

WOOLDRIDGE, A. L.
Air combat maneuvering performance measurement
A80-24037

WORTHINGTON, M.
Development of precutaneous energy transmission
[PB-300518/8] N80-16732

Y

YANG, W.-J.
Cardiograms: Theory and applications
A80-24347

YANOV, Y. K.
Effect of vestibular stimuli on visual tracking in a limited tracking area
N80-17683

YATES, D.
Validation of an in flight performance measurement methodology - F-4 ground attack training evaluation
A80-24036

YOUNG, D. R.
Noninvasive measures of bone bending rigidity in the monkey /M. nemestrina/
A80-21988

YOUNG, L. R.
Optimal estimator model for human spatial orientation
A80-24265

YUMATOV, E. A.
Dynamics of change in rat arterial pressure under conditions of immobilization
[NASA-TM-76045] N80-17672

Z

ZACKS, S.
Empirical Bayes estimation of critical dosages having smallest predictive risk
[AD-A074376] N80-16729

ZHILINSKAYA, A. A.
Catecholamines and myocardial contractile function during hypodynamia and with an altered thyroid hormone balance
[NASA-TM-76000] N80-16720

ZHOLUDEVA, V. I.
Morphological and functional manifestations of rat adrenal-cortex response to sodium bromide administration under hypodynamic stress
[NASA-TM-75953] N80-16719

1. Report No. NASA-SP-7011 (206)	**2. Government Accession No.**	**3. Recipient's Catalog No.**
4. Title and Subtitle AEROSPACE MEDICINE AND BIOLOGY A Continuing Bibliography (Supplement 206)		**5. Report Date** May 1980
		6. Performing Organization Code
7. Author(s)		**8. Performing Organization Report No.**
		10. Work Unit No.
9. Performing Organization Name and Address National Aeronautics and Space Administration Washington, D. C. 20546		**11. Contract or Grant No.**
		13. Type of Report and Period Covered
12. Sponsoring Agency Name and Address		**14. Sponsoring Agency Code**

15. Supplementary Notes

16. Abstract

This bibliography lists 169 reports, articles, and other documents introduced into the NASA scientific and technical information system in April 1980.

17. Key Words (Suggested by Author(s)) Aerospace Medicine Bibliographies Biological Effects	**18. Distribution Statement** Unclassified - Unlimited

19. Security Classif. (of this report) Unclassified	**20. Security Classif. (of this page)** Unclassified	**21. No. of Pages** 54	**22. Price*** $7.00 HC

*For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1980

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to eleven special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley

COLORADO
University of Colorado, Boulder

DISTRICT OF COLUMBIA
Library of Congress

GEORGIA
Georgia Institute of Technology, Atlanta

ILLINOIS
The John Crerar Library, Chicago

MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge

MISSOURI
Linda Hall Library, Kansas City

NEW YORK
Columbia University, New York

OKLAHOMA
University of Oklahoma, Bizzell Library

PENNSYLVANIA
Carnegie Library of Pittsburgh

WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library

COLORADO
Denver Public Library

CONNECTICUT
Hartford Public Library

MARYLAND
Enoch Pratt Free Library, Baltimore

MASSACHUSETTS
Boston Public Library

MICHIGAN
Detroit Public Library

MINNESOTA
Minneapolis Public Library

MISSOURI
Kansas City Public Library
St. Louis Public Library

NEW JERSEY
Trenton Public Library

NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library

OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library

TENNESSEE
Memphis Public Library

TEXAS
Dallas Public Library
Fort Worth Public Library

WASHINGTON
Seattle Public Library

WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019.

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy of microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESA - Information Retrieval Service, European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

U.S.MAIL

NASA

POSTMASTER: If Undeliverable (Section 158 Postal Manual) Do Not Return

---

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP-7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP-7037	AERONAUTICAL ENGINEERING Engineering, design, and operation of aircraft and aircraft components	Monthly
NASA SP-7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP-7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP-7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP-7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Washington, D.C. 20546

7011 (207)

NASA

Aerospace Medicine and Biology
A Continuing
Bibliography
with Indexes

NASA SP-7011 (207)
June 1980

NEWARK PUBLIC LIBRARY

JUL 22 1980

U. S. GOVT. PUBS.
DEPOSITORY 376

National Aeronautics and
Space Administration

NASA SP-7011 (207)

Aerospace Medicine and Biology
A Continuing Bibliography with Indexes

Pages 97-121

June 1980

Aerospace Medicine & Biolog
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi
ine & Biology Aerospace Medi
ce Medicine & Biology Aerospa
Aerospace Medicine & Biology
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi

NAS 1.21:

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series)	N80-17981 – N80-20022
IAA (A-10000 Series)	A80-24721 – A80-28952

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by PRC Data Services Company.

NASA SP-7011(207)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 207)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in May 1980 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*

NASA Scientific and Technical Information Branch 1980
National Aeronautics and Space Administration
Washington, DC

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This Supplement is available from the National Technical Information Service (NTIS), Springfield, Virginia 22161, at the price $7.00 domestic; $14.00 foreign.

INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 184 reports, articles and other documents announced during May 1980 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1980 Supplements.

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A80-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies of accessions are available at $7.00 per document up to a maximum of 40 pages. The charge for each additional page is $0.25. Microfiche (1) of documents announced in *IAA* are available at the rate of $3.00 per microfiche on demand, and at the rate of $1.25 per microfiche for standing orders for all *IAA* microfiche. The price for the *IAA* microfiche by category is available at the rate of $1.50 per microfiche plus a $1.00 service charge per category per issue. Microfiche of all the current AIAA Meeting Papers are available on a standing order basis at the rate of $1.50 per microfiche.

Minimum air-mail postage to foreign countries is $1.00 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

STAR ENTRIES (N80-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page vii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the * symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard $3.50 price, for those documents identified by a # symbol.)

---

(1) A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts*. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: Fachinformationszentrum, Karlsruhe. Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM).

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: U.S. Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free.

Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is $65.00 domestic; $130.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics
and Astronautics
Technical Information Service
555 West 57th Street, 12th Floor
New York, New York 10019

British Library Lending Division,
Boston Spa, Wetherby, Yorkshire,
England

Commissioner of Patents and
Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service
ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Scientific and Technical Information
Facility
P.O. Box 8757
B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Branch (NST-41)
Washington, D.C. 20546

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, California 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey
1033 General Services Administration
Building
Washington, D.C. 20242

U.S. Geological Survey
601 E. Cedar Avenue
Flagstaff, Arizona 86002

U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

U.S. Geological Survey
Bldg. 25, Denver Federal Center
Denver, Colorado 80225

Fachinformationszentrum Energie, Physik,
Mathematik GMBH
7514 Eggenstein Leopoldshafen
Federal Republic of Germany

NTIS PRICE SCHEDULES

Schedule A
STANDARD PAPER COPY PRICE SCHEDULE

(Effective January 1, 1980)

Price Code	Page Range	North American Price	Foreign Price
A01	Microfiche	$ 3.50	$ 5.25
A02	001-025	5.00	10.00
A03	026-050	6.00	12.00
A04	051-075	7.00	14.00
A05	076-100	8.00	16.00
A06	101-125	9.00	18.00
A07	126-150	10.00	20.00
A08	151-175	11.00	22.00
A09	176-200	12.00	24.00
A10	201-225	13.00	26.00
A11	226-250	14.00	28.00
A12	251-275	15.00	30.00
A13	276-300	16.00	32.00
A14	301-325	17.00	34.00
A15	326-350	18.00	36.00
A16	351-375	19.00	38.00
A17	376-400	20.00	40.00
A18	401-425	21.00	42.00
A19	426-450	22.00	44.00
A20	451-475	23.00	46.00
A21	476-500	24.00	48.00
A22	501-525	25.00	50.00
A23	526-550	26.00	52.00
A24	551-575	27.00	54.00
A25	576-600	28.00	56.00
A99	601-up	-- 1/	-- 2/

1/ Add $1.00 for each additional 25 page increment or portion thereof for 601 pages up

2/ Add $2.00 for each additional 25 page increment or portion thereof for 601 pages and more

Schedule E
EXCEPTION PRICE SCHEDULE

Paper Copy & Microfiche

Price Code	North American Price	Foreign Price
E01	$ 5.50	$ 11.50
E02	6.50	13.50
E03	8.50	17.50
E04	10.50	21.50
E05	12.50	25.50
E06	14.50	29.50
E07	16.50	33.50
E08	18.50	37.50
E09	20.50	41.50
E10	22.50	45.50
E11	24.50	49.50
E12	27.50	55.50
E13	30.50	61.50
E14	33.50	67.50
E15	36.50	73.50
E16	39.50	79.50
E17	42.50	85.50
E18	45.50	91.50
E19	50.50	100.50
E20	60.50	121.50
E99 - Write for quote		
N01	28.00	40.00

TABLE OF CONTENTS

Page

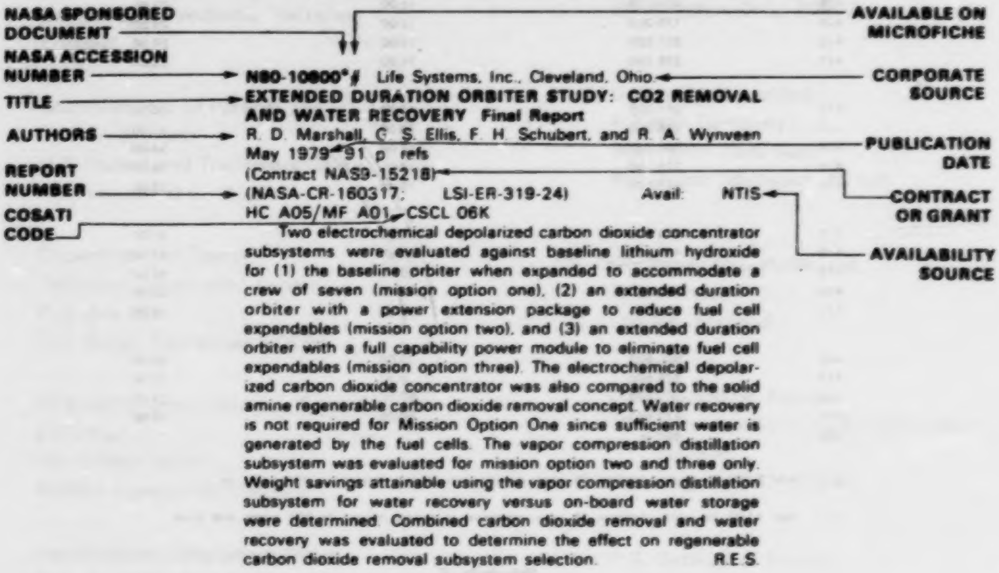
IAA ENTRIES (A80-10000) **97**

STAR ENTRIES (N80-10000) **107**

Subject Index **I-1**

Personal Author Index **I-21**

TYPICAL CITATION AND ABSTRACT FROM *STAR*

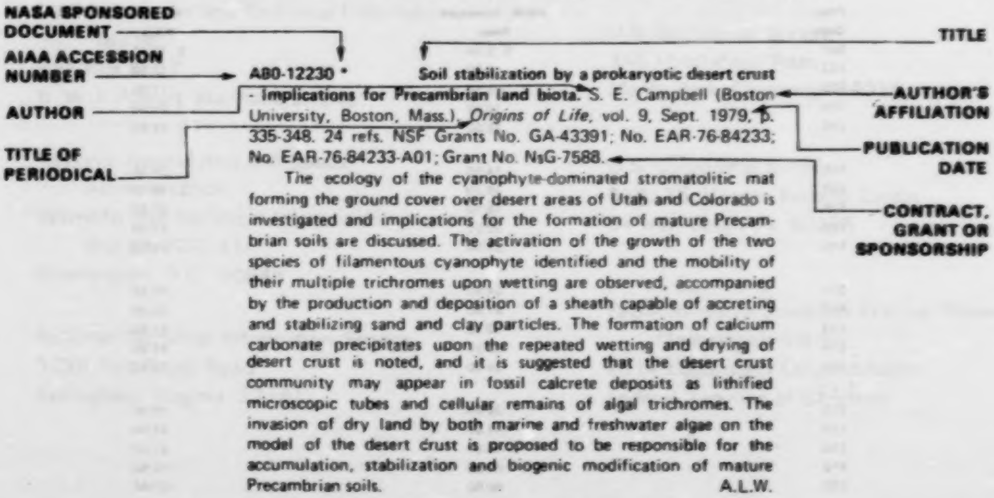


NASA SPONSORED DOCUMENT
NASA ACCESSION NUMBER
TITLE
AUTHORS
REPORT NUMBER
COSATI CODE
AVAILABLE ON MICROFICHE
CORPORATE SOURCE
PUBLICATION DATE
CONTRACT OR GRANT
AVAILABILITY SOURCE

N80-10000*# Life Systems, Inc., Cleveland, Ohio.
EXTENDED DURATION ORBITER STUDY: CO2 REMOVAL AND WATER RECOVERY Final Report
R. D. Marshall, C. S. Ellis, F. H. Schubert, and R. A. Wynveen
May 1979 91 p refs
(Contract NAS9-15218)
(NASA-CR-160317; LSI-ER-319-24) Avail: NTIS
HC A05/MF A01 CSCL 06K

Two electrochemical depolarized carbon dioxide concentrator subsystems were evaluated against baseline lithium hydroxide for (1) the baseline orbiter when expanded to accommodate a crew of seven (mission option one), (2) an extended duration orbiter with a power extension package to reduce fuel cell expendables (mission option two), and (3) an extended duration orbiter with a full capability power module to eliminate fuel cell expendables (mission option three). The electrochemical depolarized carbon dioxide concentrator was also compared to the solid amine regenerable carbon dioxide removal concept. Water recovery is not required for Mission Option One since sufficient water is generated by the fuel cells. The vapor compression distillation subsystem was evaluated for mission option two and three only. Weight savings attainable using the vapor compression distillation subsystem for water recovery versus on-board water storage were determined. Combined carbon dioxide removal and water recovery was evaluated to determine the effect on regenerable carbon dioxide removal subsystem selection. R.E.S.

TYPICAL CITATION AND ABSTRACT FROM *IAA*



NASA SPONSORED DOCUMENT
AIAA ACCESSION NUMBER
AUTHOR
TITLE OF PERIODICAL
TITLE
AUTHOR'S AFFILIATION
PUBLICATION DATE
CONTRACT, GRANT OR SPONSORSHIP

A80-12230 * **Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota.** S. E. Campbell (Boston University, Boston, Mass.), *Origins of Life*, vol. 9, Sept. 1979, p. 335-348. 24 refs. NSF Grants No. GA-43391; No. EAR-76-84233; No. EAR-76-84233-A01; Grant No. NsG-7588.

The ecology of the cyanophyte-dominated stromatolitic mat forming the ground cover over desert areas of Utah and Colorado is investigated and implications for the formation of mature Precambrian soils are discussed. The activation of the growth of the two species of filamentous cyanophyte identified and the mobility of their multiple trichromes upon wetting are observed, accompanied by the production and deposition of a sheath capable of accreting and stabilizing sand and clay particles. The formation of calcium carbonate precipitates upon the repeated wetting and drying of desert crust is noted, and it is suggested that the desert crust community may appear in fossil calcrete deposits as lithified microscopic tubes and cellular remains of algal trichromes. The invasion of dry land by both marine and freshwater algae on the model of the desert crust is proposed to be responsible for the accumulation, stabilization and biogenic modification of mature Precambrian soils. A.L.W.

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 207)

JUNE 1980

IAA ENTRIES

A80-25026 # Common properties of bacterial and visual rhodopsines - The conversion of optical energy into electric-potential difference (Obshchnost' svoistv bakterial'nogo i zritel'nogo rodopsinov - Prevrashchenie energii sveta v raznost' elektricheskikh potentsialov). V. I. Bol'shakov, A. L. Drachev, L. A. Drachev, G. R. Kalamkarov, A. D. Kaulen, M. A. Ostrovskii, and V. P. Skulachev (Akademiia Nauk SSSR, Institut Khimicheskoi Fiziki; Moskovskii Gosudarstvennyi Universitet, Moscow, USSR). *Akademiia Nauk SSSR, Doklady,* vol. 249, no. 6, 1979, p. 1462-1466. 15 refs. In Russian.

A80-25175 Effects of fasting and refeeding on the metabolic response to a standard meal in man. M. J. Stock (Queen Elizabeth College, London, England). *European Journal of Applied Physiology,* vol. 43, no. 1, 1980, p. 35-40. 16 refs.

Measurements of resting and exercising metabolic rate were made on eight subjects (five male, three female) before and after consumption of a standard liquid meal (1.67 MJ). This test was conducted after a day of complete fast and again after a day of overeating (average intake 19.8 MJ). There were no significant changes in resting or exercising metabolic rate due to the previous day's energy intake. The resting thermic effect (post-prandial rise in metabolic rate) of the standard meal was similar on both test days but the exercising thermic effect was 50% greater after the day of overeating. It was concluded that the metabolic response to food in exercising subjects may be affected by the previous day's energy intake but the overall energetic efficiency of the body at rest and during exercise is unaffected. (Author)

A80-25201 * Cyanamide mediated synthesis under plausible primitive earth conditions. VI - The synthesis of glycerol and glycerophosphates. D. E. Epps, D. W. Nooner, J. Eichberg, E. Sherwood, and J. Oro (Houston, University, Houston, Tex.). *Journal of Molecular Evolution,* vol. 14, Dec. 1979, p. 235-241. 9 refs. Research supported by the Robert A. Welch Foundation; Grants No. NIH-NS-12493; No. NGR-44-005-002.

The formation of glycerol occurs when a solution of DL-glyceraldehyde is heated in the presence of hydrogen sulfide at room temperature. DL-glyceraldehyde and dihydroxyacetone treated with hydrazine, as well as DL-glyceraldehyde incubated with formaldehyde are also partially converted to glycerol. The yields of the above reactions are from approximately 1% to about 3%. The formation of glycerophosphates occurs when glycerol is heated with ammonium dihydrogen phosphate and either urea or cyanamide. The yield of glycerophosphates is about 30%, most of which is sn-glycero-1(3)-phosphate. These findings indicate that glycerol and sn-glycero-3-phosphate, which are moieties of glycerolipids, could have been formed under conditions which may have prevailed on the primitive earth. (Author)

A80-25202 * Self-condensation of activated dinucleotides on polynucleotide templates with alternating sequences. R. Lohrmann and L. E. Orgel (Salk Institute for Biological Studies, San Diego, Calif.). *Journal of Molecular Evolution,* vol. 14, Dec. 1979, p. 243-250. 13 refs. Grants No. NGR-05-067-001; No. NIH-GM-13435.

Substantial quantities of the alternating polymers poly(U-G) and poly(C-A) have been prepared and used as templates for the self-condensation of ImpApC, ImpCpA, ImpGpU and ImpUpG. It is found that the condensation of ImpGpu and ImpUpG on poly(C-A) is efficient, the condensation of ImpCpA on poly(U-G) is moderately efficient, while the condensation of ImpApC on poly(U-C) proceeds poorly. In many cases, the product is predominantly 3'-5'-linked. These reactions demonstrate unequivocally, for the first time, that template-directed reactions occur in double-helical structures. Furthermore, they describe for the first time a pair of reactions in which each of two complementary polymers facilitates the synthesis of the other. The prebiotic significance of these findings is discussed. (Author)

A80-25283 Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936. N. N. Gurovskii, O. G. Gazenko, B. A. Adamovich, E. A. Il'in, A. M. Genin, V. I. Korolkov, A. A. Shipov, A. R. Kotovskaia, V. A. Kondrat'eva, and L. V. Serova (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR). *Acta Astronautica,* vol. 7, Jan. 1980, p. 113-121. 8 refs.

The physiological effects of weightlessness and artificial gravity on rats were investigated during the 18.5-day flight of the biosatellite Cosmos 936. Twenty male rats were exposed to the normal weightless environment of the satellite, while 10 were placed in centrifuges producing an artificial gravity of 1 g during the flight. The motor activity of the weightless rats during the flight was observed to be greater than that of the centrifuged rats, while their body temperature was significantly lower. Postflight examination of the weightless animals revealed a decrease in gas exchange, changes in electrolyte metabolism, disturbed otolith and postural equilibrium functions, a moderate stress reaction, muscular atrophy and metabolic disorders, bone degeneration and demineralization, increased sarcoplasmic protein content and decreased myocardial myosin ATPase activity. The centrifuged animals were found to exhibit little or none of these changes, however were not protected against changes in certain vestibular functions and bone metabolism. It is concluded that, in general, artificial gravity seems to be an effective countermeasure against the most serious adverse effects of prolonged weightlessness. A.L.W.

A80-25677 # Analysis of mental load by applying polynomially related measurement structures (Die Analyse der mentalen Beanspruchung mittels polynomisch verbundener Messstrukturen). R. Pursian. Braunschweig, Technische Universität, Naturwissenschaftliche Fakultät, Doktor der Naturwissenschaften Dissertation, 1979. 141 p. 63 refs. In German.

The purpose of the work is to determine how information is processed in determining the mental load and the factors that involve mental processes when applying a polynomially related measurement structure. Attention is given to methods and models of human information processes by Broadbent, Sternberg, and Kahneman as well as to the mathematical axioms of singular and collective independence and double and distributive reduction. An experiment is conducted to analyze the mental load when more than one mental activity is occurring. C.F.W.

A80-25725 Ventilatory control during exercise with increased external dead space. S. A. Ward and B. J. Whipp (Liverpool, University, Liverpool, England; California, University, Los Angeles; California, University, Medical Center, Torrance, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 48, Feb. 1980, p. 225-231. 30 refs.

The effects of increased external dead space on ventilatory control in steady-state exercise were determined in three healthy adults. The subjects performed cycle ergometer exercise on six occasions, each with a different external dead space (range: 0.1-1.0 l); work rate was increased every 5 min by 15-20 W. Minute ventilation, CO2 output, and mean alveolar CO2 tension were measured in the steady state. Without external dead space, the minute ventilation-CO2 output relationship was linear, having a small positive minute ventilation intercept, and the mean alveolar CO2 tension was constant, independent of the CO2 output. Increased external dead space was associated with an upward shift of the minute ventilation-CO2 output relationship, and an elevated mean alveolar CO2 tension, again independent of CO2 output. At each work rate, the increases in minute ventilation accompanying increased external dead space were no greater than could be expected from a conventional CO2 inhalation study. It is concluded that increasing external dead space does not impair the ability of the human respiratory system to regulate the mean alveolar CO2 tension during exercise except for resetting the regulated CO2 tension level. (Author)

A80-25763 # Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders. Z. Shi, X. Ning, P. Huang, S. Zhu, D. Zhao (Academia Sinica, Physiology Institute, Shanghai, Communist China), S. Yang, Y. Wang, and Z. Dong (People's Liberation Army, Communist China). *Scientia Sinica*, vol. 22, Dec. 1979, p. 1455-1469. 22 refs.

A80-25822 Detection of coronary artery disease - Comparison of exercise stress radionuclide angiocardiography and thallium stress perfusion scanning. J. A. Jengo, R. Freeman, M. Brizendine, and I. Mena (California, University, Los Angeles Medical Center, Torrance; St. Mary Medical Center, Long Beach, Calif.). *American Journal of Cardiology*, vol. 45, Mar. 1980, p. 535-541. 25 refs.

Exercise thallium scanning and stress radionuclide angiography were compared in 16 normal subjects and 42 patients with more than 75% coronary arterial obstruction in studies using upright exercise on a bicycle ergometer. Studies at rest were subsequently obtained. Exercise thallium scans in the control group were normal in 15 and showed a defect in 1; ejection fraction increased in all 16. During exercise, regional wall motion increased uniformly. In the group with coronary artery disease, thallium scanning revealed a new defect in the distribution of the involved arteries in 24 patients. In 15 who had a defect at rest, no new defect developed, but in 9 of the 15 new segmental wall motion defects were evident on radionuclide angiography. With exercise, ejection fraction decreased slightly. Regional wall motion abnormalities developed in the areas corresponding to thallium defects in all. Thallium scanning had a 93% and radionuclide angiography a 98% sensitivity value in detecting coronary artery disease; the respective specificity values were 94 and 100%. In patients with prior myocardial infarction who manifested new exercise abnormalities, 50% showed new thallium defects and 81% new wall motion defects. (Author)

A80-25823 Echocardiography in assessing acute pulmonary hypertension due to pulmonary embolism. W. Kasper, T. Meinertz, F. Kersting, H. Löllgen, P. Limbourgh, and H. Just (II Medizinische Klinik und Poliklinik, Mainz, West Germany). *American Journal of Cardiology*, vol. 45, Mar. 1980, p. 567-572. 22 refs.

An echocardiographic and catheterization study of 18 patients with acute pulmonary embolism is performed in order to investigate the use of echocardiography in detecting acute pulmonary hypertension. Mean pulmonary arterial pressure was found to correlate with the angiographic severity index of embolic obstruction, and with the size of the right pulmonary artery as determined by suprasternal echocardiography corrected for body surface area. Precordial echocardiography revealed that the right ventricular dimension was increased in 13 out of 16 patients and the left ventricular dimension decreased in 10 of 15, correlating well with the angiographic severity index. It is concluded that suprasternal and precordial echocardiography is a valuable noninvasive technique in the assessment of acute pulmonary hypertension in patients with acute pulmonary embolism and no history of cardiopulmonary disorder. A.L.W.

A80-25824 Nuclear cardiology. I - Radionuclide angiographic assessment of left ventricular contraction: Uses, limitations and future directions. II - The role of myocardial perfusion imaging using thallium-201 in diagnosis of coronary heart disease. M. M. Bodenheimer, V. S. Banka, and R. H. Helfant (Presbyterian-University of Pennsylvania Medical Center; Pennsylvania, University, Philadelphia, Pa.). *American Journal of Cardiology*, vol. 45, Mar. 1980, p. 661-684. 148 refs. Research supported by the Mabel Pew Myrin Trust.

The current status of radionuclide angiography is reviewed. First pass and gated equilibrium methods for determining left ventricular contraction are compared. Some clinical applications of radionuclide angiography are then examined, including the detection of discrete versus diffuse asynergy and the assessment of myocardial infarction. The second part of this work reviews the uses and limitations of thallium-201 perfusion imaging in the diagnosis of the acute and chronic manifestations of coronary heart disease. Theoretical and technical considerations of thallium-201 imaging are reviewed along with the clinical implications of the technique. B.J.

A80-25826 # Concerning some mechanisms of visual recognition (K voprosu o nekotorykh mekhanizmakh zritel'nogo opoznaniia). T. P. Zinchenko (Leningradskii Gosudarstvennyi Universitet, Leningrad, USSR). *Fiziologiia Cheloveka*, vol. 6, Jan.-Feb. 1980, p. 3-7. 7 refs. In Russian.

The paper examines the structure of the recognition process in the recognition of visual stimuli according to their shape, spatial orientation, and size. A tachistoscope was used to test 17 subjects who suffer from various impairments of peripheral vision. The data were compared with a preliminary investigation of the characteristics of afterimages perceived by the same subjects. Some general conclusions on the structure of visual recognition for the parameters studied are reported. B.J.

A80-25827 # Neurophysiological mechanisms of filtering in the visual system (O neirofiziologicheskikh mekhanizmakh fil'tratsii v zritel'noi sisteme). Ia. A. Meerson (Akademiia Nauk SSSR, Institut Evoliutsionnoi Fiziologii i Biokhimii; Psikhonevrologicheskii Institut, Leningrad, USSR). *Fiziologiia Cheloveka*, vol. 6, Jan.-Feb. 1980, p. 8-17. 21 refs. In Russian.

In an effort to study mechanisms of visual filtering, the present study examined the noise immunity of visual perception in the presence of different types of noise both for healthy subjects and those with local brain damage. The visual masking effect was found to depend on temporal relations between the effects of the signal stimulus and the masking stimulus. Two features of the filtering mechanism are delineated, and the effects of brain damage on visual masking are considered. B.J.

A80-25828 # **Spatial summation of monochromatic light in the visual system (Prostranstvennaia summatsiia monokhromaticheskogo sveta v zritel'noi sisteme).** D. S. Saudargene and A. V. Bertulis (Kaunasskii Meditsinskii Institut, Kaunas, Lithuanian SSR). *Fiziologiia Cheloveka,* vol. 6, Jan.-Feb. 1980, p. 18-23. 17 refs. In Russian.

The paper presents results on the summational properties of the fovea under different monochromatic stimuli. Color mechanisms of the human fovea exhibit various ranges of distribution of the lateral connections which determine the spatial parameters of integration of the light signal. Every color mechanism is associated with lateral inhibition, which increases with increasing brightness. The narrowing of the zones of complete and incomplete summation is discussed. B.J.

A80-25829 # **Thresholds of recognition of various features of color stimuli (Porogi opoznaniia raznykh priznakov tsvetovykh stimulov).** A. V. Bertulis and A. I. Gutauskas (Kaunasskii Meditsinskii Institut, Kaunas, Lithuanian SSR). *Fiziologiia Cheloveka,* vol. 6, Jan.-Feb. 1980, p. 24-29. 14 refs. In Russian.

Absolute thresholds of perception of objects of different shape, size, and color were determined in psychophysical experiments. The absolute thresholds of monochromatic stimuli were found to have three levels of threshold brightness: the threshold of stimulus detection (achromatic), the color recognition threshold (chromatic), and the shape-recognition threshold. The range of brightness from the achromatic threshold to the shape-recognition threshold is different for different colors. The subjective evaluation of brightness for different colors is discussed. B.J.

A80-25830 # **The dependence of thresholds of detection of moving single bands of light on their spectrum and speed (Zavisimost' porogov obnaruzheniia dvizhushchikhsia odinochnykh svetovykh polosok ot ikh spektra i skorosti dvizheniia).** K. N. Dudkin and V. E. Gauzel'man (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). *Fiziologiia Cheloveka,* vol. 6, Jan.-Feb. 1980, p. 30-34. 9 refs. In Russian.

A multichannel spatial-frequency model is used to examine experimental data on the visual detection of moving single bands of light. It is shown that the contrast sensitivity of detection of moving bands depends on their speed; this sensitivity decreases as the speed increases and the width of the bands decreases. The defocusing of bands with a rectangular illumination profile leads to a Gaussian profile of illumination and causes a significant decrease of contrast sensitivity only for narrow bands moving at low speed. It is suggested that the perception of such bands of light is realized by a multichannel system of filters which delineate the frequency components of the spectrum and operate in a definite range of speeds. B.J.

A80-25831 # **Audiokinesthetic relationships and the time of simple motor response to auditory and kinesthetic stimuli (Audiokinesteticheskie vzaimootnosheniia i vremia prostoi dvigatel'noi reaktsii na slukhovoi i kinesteticheskii stimuly).** A. V. Zav'ialov and G. N. Zaitseva (Meditsinskii Institut, Kursk, USSR). *Fiziologiia Cheloveka,* vol. 6, Jan.-Feb. 1980, p. 43-51. 30 refs. In Russian.

Healthy subjects were tested for (1) the correlation of sensitivity indices of kinesthetic and auditory analyzers and (2) the time of simple motor response to auditory and kinesthetic stimuli. Two groups of subjects were identified: (1) subjects whose kinesthetic sensitivity exceeded their auditory sensitivity and (2) subjects whose auditory sensitivity exceeded their kinesthetic sensitivity. A distinct direct correlation among the mean values of motor and sensorimotor indices was found for both groups. B.J.

A80-25832 # **Investigation of the self-regulation of sensorimotor activity (Issledovaniia protsessov samoreguliatsii sensomotornoi deiatel'nosti).** D. N. Menitskii and A. M. Zingerman (Akademiia Meditsinskikh Nauk SSSR, Leningrad, USSR). *Fiziologiia Cheloveka,* vol. 6, Jan.-Feb. 1980, p. 52-62. 36 refs. In Russian.

The work of Sechenev (1974) on sensorimotor activity is reviewed with particular reference to three mechanisms of motor control: wakefulness, sensory control, and motor control with respect to speed, strength, and duration. Experiments have been performed to verify some of Sechenev's hypotheses. In particular it is shown that in the course of evolution the diversity (or information content) of the environment becomes an ecological factor that plays an important role in maintaining the necessary functional level of the central nervous system. Furthermore, the dependence of motor response parameters on the activation level and the diversity of the environment has been demonstrated. B.J.

A80-25833 # **Peripheral fatigue under local static work of varying intensity (Perifericheskoe utomlenie pri lokal'noi staticheskoi rabote raznoi intensivnosti).** Ia. M. Kots and S. P. Kuznetsov (Gosudarstvennyi Tsentral'nyi Institut Fizicheskoi Kul'tury, Moscow, USSR). *Fiziologiia Cheloveka,* vol. 6, Jan.-Feb. 1980, p. 71-79. 25 refs. In Russian.

A80-25834 # **Functional stability of the trained organism under prolonged uniform loads in standard conditions (Funktsional'naia ustoichivost' trenirovannogo organizma pri vypol'nenii dlitel'nykh ravnomernykh nagruzok v standartnykh usloviiakh).** T. A. Matsin and A. A. Viru (Tartusskii Gosudarstvennyi Universitet, Tartu, Estonian SSR). *Fiziologiia Cheloveka,* vol. 6, Jan.-Feb. 1980, p. 85-92. 52 refs. In Russian.

A80-25835 # **Comparative analysis of lung models used to study the mechanics of breathing (Sravnitel'nyi analiz modelei legkogo, ispol'zuemykh dlia issledovaniia mekhaniki dykhaniia).** G. A. Liubimov (Moskovskii Gosudarstvennyi Universitet, Moscow, USSR). *Fiziologiia Cheloveka,* vol. 6, Jan.-Feb. 1980, p. 105-114. 8 refs. In Russian.

Results obtained with one- and two-component lung models are compared. It is shown that the one-component model with one resistance satisfactorily describes experimental data on the respiration of healthy subjects. Neither the one-component model nor the two-component model can explain certain experimental characteristics of the respiration of sick subjects. It is concluded that some of the qualitative features found in respiratory experiments can be satifactorily described by a two-component model if variations of component volumes are prescribed. B.J.

A80-25836 # **Investigation of the functional state of the CNS under conditions of altitude decompression (Issledovanie funktsional'nogo sostoianiia TsNS v usloviiakh vysotnoi dekompresii).** G. P. Goroian and I. N. Zakharova (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR). *Fiziologiia Cheloveka,* vol. 6, Jan.-Feb. 1980, p. 115-120. 13 refs. In Russian.

Subjects under decompression were tested for spontaneous EEG, latent visual-motor response, stability of attention, and thresholds of tactile and pain sensitivity. A period of subjective well-being before the actual decompression disorder was identified which was characterized by a lessening of attention and a lowering of the thresholds of tactile and pain sensitivity. A definite correlation was found between the resistance of individual subjects to altitude decompression and spontaneous EEG patterns. B.J.

A80-25837 # **Some aspects of the organization of nocturnal sleep in normal and pathological states (Nekotorye aspekty organizatsii nochnogo sna v norme i patologii).** A. M. Vein, N. N. Iakhno,

V. L. Golubev, V. V. Alekseev, V. L. Andreev, R. G. Biniaurishvili, N. A. Vlasov, V. V. Kulikovskii, and S. V. Shvarkov (I. Moskovskii Meditsinskii Institut, Moscow, USSR). *Fiziologiia Cheloveka,* vol. 6, Jan.-Feb. 1980, p. 133-140. 26 refs. In Russian.

The present study examines the structure of sleep of healthy subjects and of those suffering from functional and organic disorders of the central nervous system (e.g., neuroses, epilepsy, Parkinson's disease, etc.). Various methods are used to obtain data on the functional organization of the sleep and wakefulness of healthy persons as well as on the role of nonspecific brain systems in the development of certain neurological syndromes. Some general tendencies governing the sleep of healthy and sick persons were discovered. B.J.

A80-25838 # **Individual peculiarities of the space-time organization of the bioelectric activity of the brain in a probalilistic prediction situation (Individual'nye osobennosti prostranstvenno-vremennoi organizatsii bioelektricheskoi aktivnosti mozga v situatsii veroiatnostnogo prognozirovaniia).** S. L. Makarenko (Akademiia Pegagogicheskikh Nauk SSSR, Moscow, USSR). *Fiziologiia Cheloveka,* vol. 6, Jan.-Feb. 1980, p. 164-167. 14 refs. In Russian.

A80-25839 # **Contact ring for registering the turning of the eyeball (Kontaktnoe kol'tso dlia registratsii povorotov glaznogo iabloka).** A. G. Luuk, Iu. K. Allik, L. K. Shotter, and V. I. Kushpil' (Tartusskii Gosudarstvennyi Universitet, Tartu, Estonian SSR). *Fiziologiia Cheloveka,* vol. 6, Jan.-Feb. 1980, p. 175-177. 11 refs. In Russian.

A80-25890 * **Evaluation of the relationship between motion sickness symptomatology and blood pressure, heart rate, and body temperature.** A. Graybiel and J. R. Lackner (U.S. Naval Aerospace Medical Center, Aerospace Medical Research Laboratory, Pensacola, Fla.; Brandeis University, Waltham, Mass.). *Aviation, Space, and Environmental Medicine,* vol. 51, Mar. 1980, p. 211-214. 9 refs. Contract No. NAS9-15147. NASA Order T-9140-E.

This study investigated the relationship between the development of symptoms of motion sickness and changes in blood pressure, heart rate, and body temperature. Twelve subjects were each evaluated four times using the vestibular-visual interaction test (Graybiel and Lackner, 1980). The results were analyzed both within and across individual subjects. Neither a systematic group nor consistent individual relationship was found between the physiological parameters and the appearance of symptoms of motion sickness. These findings suggest that biofeedback control of the physiological variables studied is not likely to prevent the expression of motion sickness symptomatology. (Author)

A80-25891 * **Motion sickness in the squirrel monkey.** J. M. Ordy and K. R. Brizzee (Tulane University, Covington, La.). *Aviation, Space, and Environmental Medicine,* vol. 51, Mar. 1980, p. 215-223. 42 refs. Grants No. NIH-R-00164; No. NsG-2139.

In this study of susceptibility to motion sickness the specific aims were to examine the effects of combined vertical rotation and horizontal acceleration, phenotype, sex, visual cues, morning and afternoon testing, and repeated test exposures on incidence, frequency, and latency of emetic responses. The highest emetic incidence of 89% with an emetic frequency of 2.0 during 60 min and a latency of 19 min from onset of testing occurred at 25 rpm and 0.5 Hz linear acceleration. Since the emetic responses were quite similar to man in eliciting motion stimuli it was concluded that the squirrel monkey represents a very suitable primate model for studies of motion and space sickness. B.J.

A80-25892 * **Visual and postural motion aftereffects following parabolic flight.** J. R. Lackner and A. Graybiel (U.S. Naval Aerospace Medical Center, Aerospace Medical Research Laboratory, Pensacola, Fla.; Brandeis University, Waltham, Mass.). *Aviation, Space, and Environmental Medicine,* vol. 51, Mar. 1980, p. 230-233. 7 refs. Contract No. NAS9-15147. NASA Order T-9140-E.

Postural and visual motion aftereffects may be experienced after exposure to alternating periods of free fall and increased gravitoinertial force in parabolic flight. In an aftereffect, the body feels as if it is again undergoing periodic changes in force level because of motion of the substrate; strong apparent postural motion is also accompanied by visual motion of the surroundings. The aftereffects are discussed according to: (1) their character, (2) their time course, (3) secondary symptoms associated with them, (4) conditions favoring their occurrence, (5) their relation to the inducing frequency, (6) fragments of the complete pattern, (7) their duration, and (8) the importance of contact cues. (Author)

A80-25893 **Body fluid compartments in humans during acute high-altitude exposure.** S. C. Jain, J. Bardhan, Y. V. Swamy, B. Krishna, and H. S. Nayar (Defence Institute of Physiology and Allied Sciences, Delhi, India). *Aviation, Space, and Environmental Medicine,* vol. 51, Mar. 1980, p. 234-236. 18 refs.

Body fluid compartments were studied in a group of sea level residents at sea level and during 12 d of acute exposure to an altitude of 3,500 m. Measurements of total body water and extracellular water were done on the third and 12th days of exposure, while plasma volume was measured on 12th day only. The intracellular water, blood volume, and red cell mass were computed from the above parameters. Total body water and extracellular water decreased progressively, the decrease being 4.7% (p less than 0.001) and 6.0% (p less than 0.05) respectively on the 12th day. Plasma volume and blood volume decreased significantly with a slight increase in red cell mass. Intracellular water, computed from total body water and extracellular water, decreased by 4.3% on 12th day. This study suggested hypohydration on acute altitude exposures. (Author)

A80-25894 * **Effect of simulated weightlessness on the immune system in rats.** L. D. Caren, A. D. Mandel, and J. A. Nunes (NASA, Ames Research Center, Moffett Field; Santa Clara, University, Santa Clara, Calif.). *Aviation, Space, and Environmental Medicine,* vol. 51, Mar. 1980, p. 251-255. 14 refs. Grant No. NCA2-OR685-813.

Rats suspended in a model system designed to simulate many aspects of weightlessness were immunized with sheep red blood cells. Parameters measured on these and control rats included titers of anti-sheep red blood cell antibodies, serum immunoglobulin levels, spleen and thymus weights, hematocrits, and leukocyte differential counts on peripheral blood. No significant differences were found between test and weight-bearing, harnessed controls; however, the thymuses of animals in both these groups were significantly smaller than untreated cage controls. The lack of an effect of simulated weightlessness on the immune system is an interesting result, and its significance is discussed. (Author)

A80-25895 **Studies of limb-dislodging forces acting on an ejection seat occupant.** D. J. Schneck (Virginia Polytechnic Institute and State University, Blacksburg, Va.). *Aviation, Space, and Environmental Medicine,* vol. 51, Mar. 1980, p. 256-264. 12 refs. Grant No. AF-AFOSR-78-3706.

A mathematical theory is being developed in order to calculate the aerodynamic loading to which a pilot is exposed during high-speed ejections. Neglecting the initial effects of flow separation, results thus far indicate that a pilot's musculoskeletal system is not likely to withstand the tendency for limb-flailing if he is ejecting at Mach numbers in excess of about 0.7. This tendency depends very strongly upon the angle at which the pilot's limbs intercept a high-speed flow; the forces that cause limb dislodgement increase dramatically with speed of ejection. Examining the time-course of limb-dislodging forces after the initial onset of windblast, the theory further predicts the generation of a double vortex street pattern on the downstream side of the limbs of an ejection seat occupant. This results in the corresponding appearance of oscillating forces tending to cause lateral motion (vibration) of the limbs. The amplitude and frequency of these oscillating forces are also very dependent on the Mach number of ejection and the angle at which the pilot's limbs intercept the flow. However, even at moderate Mach numbers, the frequency can be as high as 100 cycles per second, and the amplitude rapidly exceeds a pilot's musculoskeletal resistive powers for Mach numbers above 0.7. (Author)

A80-25896 **Intravascular hemolysis in acute mountain sickness.** R. E. Lovlin, S. Rowlands, G. R. Kinnear, and E. Rast (Calgary, University, Calgary, Alberta, Canada). *Aviation, Space, and Environmental Medicine*, vol. 51, Mar. 1980, p. 271, 272. 7 refs.

A case of acute mountain sickness involving intravascular hemolysis is reported. The subject, a 20-year-old man in excellent health with no prior history of mountain sickness, developed a severe headache, nausea, anorexia, tachycardia, Cheyne-Stokes breathing, and cyanosis while on a mountain-climbing expedition to an altitude of 4200 m. When returned to altitude of 2760 m, the symptoms disappeared over the course of eight hours. Hematocrits taken before and after the event indicated hemoglobinemia in the subject, as was found in another subject after 48 hours in a hypobaric chamber at a simulated altitude of 4200 m. It is suggested that further studies of the presence or absence of intravascular hemolysis during acute mountain sickness be conducted to determine their possible relation. A.L.W.

A80-25897 **Mitral valve prolapse - A review.** P. J. Engel and J. R. Hickman, Jr. (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine*, vol. 51, Mar. 1980, p. 273-286. 192 refs.

A review of the mitral valve prolapse (MVP) is presented. The systolic click-murmur syndrome has been found to be central to a disorder characterized by abnormal systolic herniation of the mitral leaflets into the left atrium; the usual case is an idiopathic, hereditary disorder of the valve leaflets which is very common and benign, but with a clinical character at times similar to that of coronary artery disease. The left ventricular cineangiography is the definitive procedure for the diagnosis of MVP, although noninvasive techniques generally suffice for its diagnosis. A.T.

A80-25898 **The prolapsed mitral valve syndrome and the flyer.** R. B. Rayman (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *(International Academy of Aviation and Space Medicine, International Congress of Aviation and Space Medicine, Manila, Philippines, Oct. 8-12, 1979.) Aviation, Space, and Environmental Medicine*, vol. 51, Mar. 1980, p. 287-289. 13 refs.

The paper considers the prolapsed mitral valve (PMV) syndrome and its effect on the flyer. Although the syndrome is still ill-defined, its characteristics and possible sequelae such as arrhythmias, endocarditis, and sudden death are of concern to flight surgeons; the prolapsed mitral valve syndrome is reviewed and the aeromedical problem it presents is defined. In addition, it is shown that if the patient has chest pains, syncope, mitral regurgitation, and congestive heart failure associated with PMV, he should be removed from flying duty; if PMV is strongly suspected, but the interpretation of the noninvasive procedures such as echocardiogram is equivocal, angiography should be used to confirm or dismiss the suspicion. A.T.

A80-25899 **Investigation of flow rates of oxygen systems used in general aviation.** J. W. Brantigan. *Aviation, Space, and Environmental Medicine*, vol. 51, Mar. 1980, p. 293, 294.

A80-25987 * **Effects of centrifugation stress on pituitary-gonadal function in male rats.** G. D. Gray, E. R. Smith, D. A. Damassa, and J. M. Davidson (Stanford University, Stanford, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 48, Jan. 1980, p. 1-5. 9 refs. Contract No. NAS9-14716.

The effects of centrifugation for various lengths of time on circulating levels of luteinizing hormone (LH) and testosterone in male rats were investigated. In a chronic 52-day experiment, centrifugation at 4.1 G significantly reduced LH and testosterone levels for the entire period. Centrifugation at 2.3 G had less effect inasmuch as LH levels were not significantly decreased and testosterone levels were significantly reduced only during the first few days of centrifugation. In more acute experiments, centrifugation at 4.1 G for 4 h resulted in reduced testosterone levels, whereas centrifugation for 15 min did not significantly alter the hormone levels. These results indicate that centrifugation can decrease circulating LH and testosterone levels if the gravitational force is of sufficient magnitude and is maintained for a period of hours. Chronic centrifugation may also inhibit the acute excitatory response of LH to handling and ether stress. (Author)

A80-25988 **Vital capacity, exercise performance, and blood gases at altitude as related to age.** D. B. Dill, S. D. Hillyard, and J. Miller (Nevada, University, Boulder City, Nev.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 48, Jan. 1980, p. 6-9. 11 refs.

Vital capacity (VC) rarely may decrease 35-60% in healthy mountain climbers associated with high-altitude pulmonary edema (HAPE). In the age range 58-71 yr, five of six men during a week or more on White Mt. in 1962 had decreases in VC from 20 to 32% without frank symptoms of HAPE. Dill, one of the five, had decreases in VC again on White Mt. in 1977 and 1978. Yet none of 11 young climbers on White Mt. studied by Hultgren (personal communication) had a significant decrease in VC. Dill's arterial O2 saturation at age 87 at 485 torr was about 79% in rest and 74% when VO2 was 0.74 ml/min.kg. His aerobic capacity at agte 87 yr was 18 ml/min.kg at 695 torr and 15 at 385 torr. (Author)

A80-25989 * **Exercise thermoregulation after 14 days of bed rest.** J. E. Greenleaf and R. D. Reese (NASA, Ames Research Center, Laboratory of Human Environmental Physiology, Moffett Field, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 48, Jan. 1980, p. 72-78. 32 refs.

The effects of bed rest and exercise training during bed rest on body temperature and thermoregulatory responses at rest and during exercise are investigated. Seven male subjects underwent three two-week periods of bed rest during which isometric, isotonic, or no exercises were performed, separated by two ambulatory control periods and preceded by a two-week control period, during which they exercised regularly. Rectal and mean skin temperatures and sweating responses were determined during 70-min submaximal supine exercise during the bed rest and recovery periods. Measurements reveal a reduction in basal oral temperature during the control-recovery periods, with a relatively constant level during bed rest periods, and a significant increase in the rectal temperature elevation brought on by exercise following all three bed-rest regimes. It is concluded that the excessive increase in rectal temperature could be influenced by changes in skin heat conductance or the inhibition of sweating. A.L.W.

A80-25990 * **Fluid shifts and endocrine responses during chair rest and water immersion in man.** J. E. Greenleaf, E. Shvartz, S. Kravik, and L. C. Keil (NASA, Ames Research Center, Laboratory of Human Environmental Physiology, Moffett Field, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 48, Jan. 1980, p. 79-88. 45 refs.

The effects of external water pressure on intercompartmental fluid volume shifts and endocrine responses in man are investigated. Extracellular fluid volumes and plasma and urine electrolyte and endocrine responses of four male subjects were measured during eight hours of head-out water immersion and 16 hours of recovery bed rest and compared to responses obtained during eight hours of chair rest and 16 hours of bed rest without external hydrostatic pressure obtained in the same subjects five months later. Immersion is found to result in a substantial diuresis with respect to chair rest, accounted for by decreases in extracellular volume. A negative water balance during immersion and a positive water balance during chair rest were observed to be accompanied by a shift of extracellular volume to the intracellular compartment, as well as the suppression of plasma arginine vasopressin and renin activities in both regimes. The vasopressin and renin activity decreases are attributed to the increased central blood volume, and half of the plasma loss in immersed subjects is attributed to the effects of external water pressure. A.L.W.

A80-25991 * **Echocardiographic left ventricular masses in distance runners and weight lifters.** J. C. Longhurst, W. J. Gonyea, J. H. Mitchell (Texas, University, Dallas, Tex.), and A. R. Kelly. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 48, Jan. 1980, p. 154-162. 31 refs. Research supported by the Lawson and Rogers Lacy Research Fund in Cardiovascular Disease; Grants No. NIH-HL-06296; No. NsG-9026.

The relationships of different forms of exercise training to left ventricular mass and body mass are investigated by echocardiographic studies of weight lifters, long-distance runners, and comparatively sized untrained control subjects. Left ventricular mass determinations by the Penn convention reveal increased absolute left ventricular masses in long-distance runners and competitive weight lifters with respect to controls matched for age, body weight, and body surface area, and a significant correlation between ventricular mass and lean body mass. When normalized to lean body mass, the ventricular masses of distance runners are found to be significantly higher than those of the other groups, suggesting that dynamic training elevates left ventricular mass compared to static training and no training, while static training increases ventricular mass only to the extent that lean body mass is increased. A.L.W.

A80-26015 **Spectrophotometric identification of the pigment associated with light-driven primary sodium translocation in Halobacterium halobium.** J. K. Lanyi (NASA, Ames Research Center, Moffett Field, Calif.) and H. J. Weber (California, University, Berkeley, Calif.). *Journal of Biological Chemistry,* vol. 255, Jan. 10, 1980, p. 243-250. 22 refs. NIH-supported research.

A80-26029 # **The effect of vasoactive agents on the resistance and capacitance vessels of the small intestine at high altitude (Vliianie vazoaktivnykh veshchestv na soprotivlenie i emkost' sosudov tonkogo kishechnika v usloviiakh vysokogor'ia).** S. B. Daniiarov and I. E. Kononets (Kirgizskii Gosudarstvennyi Meditsinskii Institut, Frunze, Kirgiz SSR). *Fiziologicheskii Zhurnal SSSR,* vol. 65, Dec. 1979, p. 1825-1830. 20 refs. In Russian.

Cats were tested with adrenaline (10 micrograms), serotonin (30 micrograms), and acetylcholine (10 micrograms) on the 3rd, 15th, and 30th days of their stay at an altitude of 3200 m. The drugs were found to induce different vasomotor responses in the precapillary and postcapillary portions of the vascular net of the small intestine. The possible mechanisms of detected changes are discussed; one mechanism has to do with the initial tonus of the resistance vessels of the small intestine, associated with the adaptation of the organism to high altitude conditions. B.J.

A80-26030 # **Responses of the primary vestibular afferents of the frog to direct vibratory stimulation of the semicircular canal (Otvety pervichnykh vestibuliarnykh afferentov liagushki na priamuiu vibrostimuliatsiiu polukruzhnogo kanala).** I. V. Orlov (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). *Fiziologicheskii Zhurnal SSSR,* vol. 66, Jan. 1980, p. 48-55. 12 refs. In Russian.

A80-26214 **Early assignments of the genetic code dependent upon protein structure.** D. I. Marlborough (Australian National University, Canberra, Australia). *Origins of Life,* vol. 10, Mar. 1980, p. 3-14. 23 refs.

Orgel (1972) has suggested that polynucleotides with sequences of alternating purine/pyrimidine are likely to have predominated in prebiotic conditions. Therefore, in any early template-directed protein synthesis, the number of available codons would have been limited. However, for any self-organizing system to survive and propagate, some feedback must occur from the products of the synthesis to the control of the synthetic procedure itself; i.e., the protein synthesized should have catalyzed some step in the initiation of template-directed synthesis. A given protein structure with a characteristic conformation and function would be optimal for the product of such a synthesis, and this in turn would limit the number of nucleotide sequences of those available able to give rise to a functioning synthetic assembly. A possible candidate for such an early polypeptide is the ferredoxin group of proteins and it is shown that with the present-day code the corresponding nucleotides do have a high percentage of alternating purine/pyrimidine sequences. Hence these combined restraints on the primitive synthetic machinery would direct the possible assignments of the genetic code helping to explain its regularity and universality. (Author)

A80-26215 • **A conformational rationale for the origin of the mechanism of nucleicacid-directed protein synthesis of 'living' organisms.** R. Balasubramanian, P. Seetharamulu, and G. Raghunathan (Madras, University, Madras, India). *Origins of Life,* vol. 10, Mar. 1980, p. 15-30. 95 refs.

A80-26216 **The evolution of the protein synthesis system. II - From chemical evolution to biological evolution.** H. Mizutani and C. Ponnamperuma (Maryland, University, College Park, Md.). *Origins of Life,* vol. 10, Mar. 1980, p. 31-38. 21 refs.

The sequence of events previously proposed for modern protein synthesis is reviewed. It begins with an abiological synthesis of a template, and evolves through two model autocatalytic systems to a primitive cell that has a rudimentary biological protein synthesis system. A possible scheme for the origin of tRNA's is described so as to fill the gap between the model and the modern system. Fragments of genes that existed in and around the primitive system are proposed to be precursors of tRNA's. Since these fragments must have been undesirable components for the system, the origin and evolution of tRNA's may be regarded as an excellent answer by the primitive system to adverse circumstances. (Author)

A80-26217 **Operational description of microsystems formation in prebiological molecular evolution.** K. Matsuno (Tokyo University, Kawagoe, Japan). *Origins of Life,* vol. 10, Mar. 1980, p. 39-45. 12 refs.

The dynamic process responsible for the transformation of amino acid or polyamino acid solutions into proposed prebiotic microsystems such as the microspheres of Fox (1978) and the marigranules of Yanagawa and Egami (1978) is investigated. The unidirectional nature of the reactions occurring in a nonequilibrium system such as a homogeneous solution of various elements in which polymerization is not balanced by hydrolysis is discussed, and its implications are applied to a model solution of polyamino acids in which peptide bond formation is not equalled by hydrolysis. It is shown that such a solution is unstable with respect to the formation of microscopic compartments of locally condensed peptide bond linkages which accumulate as long as the solution remains in nonequilibrium. A.L.W.

A80-26218 **Oligo-glycine synthesis in an aqueous solution of glycine under oxidative conditions.** Y. Yamagata, A. Yamashita, and K. Inomata (Kanazawa University, Kanazawa, Japan). *Origins of Life,* vol. 10, Mar. 1980, p. 47-50. 5 refs.

Di- and triglycine synthesis in aqueous solution of glycine under oxidative conditions is described as part of a study of the prebiotic polymerization of biomonomers. 1M aqueous solution of glycine was bubbled for 90 hours with oxygen discharged in the path from an oxygen cylinder, and 2M solution of glycine in concentrated hydrogen peroxide (75%) was incubated at 37 C. The yields of peptides were traced for 200 days, and the final yields were 0.25% and 0.01% for di- and triglycine, respectively. In another trial the solution at 166 days of incubation was chromatographed on a G 10 Sephadex column, and the intensity of ninhydrin color was found to increase after hydrolysis by 4-5 times, indicating the presence of oligo-glycine. The solutions of 1M glycine and 0.5M diglycine prepared with 30% hydrogen peroxide were incubated for 38 days at 37 C. The yields of 0.12% and 0.33% were obtained, respectively. It is concluded that discharged oxygen and hydrogen peroxide encourage the condensation of glycine, though the yields are very low. L.M.

A80-26219 **Role of interstellar molecules in prebiological evolution.** L. M. Mukhin and M. V. Gerasimov (Akademiia Nauk SSSR, Institut Kosmicheskikh Issledovanii, Moscow, USSR). *Origins of Life,* vol. 10, Mar. 1980, p. 61-63. 11 refs.

Three generations of organic molecules in space are considered: interstellar molecules, molecules synthesized in protosolar cloud and molecules synthesized on the earth. It is shown that there are no possibilities for amino acid polymers to be synthesized under interstellar cloud conditions. Molecules of the second generation were disintegrated during the earth accumulation period. The problem of the origin of life is connected with the evolution of molecules of the third generation. (Author)

A80-26220 * **Chemical evolution and the origin of life - Bibliography supplement 1977.** L. G. Pleasant (George Washington University, Medical Center, Washington, D.C.) and C. Ponnamperuma (Maryland, University, College Park, Md.). *Origins of Life,* vol. 10, Mar. 1980, p. 69-87. 360 refs. Contract No. NASw-3165; Grant No. NGR-21-002-317.

A80-26335 # **On the structural and kinematic synthesis of open-loop manipulators. I - Basic structural and kinematic procedures.** P. N. Nitescu (Institute for Computer Technique, Bucharest, Rumania). *(International Symposium on Theory and Practice of Robots and Manipulators, 3rd, Udine, Italy, Sept. 12-15, 1978.) Revue Roumaine des Sciences Techniques, Série de Mécanique Appliquée,* vol. 25, Jan.-Feb. 1980, p. 49-66. 10 refs.

This paper offers an approach to perform the structural synthesis of industrial manipulators having an open-loop kinematic chain with lower-pair joints. In the context of achieving the computer-aided control of various manipulator structures, the expressions defining anthropomorphic angular and linear displacements between the adjacent links are deduced as solutions of the closure equation of the corresponding closed-loop mechanisms in the successive positions of the free end along the required spatial track. The successive computation followed by a suitable mechanical variation of the joint parameters according to the procedure mentioned offers a guidance technique of the manipulator without requiring feedback in the control system. (Author)

A80-26390 * **Some final conclusions and supporting experiments related to the search for organic compounds on the surface of Mars.** K. Biemann and J. M. Lavoie, Jr. (MIT, Cambridge, Mass.). *Journal of Geophysical Research,* vol. 84, Dec. 30, 1979, p. 8385-8390. 22 refs. Contract No. NAS1-9684; Grant No. NGR-22-009-005.

The Viking molecular analysis experiment has demonstrated the absence (within the detection limits which range from levels of parts per million to below parts per billion) of organic substances in the Martian surface soil at the two Viking landing sites. Laboratory experiments with sterile and nonsterile antarctic samples further demonstrate the capability and reliability of the instrument. The circumstances under which organic components could have escaped detection, such as inaccessibility or extreme thermal stability of organic polymers, are discussed but are found to be unlikely. The inability of the instrument to detect free oxygen evolved from soil samples is pointed out. (Author)

A80-26391 * **Viking gas exchange reaction - Simulation on UV-irradiated manganese dioxide substrate.** T. R. Blackburn (St. Andrews Presbyterian College Laurinburg, N.C.), H. D. Holland (Harvard University, Cambridge, Mass.), and G. P. Ceasar (Xerox Corp., Webster, N.Y.). *Journal of Geophysical Research,* vol. 84, Dec. 30, 1979, p. 8391-8394. 17 refs. Contract No. NAS1-10492.

The exchange of O2 for H2O, analogous to that recorded on Mars by the Viking GEX experiment, has been observed on humidifying powdered beta-MnO2 (pyrolusite) which had been irradiated by UV in a humidified analog of the Martian atmosphere. Pyrolusite irradiated in a dry atmosphere did not release O2 on humidification. The XPS spectra of Mn and O of the reactive pyrolusite were shifted toward higher binding energies during UV irradiation. These shifts are consistent with the creation of a surface layer of a Mn(V) or Mn(VI) compound. The destruction of such a layer on humidification could account for the observed O2 release. Although manganese has not been identified in the Martian regolith, the upper limit of the Mn concentration is sufficiently high that O2 release from pyrolusite could have been responsible for the results of the Viking GEX experiment. (Author)

A80-26424 # **Spectral analysis of conduction fluctuations of calcium channels in a nerve-cell membrane (Spektral'nyi analiz fluktuatsii provodimosti kal'tsievykh kanalov v membrane nervnoi kletki).** P. G. Kostiuk, O. A. Kryshtal', V. I. Pidoplichko, and Iu. A. Shakhovalov (Akademiia Nauk Ukrainskoi SSR, Institut Fiziologii, Kiev, Ukrainian SSR). *Akademiia Nauk SSSR, Doklady,* vol. 250, no. 1, 1980, p. 219-222. 10 refs. In Russian.

A80-26425 # **The effect of SQ-20881, an inhibitor of carboxycathepsin /angiotensin of 1-transforming enzyme/ on the peripheral blood circulation during the early postresuscitation period (Desistvie SQ-20881, ingibitora karboksikatepsina /angiotenzin I-prevrashchaiushchego fermenta/, na perifericheskoe krovoobrashchenie v zannem postreanimatsionnom periode).** V. N. Orekhovich, Iu. E. Eliseeva, L. V. Pavlikhina, V. A. Negovskii, I. S. Novoderzhkina, and L. V. Molchanova (Akademiia Meditsinskikh Nauk SSSR; Akademiia Nauk SSSR, Nauchno-Issledovatel'skaia Laboratoriia Obshchei Reanimatologii, Moscow, USSR). *Akademiia Nauk SSSR, Doklady,* vol. 250, no. 1, 1980, p. 253-256. 15 refs. In Russian.

A80-27029 **Aviation medicine. Volume 2 - Health and clinical aspects.** Edited by G. Dhenin (RAF, Medical Services, London, England). London, Tri-Med Books, Ltd., 1978. 351 p. $26.35.

The present textbook deals with health and clinical aspects in aviation medicine. It is divided in four parts: Part 1 covers commercial aviation and health, Part 2 health and hygiene, Part 3 clinical aspects, and Part 4 accident investigation and air safety. Attention is given to medical standards for commercial aircrew, some epidemiological and immunological problems in international travel, medical aspects of aircraft accidents, and some aspects of air transport of animals. The clinical aspects are discussed in detail, including carriage of invalid passengers in civil airlines, some medical conditions of importance in aviation medicine, respiratory disease and aviators, psychiatry and neurology in aviation medicine, as well as otorhinolaryngology, ophthalmology and orthopedics in aviation medicine. S.D.

A80-27065 # **A method of determination of scale numbering taking into account the carrying capacity of an operator (Metod opredeleniia otsifrovki shkal priborov s uchetom propusknoi sposobnosti operatora).** Iu. E. Khoroshavtsev and V. V. Perepechaev (Akademiia Grazhdanskoi Aviatsii, Leningrad, USSR). *Priborostroenie*, vol. 23, Jan. 1980, p. 9-12. In Russian.

The paper presents a method for calculating the scale value of meters. Statistic characteristics of flight parameters are taken into account along with the information carrying capacity of a human operator. A mathematical model for n meters is derived. V.T.

A80-27074 **Interaction of pre- and postsaccadic patterns having the same coordinates in space.** W. Wolf, G. Hauske, and U. Lupp (München, Technische Universität, Munich, West Germany). *Vision Research*, vol. 20, no. 2, 1980, p. 117-125. 14 refs. Deutsche Forschungsgemeinschaft Contract No. SFB-50.

Experiments were carried out to study the visibility of postsaccadic stimuli under the influence of patterns presented at the saccade goal immediately before the saccade. For gratings of 3.2 c/deg an improved visibility was found in the case when the pre- and postsaccadic stimuli have the same spatial frequency. This enhancement effect is also obtained with aperiodic patterns, and turns out to be pattern specific. Dichoptic experiments show that this effect is a central phenomenon. The experimental data can be interpreted as an integration of information about extra-foveal regions of the visual field at the saccade goal with later information obtained by foveal fixation after the eye movement. The results are discussed under the view point of visual stability. (Author)

A80-27075 **A comparison of accommodative responsiveness and contrast sensitivity for sinusoidal gratings.** D. A. Owens (Pennsylvania State University, University Park, Pa.). *Vision Research*, vol. 20, no. 2, 1980, p. 159-167. 51 refs. Grant No. PHS-MH-08061.

The accuracy of steady-state accommodation for high contrast sinusoidal gratings was compared with the observers' contrast sensitivities for the same gratings. Stimuli ranging in spatial frequency from 0.5 to 19 c/deg were presented at optical distances ranging from 0 to 5 diopters, and accommodative responses were measured with a laser optometer. Contrast thresholds were obtained by the method of constant stimuli. The results showed that optimal performance for both accommodation and contrast sensitivity was obtained for spatial frequencies of 3-5 c/deg, while progressively diminished performance was obtained for higher and lower spatial frequencies. The accuracy of accommodation for sinusoidal gratings of intermediate spatial frequencies was equivalent to that for a square-wave grating of 4 c/deg. These findings imply that sharp edges are not necessary for accurate accommodative responses, and they suggest that mechanisms underlying foveal contrast resolution are also involved in the control of steady-state accommodation. (Author)

A80-27077 * **The role of Na/+/ in transport processes of bacterial membranes.** J. K. Lanyi (NASA, Ames Research Center, Extraterrestrial Research Div., Moffett Field, Calif.). *Biochimica et Biophysica Acta*, vol. 559, 1979, p. 377-397. 140 refs.

Until recently it was generally held that transport in bacteria was linked exclusively to proton circulation, in contrast to most eucaryotic systems, which depended on Na(+) circulation. The present review is intended to trace recent developments which have led to the discarding of this idea. The discussion covers transport of Na(+) and other cations, effects of Na(+) and Na(+) gradients on metabolite transport, properties of Na(+)-dependent transport carriers, and evolutionary considerations of Na(+) transport. It is now apparent that the transport of Na(+) is an important part of energy metabolism in bacteria, and that Na(+) gradients as well as H(+) gradients are used in these systems for the conservation and transmission of energy. Two hypotheses are proposed to explain the evolution of Na/K systems, and it is presently difficult to decide between them. S.D.

A80-27078 * **Changes in body temperature and metabolic rate after injection of calcium into the caudal hypothalamus of the rabbit.** P. E. Penn, R. L. Gerber, and B. A. Williams (NASA, Ames Research Center, Biosystems Div., Moffett Field, Calif.). In: Thermoregulatory mechanisms and their therapeutic implications. Basel, S. Karger AG, 1980, p. 212, 213. 5 refs.

A80-27260 **Rate of acoustic change may underlie hemispheric specialization for speech perception.** J. Schwartz (Johns Hopkins University, Baltimore, Md.) and P. Tallal (California, University, La Jolla, Calif.). *Science*, vol. 207, Mar. 21, 1980, p. 1380, 1381. 27 refs.

Phonemically similar syllables, differing only by temporal acoustic cues, were presented dichotically to investigate temporal processing mechanisms in hemispheric specialization for speech. Reducing the rate of acoustic change within syllables while keeping their phonemic characteristics constant significantly decreased the characteristic asymmetry in processing speech. (Author)

A80-27261 **Microwaves induce peripheral vasodilation in squirrel monkey.** E. R. Adair and B. W. Adams (John B. Pierce Foundation Laboratory; Yale University, New Haven, Conn.). *Science*, vol. 207, Mar. 21, 1980, p. 1381-1383. 39 refs. Grant No. AF-AFOSR-77-3420.

A80-27830 # **On the audition coordinating cerebral activity.** P. Albert (Szeged, Tudomanyegyetem, Szeged, Hungary). *Acta Technica*, vol. 89, no. 1-2, 1979, p. 201-212. 7 refs.

A model is demonstrated of the non-adaptive cerebral activities connected with audition, which is functional rather than structural, thus relationship between the transformations and the cerebral structure will not be examined. Our analysis of the transformations leads to the explanation of many experiments connected with hearing. The model transforms the information entering the ears into such a form which is suitable for cluster analysis, thus creating a possibility for the description of adaptive brain activity. In this study it will be demonstrated how to apply the model in some simple mathematical cases, and a quantitative discussion will be given of Treisman's experiments. (Author)

A80-28101 **Visual search through color displays - Effects of target-background similarity and background uniformity.** E. W. Farmer and R. M. Taylor (RAF, Institute of Aviation Medicine, Farnborough, Hants., England). *Perception and Psychophysics*, vol. 27, no. 3, Mar. 1980, p. 267-272. 26 refs.

The effects of target-background similarity and background uniformity were investigated in two experiments in which subjects reported the presence or absence of an achromatic target item in arrays containing irrelevant chromatic items. In Experiment 1, both 'present' and 'absent' decision times were an increasing function of the similarity of a predefined target item to the background, and were shortened when the interitem similarity of the background set was increased. In Experiment 2, the effects of target-background similarity on the 'present' decision were replicated when subjects were not informed on each trial as to which member of the target set might appear in the array, and the 'absent' decision was faster when each row of the array comprised background items of a single color than when these items were allocated randomly to array locations. The results are interpreted in terms of the role of preattentive grouping operations. (Author)

A80-28167 **Chronic propranolol treatment blunts right ventricular hypertrophy in rats at high altitude.** N. F. Voelkel, I. F. McMurtry, and J. T. Reeves (Colorado, University, Denver, Colo.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 48, Mar. 1980, p. 473-478. 29 refs. Research supported by the Max Kade Foundation; Grant No. NIH-HL-14985.

A80-28188 * **A model for hypokinesia: Effects on muscle atrophy in the rat.** X. J. Musacchia, D. R. Deavers, G. A. Meininger, and T. P. Davis (Louisville, University, Louisville, Ky.; Missouri, University, Columbia, Mo.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 48, Mar. 1980, p. 479-486. 28 refs. Grants No. NsG-2191; No. NsG-2325.

Hypokinesia in the hindlimbs of rats was induced by suspension; a newly developed harness system was used. The animal was able to use its forelimbs to maneuver, within a 140 deg arc, to obtain food and water and to permit limited grooming of the forequarters. The hindlimbs were nonload bearing for 7 days; following a 7-day period of hypodynamia, selected animals were placed in metabolic cages for 7 days to study recovery from hypokinesia. During the 7-day period of hypokinesia there was evidence of muscle atrophy. Gastrocnemius weight decreased, renal papillary urea content increased, and daily urinary losses of NH3 and 3-methylhistidine increased. During the 7-day recovery period muscle mass and excretion rate of urea, NH3 and 3-methylhistidine returned to control levels. Calcium balance was positive throughout the 7-day period of hypokinesia. Hypertrophy of the adrenals suggested the occurrence of some level of stress despite the apparent behavioral adjustment to the suspension harness. It was concluded that significant muscle atrophy and parallel changes in nitrogen metabolism occur in suspended rats and these changes are readily reversible. (Author)

A80-28189 **Variable open-loop gain in the control of thermogenesis in cold-exposed rabbits.** J. T. Stitt (John B. Pierce Foundation Laboratory, New Haven, Conn.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 48, Mar. 1980, p. 495-499. 12 refs. Grant No. NIH-NS-11487.

A80-28190 **Methods for identifying respiratory oscillations disclose altitude effects.** P. J. Brusil, T. B. Waggener, R. E. Kronauer, and P. Gulesian, Jr. (Harvard University, Boston and Cambridge, Mass.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 48, Mar. 1980, p. 545-556. 28 refs. Grant No. NIH-1-R01-HL-16325-01-A1.

The paper presents methods for identifying respiratory oscillations which disclose altitude effects. Breath shape was defined by inspiratory and expiratory durations and volumes (V sub E), total breath duration (T sub t), and ventilation. Dynamic breath pattern analysis revealed that the chronological sequences of these variables display large sustained oscillation, and that the simultaneous oscillations in ventilation and total breath duration are 'compensating' or 'reinforcing': the 'compensating' oscillations typify the view that breath-to-breath changes in V sub E and T sub t oscillate in phase, but for the reinforcing oscillations breath changes in V sub E and T sub t oscillate out-of-phase. A.T.

A80-28270 **A potassium superoxide /KO2/ life support system for Deep Quest.** Y. S. Li (Lockheed Missiles and Space Co., Inc., Sunnyvale, Calif.). In: OCEANS '79; Proceedings of the Fifth Annual Combined Conference, San Diego, Calif., September 17-19, 1979. New York, Institute of Electrical and Electronics Engineers, Inc., 1979, p. 752-757.

The original Deep Quest life support system is described. A need to increase the authorized diving duration led to development of an improved system utilizing potassium superoxide (KO2). KO2 system developments at Lockheed are discussed and the design characteristics, benefits and operational performance of the improved system for Deep Quest are described. (Author)

A80-28350 # **The effects of hypoxia and hypercapnia on myocardial adenosine triphosphatase activity (Vliianie gipoksii i giperkapnii na aktivnost' adenozintrifosfataz miokarda).** S. B. Balmukhanov, K. R. Uteulin, A. T. Ivashchenko, and I. A. Bushneva. *Akademiia Nauk Kazakhskoi SSR, Vestnik,* Jan. 1980, p. 68-70. In Russian.

A80-28554 **A dual task investigation of pilots' skill level.** J. V. Crosby and S. R. Parkinson (Arizona State University, Tempe, Ariz.). *Ergonomics,* vol. 22, Dec. 1979, p. 1301-1313. 14 refs. Contract No. F33615-77-C-0053.

Performances of instructor pilots and student pilots were compared in a dual task paradigm combining a ground controlled approach as the primary task and memory search as the subsidiary task. In the first experiment the difference in subsidiary task performance between single and dual conditions was greater for a group of students in the middle phase of T-37B training than for a group of experienced instructor pilots. It was concluded that the effect of experience on the type of flight task examined here is to reduce the processing demands of encoding and/or responding. In the second experiment a group of student pilots who had just completed T-37B training was run in the same task to determine the sensitivity of the dual task to less disparate amounts of flying experience. The difference in memory search performance between single and dual conditions for the late-phase students was quite similar to that of the instructor pilots and was significantly less than that of mid-phase students. That dual task performance discriminated between student groups differing in only four weeks of training suggests that the dual task paradigm has considerable potential value in providing an objective measure of flight proficiency. (Author)

A80-28555 **Some aspects concerning the dynamic evaluation of oxygen consumption in exercise tests.** F. Balanescu (Institute of Medical Assessment and Rehabilitation of Work Capacity, Bucharest, Rumania). *Ergonomics,* vol. 22, Dec. 1979, p. 1337-1342. 13 refs.

Oxygen intake assessment for rating performance efficiency in an exercise test with 42 subjects who ascended and descended a step at 60, 80, 100 and 120 W respectively is discussed. Oxygen consumption is determined under steady-state and nonsteady-state conditions with open circuit equipment by adding consumption for each minute of exercise and recovery periods, and subtracting the value from the total. It is shown that in real steady-state exercise the oxygen deficit is lower than or equal to the oxygen debt, that the oxygen intake per mechanical work unit is significantly lower than in the nonsteady-state exercise, and that the efficiency of the energy expenditure is lower in the nonsteady-state exercise than in the steady-state exercise. L.M.

A80-28556 * **Effect of cursor characteristics on pilots' tracking performance on a cathode-ray tube in dynamic simulation.** M. K. Junge (Stanford University, Stanford, Calif.). *Ergonomics,* vol. 22, Dec. 1979, p. 1363-1370. 24 refs. Grant No. NsG-2269.

The effects of cursor configuration, size, and orientation on the performance of 11 commercial airline pilots were investigated in a difficult compensatory tracking task in a moving-base aircraft simulator. Three levels of congruent cab motion (0, 1, and 2 times the visual motion) were superimposed on the tracking task. Data analysis of the mean tracking error scores revealed no significant effects of cursor size, orientation, or configuration on pilots' tracking performance. Mean tracking error did not significantly differ between the three levels of motion for the conditions with a single dot as the cursor. However, for the dotted and solid line cursors, tracking error significantly decreased from the no motion condition to the motion conditions. The addition of simulator motion significantly reduced tracking error for large cursors, but not for small ones such as a single dot. (Author)

A80-28699 * **Astronaut crew selection.** S. D. Griggs (NASA, Johnson Space Center, Houston, Tex.). In: Space Shuttle: Dawn of an era; Proceedings of the Twenty-sixth Annual Conference, Los Angeles, Calif., October 29-November 1, 1979. Part 1. San Diego, Calif., American Astronautical Society; Univelt, Inc., 1980, p. 29-41. (AAS 79-207)

Thirty-five astronaut candidates were selected by NASA in January 1978, and in August 1979 they completed their initial training and evaluation candidacy status to become designated astronauts eligible for selection to flight crews. The astronauts have been chosen in groups, and to date there have been a total of eight groups selected. This paper examines the basis for the selection criteria, the physiological makeup of the astronauts that types them to the criteria, and some of the testing and evaluation criteria used for the selection. B.J.

A80-28700 **Shuttle payload, manual vs. automated functions.** J. W. Patrick and M. M. Beilock (Rockwell International Corp., Downey, Calif.). In: Space Shuttle: Dawn of an era; Proceedings of the Twenty-sixth Annual Conference, Los Angeles, Calif., October 29-November 1, 1979. Part 1. San Diego, Calif., American Astronautical Society; Univelt, Inc., 1980, p. 63-70. 5 refs. (AAS 79-210)

The paper describes requirements, methodology, and typical design concepts for the application of EVA to Orbiter payloads. The performance improvements and developmental cost benefits gained by providing manual versus automated functions should be considered in the design of Shuttle payloads. EVA capability can help maximize mission success and the scientific return of each project. It is concluded that substantial savings can be realized if Shuttle payloads adopt EVA as a primary mode of operation. B.J.

A80-28707 **Determination of ethylene produced by pea seedlings under near-zero gravity conditions - Preliminary studies.** R. A. Kapteyn, K. E. Kubow, A. J. O'Connor, J. W. Shockley, M. P. Sweet, and C. K. Tyran. In: Space Shuttle: Dawn of an era; Proceedings of the Twenty-sixth Annual Conference, Los Angeles, Calif., October 29-November 1, 1979. Part 2.
San Diego, Calif., American Astronautical Society; Univelt, Inc., 1980, p. 481-485. (AAS 79-216)

The paper describes a proposal to test the involvement of ethylene in the gravitational response of seedlings under four sets of conditions: normal terrestrial gravity, clinostat, enhanced gravity, and near zero gravity. The experimental material will be germinating pea seeds. Attention is given to the preliminary design studies for one aspect of the experiment - growth under near zero gravity conditions. M.E.P.

A80-28713 **Life support in the Shuttle Era.** P. Heimlich, C. Flugel, and R. Galluccio (United Technologies Corp., Hamilton Standard Div., Windsor Locks, Conn.). In: Space Shuttle: Dawn of an era; Proceedings of the Twenty-sixth Annual Conference, Los Angeles, Calif., October 29-November 1, 1979. Part 2. San Diego, Calif., American Astronautical Society; Univelt, Inc., 1980, p. 709-743. (AAS 79-253)

The paper discussed the Space Shuttle, Spacelab, and Extravehicular Mobility Unit Life Support Equipment Systems, which provide the crewmen with habitable work environments while in orbit. Attention is given to system functional descriptions, performance capabilities and typical mission support tasks required of the crew. Finally, it is concluded that as the 'Space Shuttle' era matures, life support system design modifications will result from extended mission requirements and the increased role of extravehicular activity. M.E.P.

A80-28775 **Illusory reversal of extrafoveally perceived displacement.** D. M. MacKay (Keele, University, Keele, Staffs., England). *Nature*, vol. 284, Mar. 20, 1980, p. 257. 8 refs.

An extrafoveal illusion of reversed displacement is reported. The illusion is brought about by the instantaneous deflection of a spot or line on a cathode ray oscilloscope, followed by its slow return to its original position. Viewed 3 or 4 deg from the fovea, the perceived displacement is actually in the opposite direction to the real displacement. The illusion can be quantified by imposing an RC-filtered step deflection of this form on a second cathode ray tube beam viewed foveally, and adjusting its amplitude and time constant until the motion of both spots or lines matches. The illusion is evidence for the computation of extrafoveal location from motion signals, and further experiments at scotopic light levels have shown this integration primarily a function of the cone system. A.L.W.

A80-28786 **Electroretinographic and psychophysical measures of cone spectral mechanisms using the two-color threshold technique.** M. Korth (Northeastern University, Boston, Mass.) and S. Sokol (New England Medical Center; Tufts University, Boston, Mass.). *Vision Research*, vol. 20, no. 3, 1980, p. 205-212. 18 refs. Grants No. NIH-EY-0759; No. NIH-EY-00926.

The two-color threshold paradigm of Stiles (1939) and a spatially alternating bar pattern stimulus were used to derive electrophysiological and psychophysical spectral sensitivity curves from the human retina. The test wavelength was kept constant at 600 nm and the background wavelength was varied from 450 to 650 nm. Three experiments were carried out with two color normal subjects. In the first experiment the original stimulus configuration of Stiles, a 1 deg, 500 msec test flash on a 10 deg background, was used to determine increment threshold curves. In the second experiment, ERGs were recorded with a bar pattern test field with a stripe width of 30 arcmin alternating at a rate of 8 Hz superimposed on a steady background. The diameter of both test and adaptation field was 15 deg. In the third experiment psychophysical thresholds were determined with the same stimulus conditions used to record the ERG. Stiles' pi sub 5 mechanism provides a good fit to the spectral sensitivity curves derived from the increment threshold functions. (Author)

A80-28787 **The influence of colour and contour rivalry on the magnitude of the tilt illusion.** N. J. Wade (Dundee, University, Dundee, Scotland). *Vision Research*, vol. 20, no. 3, 1980, p. 229-233. 15 refs. Research supported by the Medical Research Council.

Tilt illusions were generated in three experiments by surrounding a central grating by another differing in orientation by 10 or 15 deg. The magnitude of the illusion (1) was not influenced by the color of the central and surround grating, (2) was reduced to about 50% under interocular transfer and (3) was unchanged during binocular rivalry between tilted and horizontal surrounds. The results are considered to support the equation of the tilt illusion and aftereffect with regard to the neural mechanisms involved in their generation. (Author)

STAR ENTRIES

N80-18679*# California Univ., Berkeley. Environmental Physiology Lab.

METHODOLOGY FOR ESTIMATION OF TOTAL BODY COMPOSITION IN LABORATORY MAMMALS

Nello Pace, Donald F. Rahlmann, and Arthur H. Smith 14 Dec. 1979 44 p refs
(Grant NsG-7336)
(NASA-CR-162806; EPL-79-1) Avail: NTIS HC A03/MF A01 CSCL 06C

A standardized dissection and chemical analysis procedure was developed for individual animals of several species in the size range mouse to monkey (15 g to 15 kg). The standardized procedure permits rigorous comparisons to be made both interspecifically and intraspecifically of organ weights and gross chemical composition in mammalian species series, and was applied successfully to laboratory mice, hamsters, rats, guinea pigs, and rabbits, as well as to macaque monkeys. The procedure is described in detail. R.E.S.

N80-18680*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

THE CARBON ISOTOPE BIOGEOCHEMISTRY OF THE INDIVIDUAL HYDROCARBONS IN BAT GUANO AND THE ECOLOGY OF INSECTIVOROUS BATS IN THE REGION OF CARLSBAD, NEW MEXICO

David J. DesMarais, J. M. Mitchell (Indiana Univ., Bloomington), W. G. Meinschein (Indiana Univ., Bloomington), and J. M. Hayes Feb. 1980 46 p refs
(NASA-TM-81164; A-8056) Avail: NTIS HC A03/MF A01 CSCL 06C

The structures and C-13 contents of individual alkanes extracted from bat guano found in the Carlsbad region of New Mexico can be related to both the photosynthetic pathways of the local plants and the feeding habits of the insects that support the bats. Carbon isotopic analyses of the 62 most important plant species in the Pecos River Valley, the most significant feeding area for the Carlsbad bats, reveal the presence of 29 species with C3 photosynthesis and 33 species, mostly grasses, with C4 photosynthesis. Although the abundances of nonagricultural C3 and C4 plants are similar, alfalfa and cotton, both C3 plants, constitute over 95 per cent of the crop biomass. The molecular composition of the bat guano hydrocarbons is fully consistent with an insect origin. Two isotopically distinct groups of insect branched alkanes were discerned. These two groups of alkanes derived from two chemotaxonomically distinct populations of insects possessing distinctly different feeding habits. It is likely that one population grazes predominantly on crops whereas the other population prefers native vegetation. This and other isotopic evidence supports the notion that crop pests constitute a major percentage of the bats' diet. Author

N80-18681*# National Aeronautics and Space Administration. Washington, D. C.

EFFECT OF THE ENZYMATIC INHIBITOR OF KUNITZ ON THE GASTRIC LESIONS FROM RESERPINE, FROM PHENYLBUTAZONE, FROM PYLORIC LIGATION AND BY RESTRAINT IN THE RAT

F. Guerrin, A. Demaille, P. Merveille, and C. Bel Feb. 1980 9 p refs Transl. into ENGLISH from Comp. Rend. Soc. Biol. (Paris), v. 159, no. 5, 1965 p 1172-1174 In ENGLISH and FRENCH Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76027) Avail: NTIS HC A02/MF A01 CSCL 06C

The protective effects of certain polypeptides on gastric ulcerations caused from reserpine and phenylbutazone in the rate were studied. It was found that the Kunitz enzymatic inhibitor exerts a protective action in regard to gastric lesions. However, the inhibitor did not change the development of Shay ulcers and stress ulcers from restraint. R.E.S.

N80-18682*# National Aeronautics and Space Administration, Washington, D. C.

MULTIPURPOSE ROTATING MACHINE FOR IMMOBILIZATION AND CONDUCTING STUDIES ON SMALL LABORATORY ANIMALS

N. F. Kornelishin 9 Feb. 1980 7 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), no. 5, Sep. - Oct. 1979, p 80-82 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76049) Avail: NTIS HC A02/MF A01 CSCL 14B

A new device assisting the researcher in conducting laboratory experiments on small animals is described. Its advantages over extant machines are discussed. R.E.S.

N80-18683*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF RESTRICTED MOTION IN HIGH TEMPERATURE ON ENZYMATIC ACTIVITY OF THE PANCREAS

A. Abdusattarov and G. I. Smirnova Feb. 1980 6 p refs Transl. into ENGLISH from Uzbeksk. Biol. Zh. (USSR), no. 1, 1979 p 35-37 Transl. by Sci. Transl. Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76063) Avail: NTIS HC A02/MF A01 CSCL 06C

Effects of 30 day hypodynamia coupled with high temperature (35-36 C) on enzymatic activity of the pancreas of male adult rats were studied. The test animals were divided into four groups. Group one served as controls (freedom of movement and a temperature of 25-26 C, considered optimal). The remaining animals were divided into three additional groups: Group two freedom of movement but high temperature (35-36 C); group three hypodynamia but an optimal temperature; group four hypodynamia and 35-36 C. Considerable change in the enzymatic activity in the pancreas of the four groups is observed in three experimental groups (two, three, and four) as compared to the control (group one). The results indicate that adaption of the organism to the thermal factor and restricted movement is accompanied by a change in the enzymatic spectrum of the pancreas. With the combined effect of these two stresses under conditions of the adaption of the organism especially sharp shifts occur in the enzymatic activity. R.E.S.

N80-18684*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF CONSECUTIVE COOLING AND IMMOBILIZATION ON CATECHOLAMINE METABOLISM IN RAT TISSUES

E. Sh. Matlina, S. M. Waysman, I. G. Zaydner, B. M. Kogan, and L. V. Nozdracheva Nov. 1979 19 p refs Transl. into ENGLISH from Fiziol. Zh. SSSR (USSR), v. 60, no. 4, Apr. 1974 p 540-547 Trans. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75962) Avail: NTIS HC A02/MF A01 CSCL 06C

The combined effect of two stressor stimuli--cooling and immobilization--acting successively on the sympathetic-adrenaline system was studied experimentally in rats that were cooled for 8 hours at 7 C on the first day and immobilized for 6 hours on the next day. The biochemical and histochemical methods used and the experimental technique involved are described in detail. The following conclusions were formulated: (1) the successive action of cooling and immobilization results in a stronger decrease in the adrenaline and noradrenaline content in the adrenal gland than that which could be due to a simple summation of the cooling and immobilization effects; (2) successive cooling and immobilization are followed by activation of catecholamine synthesis in the adrenal gland; and (3) 1-DOPA administration (45 mg/kg 3 times in 2 days) intraabdominally activated catecholamine synthesis in the adrenal glands in both the control and test animals. R.E.S.

N80-18685*# National Aeronautics and Space Administration, Washington, D. C.

THE EFFECTS OF ADRENALECTOMY AND CORTICSTEROID INJECTION ON THE FIBRINOLYTIC ACTIVITY OF COMPLEX HEPARIN COMPOUNDS IN THE BLOOD DURING IMMOBILIZATION

B. A. Kudryashov, E. G. Lomovskaya, F. B. Shapiro, and L. Ya. Lyapina Feb. 1980 11 p refs Transl. into ENGLISH from Fiziol. Zh. SSSR (USSR), v. 59, no. 7, 1973 p 1108-1113 Original language document announced as A75-31019 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prepared by Moscow State Univ., USSR
(Contract NASw-3199)
(NASA-TM-75985) Avail: NTIS HC A02/MF A01 CSCL 06C

Total non-enzymatic fibrinolytic activity in the blood of rats increased three times in response to stress caused by 30 minute immobilization, and the activity of epinephrine-heparin complex increased nine times. In adrenalectomized animals, which showed a weak response to the same stress, intraperitoneal injection of hydrocortisone 30 minutes prior to immobilization normalized the response. Obtained results indicate that adrenalectomy leads to sharp reduction of heparin complexing with thromogenic proteins and epinephrine, while substitution therapy with hydrocortisone restores anticoagulation system function. Author

N80-18686*# National Aeronautics and Space Administration, Washington, D. C.

INFLUENCE OF AMBIENT TEMPERATURES ON THE PRODUCTION OF RESTRAINT ULCERS IN THE RAT

L. Buchel and D. Gallaire Feb. 1980 7 p refs Transl. into ENGLISH from Soc. Biol. C. R. Seances, (France), v. 160, no. 10, 1966 p 1817-1820 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(NASA-TM-76028) Avail: NTIS HC A02/MF A01 CSCL 06C

A study of the influence of ambient temperature on the production of restraint ulcers in the rat is described. It concludes that the production of restrain ulcers, is favored by the reduction of the environmental temperature, whether the rat has been subjected to a fast or not. R.E.S.

N80-18687*# National Aeronautics and Space Administration, Washington, D. C.

FEATURES OF CHOLINERGIC CARDIA REGULATION UNDER CONDITIONS OF HYPOKINESIA

Ye. A. Markova, Yu. I. Bondarenko, V. A. Bolyarskaya, V. V. Fayfura, A. P. Rosolovskiy, and L. N. Babinskaya Feb. 1980 10 p refs Transl. into ENGLISH from Patologhk. Fiziol. Eksp. Terapiya (USSR), no. 3, 1979 p 13-16 Transl. by Kanner (Leo) Associates Redwood City, Calif.
(Contract NASw-3198)
(NASA-TM-76044) Avail: NTIS HC A02/MF A01 CSCL 06C

The features of cholinergic processes in the heart on the 4th, 8th, 16th and 30th days of hypokinesia were studied in experiments on 382 albino rats. It was shown that hypokinesia is attended by increased acetylcholine content in the atria, reduced choline acetyltransferase activity in the atria and ventricles and by increased activity of acetylcholinesterase in the ventricles and of pseudocholinesterase in both parts of the heart. The sensitivity of the heart to exogenic acetylcholine and to stimulation of the vagus nerve increases. Author

N80-18688*# National Aeronautics and Space Administration, Washington, D. C.

THE EFFECTS OF STIMULATION OF THE ANTERIOR CINGULATE GYRUS IN CATS WITH FREEDOM OF MOVEMENT

G. Dapres, J. Cadilhac, and P. Passouant Feb. 1980 8 p refs Transl. into ENGLISH from Compt. Rend. Soc. Fr. Gynecol. (France), v. 161, no. 3, 1967 p 657-660 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76055) Avail: NTIS HC A02/MF A01 CSCL 06C

Stimuli of varying strength, frequency and duration were applied to the anterior cingulate gyrus in unanesthetized cats with freedom of movement. The motor, vegetative and electrical effects of these stimuli, although inconstant, lead to a consideration of the role of this structure in the extrapyramidal control of motricity. Author

N80-18689*# National Aeronautics and Space Administration, Washington, D. C.

TOPOCHEMICAL DIFFERENCES IN THE AMOUNT OF RNA IN THE MOTONEURONS OF THE SPINAL CHORD IN HYPOXIA AND HYPOKINESIA

V. A. Brumberg, O. G. Gazenko, N. N. Demin, V. B. Malkin, and L. Z. Pevzner Feb. 1980 8 p refs Transl. into ENGLISH from Dokl. Akad. Nauk SSSR (USSR), vol. 205, no. 6, 1972 p 1490-1493 Original language document was announced as A73-12558 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75994) Avail: NTIS HC A02/MF A01 CSCL 06C

Reactions to hypoxia and hypoknesia were compared by measuring charges in the amount of ribonucleic acid (RNA) in the cytoplasm of neurons of the intumescentia cervicalis and lumbalis. Animals were subjected to hypoxia, hypokinesia and both combined and a control group to neither. A total of two groups of motoneurons were compared, one innervating the respiratory musculature, the other the musculature of the lower extremities, so that hypoxic hypoxia would probably affect the first group primarily and hypokinesia the second. Results indicate that neither affect the amount of RNA in the neurons of the first group but a significant increase is noted in neurons of the second group. Other significant results are reported. R.C.T.

N80-18690* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

INTRA-OCULAR PRESSURE NORMALIZATION TECHNIQUE AND EQUIPMENT Patent

William J. McGannon, inventor (to NASA) Issued 22 Jan. 1980 5 p Filed 31 Aug. 1977 Supersedes N77-30727 (15 - 21, p 2839)
(NASA-Case-LEW-12723-1; US-Patent-4,184,491;
US-Patent-Appl-SN-829317; US-Patent-Class-128-276;
US-Patent-Class-128-760) Avail: US Patent and Trademark Office CSCL 06B

A method and apparatus for safely reducing abnormally high intraocular pressure in an eye during a predetermined time interval is presented. This allows maintenance of normal intraocular pressure during glaucoma surgery. According to the invention, a pressure regulator of the spring biased diaphragm type is provided with additional bias by a column of liquid. The height of the column of liquid is selected such that the pressure at a hypodermic needle connected to the output of the pressure regulator is equal to the measured pressure of the eye. The hypodermic needle can then be safely inserted into the anterior chamber of the eye. Liquid is then bled out of the column to reduce the bias on the diaphragm of the pressure regulator and, consequently, the output pressure of the regulator. This lowering pressure of the regulator also occurs in the eye by means of a small second bleed path provided between the pressure regulator and the hypodermic needle. Alternately, a second hypodermic needle may be inserted into the eye to provide a controlled leak off path for excessive pressure and clouded fluid from the anterior chamber.

Official Gazette of the U.S. Patent and Trademark Office

N80-18691* National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

INDUCTION POWERED BIOLOGICAL RADIOSONDE Patent

Thomas B. Fryer, inventor (to NASA) Issued 5 Feb. 1980 12 p Filed 12 May 1977 Supersedes N77-23743 (16 - 14, p 1894)
(NASA-Case-ARC-11120-1; US-Patent-4,186,749; US-Patent-Appl-SN-796256; US-Patent-Class-128-748; US-Patent-Class-128-903; US-Patent-Class-73-724) Avail: US Patent and Trademark Office CSCL 06B

An induction powered implanted monitor for epidurally measuring intracranial pressure and telemetering the pressure information to a remote readout is disclosed. The monitor utilizes an inductance-capacitance (L-C) oscillator in which the C comprises a variable capacitance transducer, one electrode of which is a small stiff pressure responsive diaphragm. The oscillator is isolated from a transmitting tank circuit by a buffer circuit and all electric components in the implanted unit except an input and an output coil are shielded by a metal housing.

Official Gazette of the U.S. Patent and Trademark Office

N80-18692 Kent State Univ., Ohio.

THE EFFECTS OF SPECTRAL DENSITY AND STIMULUS INTENSITY ON THE ELICITATION OF THE ACOUSTIC REFLEX Ph.D. Thesis

Colleen Ann Mcaleer 1979 159 p
Avail: Univ. Microfilms Order No. 8003475

The acoustic reflex (AR) responses of normal hearing and hearing-impaired subjects elicited by moderate and high tensity stimuli when the stimulus energy was contained within an AR critical band were compared. The effects of minimum and maximum spectral density of the elicitation and growth of the AR were also investigated. The results show that ARTs were higher in dB sound pressure level for all four stimulus conditions for the hearing-impared than for the normal hearing subjects. Additionally, stimulus spectral density within a critical band had a differential effect on the elicitation of the AR for normal hearing and hearing-impaired subjects. The differences between the AR responses of normal hearing and hearing-impaired subjects could be attributed to the anatomical and physiological changes that accompany a noise-induced hearing loss. Dissert. Abstr.

N80-18693 Florida Univ., Gainesville.

FATIGUE IN SKELETAL MUSCLE Ph.D. Thesis

Brian Robert Macintosh 1979 118 p
Avail: Univ. Microfilms Order No. 8002876

Skeletal muscle fatigue is examined utilizing an in situ dog gastrocnemius-plantaris muscle preparation. Skeletal muscle fatigue (reduced force output for a given stimulus) results from a thirty minute period of isometric contractions at 2.5 to 20/sec. This fatigue is not a result of failure of motor nerve propagation or transmitter release. The ratio of oxygen uptake to developed tension is unaltered during or following fatiguing contractions. Energy sources are available and with maximal activation the contractile mechanism is capable of the same force output it had before the fatiguing contractions. Further, there is no reduction in twitch developed tension associated with intracellular acidosis. It appears that twitch fatigue results from a reduced activation of the myofilaments during a twitch contraction. This may be due to either a reduced sarcoplasmic Ca2(+) concentration during contraction or a reduced response of the myofilaments at a given CA2(+) concentration. Dissert. Abstr.

N80-18694 Virginia Univ., Charlottesville.

MICROVASCULAR DETERMINANTS OF OXYGEN SUPPLY IN RESTING AND CONTRACTING STRIATED MUSCLE Ph.D. Thesis

Bruce Maurice Klitzman 1979 138 p
Avail: Univ. Microfilms Order No. 8002544

The alteration of striated muscle oxygen supply in response to increases in oxygen demand induced by twitch contraction was examined. The approach taken was to measure the four most important microvascular determinants of tissue oxygen supply: arteriolar diameter, capillary density, tissue PO2, and hematocrit. Using the results of this study obtained at the microvascular level, muscle oxygen consumption was estimated to increase 9.8 fold with 1 Hz twitch contraction. Perfused muscle studies have found an increase of 8 fold with 1 Hz contraction. These results from microvascular and whole organ studies are remarkably close, indicating that the parameters chosen in this study as determinants of oxygen supply do in fact accurately relfect oxygen supply when considered collectively.

Dissert. Abstr.

N80-18695 Missouri Univ. - Columbia.

CIRCADIAN RHYTHMICITY IN VENTRICULAR MYOCARDIAL AND DIAPHRAGMATIC METABOLISM Ph.D. Thesis

Susan Marie Garthwaite 1979 121 p
Avail: Univ. Microfilms Order No. 8002361

Circadian rhythm studies were utilized to elucidate metabolic mechanisms operative in ventricle and diaphragm of unstressed animals. Male Wistar rats were sampled after two weeks of entrainment to a 12L:12D light cycle in which the lights came on at 0600 hours and went off at 1800 hours. Food and water were available ad lib. Ventricular and diaphragmatic samples were obtained from each rat at 4 hour intervals during the 24 hour cycle. Weight of the stomach contents of the same rats was also determined as an index of food consumption. A circadian rhythm in ventricular glycogen was found with a peak at 0600 hours and a nadir at 1800 hours. Ventricular free fatty acid and triglyceride levels also showed a circadian rhythm, but 180 deg out of phase with the glycogen rhythm. A circadian rhythm of diaphragmatic glycogen was found with a peak value preceding the ventricular glycogen peak by about 4 hours. Other significant results are reported. Dissert. Abstr.

N80-18696 Arizona Univ., Tucson.

MUSCULAR FORCE-VELOCITY ALTERATIONS CONSEQUENT TO SLOW AND FAST VELOCITY POWER TRAINING Ph.D. Thesis

Edward Francis Coyle 1979 77 p
Avail: Univ. Microfilms Order No. 8003049

Muscular force-velocity alterations were compared to slow and fast velocity power training. Active males trained the knee extensors of both legs simultaneously for six weeks, three times per week, by attempting to generate maximal peak torque (MPT) with each repetition at velocities of 60 deg/sec (MPT/60), 300 deg/sec (MPT/300), or both. Fast training significantly improved MPT uniformly (16-21%) at the training velocity as well as at slower velocities. Only the MPT/180 and MPT/300 improvements contained a significant physiological component of adaptation. High tension producing contractions appear necessary to improve MPT/slow while fast training velocities must be employed to improve MPT/fast. Fast training improves MPT in the mid-velocities more effectively than does slow training. Dissert. Abstr.

N80-18697 Arizona Univ., Tucson.

MODELS OF HUMAN VISION IN DIGITAL IMAGE BANDWIDTH COMPRESSION Ph.D. Thesis

Douglas James Granrath 1979 181 p
Avail: Univ. Microfilms Order No. 8003051

The study of human vision is applied to the problem of reducing the amount of information necessary to represent an image. Relevant vision research is reviewed, including eye and retina anatomy, membrane potential recordings, and psychophysical studies. Current engineering models of human vision are discussed in terms of their structural similarities to the eye. A two-channel model of spatial interaction in the retina is then developed based on retinal cell structure and related experimental results. Analysis of this model shows that one of the channels carries mainly image contrast information while the other carries edge detail. Computer simulation results demonstrate a bandwidth reduction potential from 6 bits per pixel down to 2 bits per pixel for the model. Suggestions for further research include use of the two-channel model to predict image quality. Dissert. Abstr.

N80-18698 Lehigh Univ., Bethlehem, Pa.
MATHEMATICAL ANALYSIS OF CARBON DIOXIDE TRANSPORT BY BLOOD Ph.D. Thesis
Ramon Fayad 1979 191 p
Avail: Univ. Microfilms Order No. 8003061

A theoretical analysis of acid-base balance at the microcirculatory level is presented. A mathematical model that includes the physiological and biochemical processes important to carbon dioxide transport by blood is constructed. Using perturbation and time scale techniques to study the steady-state problem, analytic solutions are obtained for the cases when no change in saturation of hemoglobin occurs and when a linear decrease in oxygenation of blood from the arterial to the venous end of the capillary occurs. The extent to which the various processes contribute to carbon dioxide transport by blood is determined, and it is found that while the dependence of CO2 exchange on O2 (Haldane effect) accounts for 40% of carbon dioxide transport, the magnitude of the Bohr effect is rather small. Dissert. Abstr.

N80-18699 George Washington Univ., Washington, D. C.
CONTINUOUS REAL-TIME AUDITORY EVOKED POTENTIALS USING A SLIDING WINDOW OF AVERAGES Ph.D. Thesis
Nicholas Anthony Diakides 1979 195 p
Avail: Univ. Microfilms Order No. 8003453

Procedures and computer instrumentation which would advance the state of the art in auditory evoked response (AER) measurement, especially to alleviate the need for prolonged testing periods required by the traditional method of AER measurement were developed. The key to an improved method lay in the use of high rates of presentation of auditory stimuli, i.e., 20-50 Hz, and a means of continuously averaging and updating the output data (sliding window of averages). The high stimulus rates would allow more responses to be obtained and evaluated in a very short time, i.e., a few seconds. A clearly observable enhancement of AER amplitude was found at and around 45 Hz with correspondingly high signal-to-noise ratios (SNRs) when referenced to ongoing EEG background activity levels. Having demonstrated the fundamental phenomenon of AER and SNR enhancement at high stimulus frequencies, a low cost microcomputer system and operational algorithm were developed and successfully tested. Dissert. Abstr.

N80-18700 Wisconsin Univ. - Madison.
MASS TRANSFER STUDIES OF PULMONARY FUNCTION Ph.D. Thesis
Simon Hallifax Hobbs 1979 282 p
Avail: Univ. Microfilms Order No. 7928647

A comprehensive lung model was developed which takes into account both diffusion and ventilation distribution effects. Particlar emphasis was placed on the simulation of the pulmonary transport of insoluble inert gases, especially nitrogen, helium, and sulfur hexafluoride, which are commonly used in respiratory diagnostic testing. An expression was developed to describe individual lung unit alveolar gas concentrations, in terms of the most important lung parameters. The ventilation distribution found throughout the lung was the critical factor controlling gas concentration since it severely limited transport of gas into poorly ventilated lung regions. Dissert. Abstr.

N80-18701 Commission of the European Communities, Luxembourg.
THE RADIATION PROTECTION PROGRAM Annual Report, 1977
1978 798 p refs Partly in ENGLISH, FRENCH and GERMAN
(EUR-5972; ISBN-92-825-0184-1) Copyright. Avail: Issuing Activity

Five hundred seventy-four papers published as a result of research are presented under six headings. These are dosimetry, radioactive contamination of the environment, hereditary effects of ionizing radiation, somatic short-term effects of ionizing radiation, somatic long-term effects of ionizing radiation, and evaluation of radiation risks. Much research was undertaken into the damaging effects of radiation on chromosomes and other genetic material. Somatic effects of radiation in the induction of leukemia and carcinogenesis as well as the controlled use of radiation in the treatment of diseases were studied. The environmental impact of radiation on the water cycle and food chain are also covered. Author (ESA)

N80-18702# Royal Aircraft Establishment, Farnborough (England).
THE HUMAN BODY TEMPERATURE REGULATION SYSTEM
J. Werner Sep. 1979 24 p refs Transl. into ENGLISH from Biol. Cybernetics (West Germany), v. 17, 1975, p 53-63
(RAE-Lib-Trans-2019; BR71910) Avail: NTIS HC A02/MF A01

The control loop of human body temperature is treated as a distributed parameter system. The equations of heat balance are formulated, admitting discontinuities of parameters. Using two successive integral transformations and an expansion with eigenfunctions, an analytical solution is found for the closed control loop. Regarding the stationary as well as the dynamic behavior, the mathematical results are on the whole compatible with experimental results. K.L.

N80-18703# Materials Research Labs., Melbourne (Australia).
SIZE AND LUMINANCE DISCRIMINATION IN THE PERIPHERAL VISUAL FIELD
Stephen E. Jenkins Oct. 1979 28 p refs
(MRL-R-760; AR-001-843) Avail: NTIS HC A03/MF A01

The discrimination of length differences between two bars as well as size and luminance differences between two discs was measured as a function of the angle of eccentricity between the fixation point and the stimulus. The experiments provided basic data necessary for the interpretation of experiments involving the detection of discs embedded in a complex background which in turn elucidate the determinants of camouflage. It was found that, (1) discs are discriminated in size by virtue of their difference in diameter rather than their difference in area; (2) the 50% and 90% levels of detection probability of size and luminance contrast between two discs are linear functions of eccentricity at least to 14 deg eccentricity; (3) the visual system is better at discriminating size contrast at all eccentricities tested than it is at discriminating luminance contrast; and (4) there is a fundamental difference between the mechanisms which mediate size and luminance discrimination. K.L.

N80-18704*# National Aeronautics and Space Administration, Washington, D. C.
EXPERIMENTAL INVESTIGATION OF THE ROLE OF THYROCALCITONIN IN THE PROPHYLAXIS OF DISTURBANCES IN THE WATER-SALT AND MINERAL METABOLISM DURING A 30-DAY HYPOKINESIA
V. S. Shashkov, B. B. Yegorov, B. S. Dmitriyev, A. N. Volozhin, and B. P. Krotov Nov. 1979 10 p refs Transl. into ENGLISH from Fiz. Zh. SSSR (Moscow), v. 60, no. 2, 1974 p 290-294
Original language document was announced as A74-26557
Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75938) Avail: NTIS HC A02/MF A01 CSCL 06S

The effect of thyrocalcitonin (TCT) injections on the metabolism of water and electrolytes in free-moving and immobilized chinchilla hares is described. Calcium excretion from immobilized animals was elevated, but normalized in those also receiving TCT injections. TCT also normalized water content and excretion rates. Author

N80-18705*# National Aeronautics and Space Administration, Washington, D. C.

RESTRAINT ULCERS IN THE RAT. 1: INFLUENCE ON ULCER FREQUENCY OF FASTING AND OF ENVIRONMENTAL TEMPERATURE ASSOCIATED WITH IMMOBILIZATION OF VARYING DURATIONS

L. Buchel and D. Gallaire Feb. 1980 16 p refs Transl. into ENGLISH from Arch. Sci. Physiol. (France), v. 21, 1967 p 527-536 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76031) Avail: NTIS HC A02/MF A01 CSCL 06S

The results of the production of experimental ulcers in rats are described. Two experimental conditions were found to regularly provoke the appearance of gastric ulcers in a high percentage of rats: (1) two-and-a-half hour restraint, proceeded by a 24 hour fast; and (2) one-and-a-half hour restraint with lowering of the environmental temperature while fasting. R.E.S.

N80-18706*# National Aeronautics and Space Administration, Washington, D. C.

HORMONE SUPPLY OF THE ORGANISM IN PROLONGED EMOTIONAL STRESS

M. G. Amiragova, B. V. Stulnikov, and R. I. Svirskaya Feb. 1980 15 p refs Transl. into ENGLISH from Fiziol. Zh. SSSR I. M. Sechenova (USSR), v. 65, no. 7, 1979 p 945-952 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3198)
(NASA-TM-76046) Avail: NTIS HC A02/MF A01 CSCL 06S

The effect of prolonged emotional stress of varying genesis on the hormonal function of the pancreas, thyroid gland, and adrenal cortex was studied. The amount of the hormonal secretion was found to depend on the type of adaptation activity and its duration. High secretion of the hormones observed outside the adaptation activity was examined as an index of the phase transition of defense reactions to the phase of overstress. R.E.S.

N80-18707*# National Aeronautics and Space Administration, Washington, D. C.

PHYSIOLOGIC REACTIONS DURING FIVE WEEKS OF CONTINUOUS RESIDENCE IN AN ARTIFICIAL HUMID AND HOT CLIMATE

Ulrich Laaser Oct. 1979 24 p refs Transl. into ENGLISH from Int. Z. Angew. Physiol. (West Germany), v. 25, 1968 p 279-302 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prepared by Tuebingen Univ., West Germany
(Contract NASw-3199)
(NASA-TM-75356) Avail: NTIS HC A02/MF A01 CSCL 06S

During 5 weeks in a climatic room, total sweat during work almost doubled. Initial hour differences increasingly equalized. There was a displacement of sweat secretion from trunk to extremities till the end of week 3, occurring earlier and more clearly for the arm than for the leg. Work temperatures dropped rapidly and evenly to a constant level by day 11. Circulation behavior matched that of temperature. Pulse rate during work dropped like rectal temperature and pulse rate during rest was phasically like the pattern of corresponding temperatures. Except for the first days urine output was adequate and even, Na decreasing in the urine until week 3, then returning to initial values. Na and K in sweat declined but with opposite patterns for hours 1-4. Total salt elimination decreased. The conclusive phenomena of redistribution occurred within the first 3 weeks. A few functions changed later also. Relatively trivial changes in an otherwise uniform reaction pattern indicated that after 3 or even 5 weeks of acclimatization the process is not over or at least not completely so. The tempo of the process appears to be a function of the degree of loading. Author

N80-18708*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF HYPOKINESIA ON CONTRACTILE FUNCTION OF CARDIAC MUSCLE

F. Z. Meyerson, V. I. Kapelko, A. M. Trikhpoyeva, and M. S. Gorina Feb. 1980 12 p refs Transl. into ENGLISH from Kardiologiya (USSR), no. 2, Feb. 1979 p 71-76 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76061) Avail: NTIS HC A02/MF A01 CSCL 06S

Rats were subjected to hypokinesia for two months and the contractile function of isolated papillary muscle was studied. Hypokinesia reduced significantly the isotonic contraction rate which depended on the ATPase activity of the myofibrils; it also reduced the rate and index of relaxation which depended on the functional capacity of the Ca(++) pump of the sarcoplasmic reticulum. The maximum force of isometric contraction determined by the quantity of actomyosin bridges in the myofibrils did not change after hypokinesia. This complex of changes is contrary to that observed in adaptation to exercise when the rate of isotonic contraction and relaxation increases while the force of isometric contraction does not change. The possible mechanism of this stability of the contractile force during adaptation and readaptation of the heart is discussed. Author

N80-18709*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

OBJECTIVE MEASUREMENT OF HUMAN TOLERANCE TO +G SUB Z ACCELERATION STRESS Ph.D. Thesis - Univ. of N. Indiana

Salvadore A. Rositano Washington Feb. 1980 100 p refs
(NASA-TM-81166; A-8059) Avail: NTIS HC A05/MF A01 CSCL 06S

The efficacy of a new objective technique using a transcutaneous Doppler flowmeter to monitor superficial temporal artery blood flow velocity during acceleration was investigated. The results were correlated with current objective and subjective G tolerance end points. In over 1300 centrifuge runs, retrograde eye level blood flow leading to total flow cessation was consistently recorded and preceded visual field deterioration leading to blackout by 3 to 23 seconds. The new method was successfully applied as an objective indication of tolerance in a variety of test situations including evaluation of g-suits, straining maneuvers, and 13 deg, 45 deg and 65 deg set back angles. R.E.S.

N80-18710*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

COSMOS 81 US/USSR CARDIOVASCULAR STUDY: EXPERIMENT IMPLEMENTATION PLAN

John W. Hines Feb. 1980 14 p
(NASA-TM-81178) Avail: NTIS HC A02/MF A01 CSCL 06B

The experimental activities to be undertaken in the accomplishment of the Cosmos 81 Primate Study are discussed. A detailed description of the specific tasks to be performed, approaches, options, and tradeoffs to be considered, and personnel assigned is presented. The main project is to chronically instrument the carotid artery (flow, pressure) using Rhesus monkeys and interpret the results. R.E.S.

N80-18711*# National Aeronautics and Space Administration, Washington, D. C.

EFFECTS OF GRAVITATIONAL STRESS, HYPOKINESIA AND HYPODYNAMIA ON THE STRUCTURE OF THE VASCULAR BED OF THE SPLEEN

N. T. Nesterenko Feb. 1980 12 p refs Transl. into ENGLISH from Arkh. Anat., Gistol. Embriol. (USSR), v. 64, no. 5, 1973 p 44-51 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prepared by 1st Leningrad I. P. Pavlov, Medical Inst.
(Contract NASw-3199)
(NASA-TM-75934) Avail: NTIS HC A02/MF A01 CSCL 06S

The effects of two extreme factors, hypokinesia and hypodynamia, on spleen vascular beds were studied on 180 male and female albino rats. Vessels were studied by roentgenography, microroentgenography, clearing of sections and histology.

Gravity stress yielded construction of all links of arterial bed and of order 5-7 veins. Large intraorganic vein diameters changed significantly but erratically. Hypokinesia in early phases produced pronounced spleen size reduction. Veins and arteries constricted along entire length. Later hypokinetic stages showed arteries still constricted; veins began to dilate from week 4 of hypokinesia. Sinuosity, uneven contours and varicose dilations of walls in large arteries and veins occurred. Abrupt changes in parenchyma, e.g., atrophy of folliculi, narrowing of lumen of central arteries from thickening of muscular wall. After exposure to hypokinesia followed by gravitational stress, pronounced lesions such as deformation of vascular wall, including rupture, in all vessels of the spleen vascular bed. R.E.S.

N80-18712# Interuniversitair Reactor Instituut, Delft (Netherlands).

[ACTIVITIES REPORT ON REACTOR PHYSICS, 1977 TO 1978] Annual Report [JAARVESLAG 1977-1978: AKADEMISCH JARR]

1979 107 p refs In DUTCH

Avail: NTIS HC A06/MF A01

The structure, staffing, budget, space allocation, and publications of the institute are described. The scientific activities include radiation and reactor physics, radiochemistry, dosimetry, and radiation hygiene. Author (ESA)

N80-18713# Southampton Univ. (England). Inst. of Sound and Vibration Research.

VIBRATION INJURIES OF THE HAND AND ARM: THEIR OCCURENCE AND THE EVOLUTION OF STANDARDS AND LIMITS

M. J. Griffin Jul. 1979 85 p refs

(Contract HSE-1653/45.09)

(ISVR-TR-101) Avail: NTIS HC A05/MF A01

Alternative methods of rating the serverity of vibration exposures for the hand and arm are compared. The difficulties associated with the formulation of useful vibration standards and limits are discussed and deficiencies in present standards are outlined. Specific recommendations concerning the formulation of standards and limits are offered. Desirable objectives for surveys of worker health, tool vibration characteristics, and working methods are defined. The need for reducing and isolating tool vibration is identified along with the importance of tool gripping methods. It is suggested that an improved understanding of the nature of vibration injuries and their symptoms is required. Author (ESA)

N80-18714# Technische Hogeschool Twente, Enschede (Netherlands). Afdel. Elektrotechniek.

APPLICATION OF MUTUAL AMOUNT OF INFORMATION FOR TIME DELAY ESTIMATION Ph.D. Thesis

G. W. vanArragon 6 Aug. 1979 80 p refs Partly in ENGLISH and DUTCH

(THT-210) Avail: NTIS HC A05/MF A01

An estimate for the average mutual amount of information (AMAI) as a function of time delay between two time series was developed. This estimate is intended for analyzing the spread of an epileptic seizure through the cortical layers of the brain of an epileptic patient based on an ictal EEG recording. The theory of mutual amount of information is reviewed. It depends on the marginal and joint probability densities of two time series. An estimator for the joint (bi-variate) density is proposed and compared with estimators described in the literature. Results show that the proposed estimator is the best for practical AMAI estimation. A computer algorithm for AMAI estimation was derived and its behavior studied using test data. Promising results lead to its inclusion in an interactive FORTRAN program which is available as part of an EEG analysis library for special purposes. Author (ESA)

N80-18715 California School of Professional Psychology, Los Angeles.

THE POWER PROCESS: A SYNTHESIS THEORY OF POWER Ph.D. Thesis

Steven Howard Graubard 1979 418 p

Avail: Univ. Microfilms Order No. 8003230

A series of studies designed to test the process approach to power is offered. In order to describe the power process adequately, a blend of phenomenological and empirical methods is suggested. Phenomenological techniques are expected to yield subjects' descriptions, thoughts and feelings associated with power related experiences. This data is analyzed for thematic content as it relates to each of the four power process components and compared with data obtained from empirical measures. Experimental situations, including small group interactions, individual tasks, experimental descriptions, and specific psychological tests, are suggested. Implications for future research are discussed. Dissert. Abstr.

N80-18716# Research Inst. of National Defence, Linkoeping (Sweden).

PILOT SELECTION USING PSYCHOLOGICAL METHODS [URVAL AV FLYGFOERARE MGD PSYKOLDGISKA METODGR]

Leif Carlstedt Mar. 1979 62 p refs In SWEDISH

(FOA-C-55024-H7) Avail: NTIS HC A04/MF A01

The use of psychological methods in military aircraft pilot selection is surveyed, covering the period from World War 1 to 1979. The methods of analysis used have different starting points, stressing either the man or the function characteristics. A multiple regression statistical evaluation model is most frequently used resulting in some compensation of psychological characteristics. No examples of normative evaluation models were found in recent pilot selection methods. Author (ESA)

N80-18717 Arizona State Univ., Tempe.

MODELING REQUIREMENTS FOR NETWORK SIMULATION OF HUMAN-MACHINE SYSTEMS Ph.D. Thesis

Gayle Lynn Berry 1979 335 p

Avail: Univ. Microfilms Order No. 8003862

A critical review of eight task taxonomies was performed. Each taxonomy was ranked against a set of criteria which were developed to select for usefulness in modeling human machine systems. The standard task analysis procedure was revised so that all information required for a network computer simulation of a human machine system would be produced. The two highest ranking task taxonomies were used in the task analysis procedure to model a test case human machine system. A SAINT computer simulation was performed for each of the two resulting models. For each simulation model, both Normal and Weibull distributions were used in four different combinations to represent human task performance time. In order to make it possible to use the Weibull distribution when no sample data were available, a method was developed to derive the Weibull parameters for shape and scale from an estimated mean and standard deviation. Dissert. Abstr.

N80-18718*# Rockwell International Corp., Canoga Park, Calif.

STS MISSION DURATION ENHANCEMENT STUDY: (ORBITER HABITABILITY) Final Report

A. D. Carlson Dec. 1979 145 p

(Contract NAS9-15903)

(NASA-CR-160535; SOD-79-0321) Avail: NTIS HC A07/MF A01

Habitability improvements for early flights that could be implemented with minimum impact were investigated. These included: (1) launching the water dispenser in the on-orbit position instead of in a locker; (2) the sleep pallet concept; and (3) suction cup foot restraints. Past studies that used volumetric terms and requirements for crew size versus mission duration were reviewed and common definitions of key habitability terms were established. An accurately dimensioned drawing of the orbiter mid-deck, locating all of the known major elements was developed. Finally, it was established that orbiter duration and crew size can be increased with minimum modificattion and impact to the crew module. Preliminary concepts of the aft med-deck, external versions of expanded tunnel adapters (ETA), and interior concepts of ETA-3 were developed and comparison charts showing the various factors of volume, weight, duration, size, impact to orbiter, and number of sleep stations were generated. R.E.S.

N80-18719# School of Aerospace Medicine, Brooks AFB, Tex.

A NEW ANTI-G VALUE FOR HIGH-PERFORMANCE AIRCRAFT Final Report, 1 Jan. 1977 - 1 Jan. 1979

Russell R. Burton, Robert M. Shaffstall, Jamy L. Jaggers, Kent K. Gillingham, and Kennith W. Stevens Nov. 1979 25 p
(AF Proj. 7930)
(AD-A076904; SAM-TR-79-27) Avail: NTIS HC A02/MF A01 CSCL 22/1

The USAF School of Aerospace Medicine (USAFSAM) Crew Technology Division has developed an advanced anti-G valve for pressurizing the anti-G suit during exposures to acceleration. The anti-G valve presently in fighter aircraft has been determined to operate too slowly for rapid onset of G, potentially causing pilots of high-performance aircraft to black out, lose consciousness, and/or become fatigued. The time relationship to G-suit pressurization using the conventional anti-G valve was found to be sigmoidal, having two relatively slow pressurization phases--one early, and the other late--in the suit-inflation schedule. Elimination of these two slow phases were accomplished by: (1) preinflating the anti-G suit to 0.2 psi prior to an increase in G (called 'Ready Pressure'), and (2) increasing the capacity of air flow through the anti-G valve (called 'Hi-Flow'). The development of the Hi-Flow Ready Pressure (HFRP) anti-G valve by USAFSAM increased in the rate of G-suit pressurization threefold. This HFRP anti-G valve was tested on eight F-15 pilots, using the centrifuge at the Naval Air Development Center, Warminster, Pa. A comparison of this experimental valve with the conventional anti-G valve (presently operational in the F-15 aircraft) resulted in a high degree of pilot acceptance, because the HFRP valve had better valve response, reduced valve error scores, and allowed the pilots to tolerate high-G exposures with less effort. GRA

N80-18720# Research Inst. of National Defence, Stockholm (Sweden).

PROTOTYPE: PRELIMINARY STUDY ON EMERGENCY BREATHING APPARATUS [FRISKLUFTHJAELM 1 PROTOTYP. FOERSTUDIUM]

Tage Berglund Jun. 1979 17 p In SWEDISH
(FOA-C-40103-C2) Avail: NTIS HC A02/MF A01

Some developmental alternatives for the protection helmet M-51 are discussed in terms of military aircraft application. A helmet prototype is described, including four complete mask alternatives. It is concluded that all four designs and the helmet prototype are acceptable, but improvements are necessary in all cases. Author (ESA)

N80-18721# Research Inst. of National Defence, Stockholm (Sweden).

SUGGESTIONS FOR THE CONTENTS OF THE AVIATION BOARD SURVIVAL KIT [FOERSLAG TILL INNEHAALL I FV NOEDUTRUSTNINGSPACKE]

Ove Wilson, Christer Spaangberg, and Bo Ekberger Aug. 1979 56 p refs In SWEDISH
(FOA-A-59004-H3(H9)) Avail: NTIS HC A04/MF A01

Survival equipment for aircrews operating over land and sea in arctic climates is described. Survival techniques are discussed in relation the contents of a proposed survival kit, including the requirements for protection from the elements, food and water, signaling, first aid, and weapons. The various kit materials are either attached to the life jacket, the flight suit, the life raft, or are found in a separate container. Author (ESA)

N80-19748*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF HABITUATION ON THE SUSCEPTIBILITY OF THE RAT TO RESTRAINT ULCERS

M. S. Martin, F. Martin, and R. Lambert Mar. 1980 12 p refs Transl. into ENGLISH from Compt. Rend. Soc. Biol. (France), v. 164, no. 4, 1970 p 826-828 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original Doc. prepared by Hopital Edouward Heriott, Lyon
(Contract NASw-3199)
(NASA-TM-76072) Avail: NTIS HC A02/MF A01 CSCL 06C

The frequency and gravity of restraint ulcers were found to significantly diminish in rats previously exposed to brief periods of immobilization. The rats' becoming habituated to restraint conditions probably explains this phenomenon. R.E.S.

N80-19749*# National Aeronautics and Space Administration, Washington, D. C.

NASA STANDARD PROCEDURES FOR THE MICROBIOLOGICAL EXAMINATION OF SPACE HARDWARE

Feb. 1980 31 p refs
(NASA-TM-80756; NHB-5340.1B) Avail: NTIS MF A01; SOD HC CSCL 06B

Microbiological assay procedures are described which assess the degree of microbial contamination of intramural environments where spacecraft hardware is assembled, tested and launched and also assess the level of microbial contamination on spacecraft hardware in relation to the known or anticipated environments of the target planets. It is emphasized that uniformity of procedures is of primary importance. However, portions of these procedures are written to include a degree of flexibility in that alternate techniques are described. Any change in these procedures, other than those specifically mentioned in alternate sections, is considered a deviation. R.C.T.

N80-19750*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF GRADED PHYSICAL LOAD ON THE STATE OF THE LIVER FROM MORPHOMETRIC DATA AND BIOCHEMICAL BLOOD INDICES OF RATS AGAINST A BACKGROUND OF HYPOKINESIA

B. A. Nikityuk, B. I. Kogan, V. A. Yermolyev, and L. V. Tindare Feb. 1980 8 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), no. 4, Jul. - Aug. 1978 p 32-35 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75969) Avail: NTIS HC A02/MF A01 CSCL 06C

Tests were conducted on 100 sexually immature inbred August and Wistar male rats in order to determine the effects hypokinesia, physical load and phenamine on the liver. Weight and linear dimension fell in hypokinesia; total serum protein lowered and aldolase and cholesterol and beta-lipoprotein levels rose. Blood sugar content rose and liver glycogen fell. Interlinear differences of these indices are found. Rehabilitated physical loading against hypokinesia background diminished and at times completely prevented its negative effect. Extent of correction depended on animal species. Evidence of genotypical conditionality of organism adaptation to physical load in hypokinesia was found. R.E.S.

N80-19751*# National Aeronautics and Space Administration, Washington, D. C.

EFFECTIVENESS OF USING THYROCALCITONIN FOR THE PREVENTION OF A CALCIUM METABOLIC DISORDER IN THE MINERALIZED TISSUES OF RABBITS WITH 30 DAYS HYPOKINESIA

A. I. Volozhin, V. S. Shashkov, B. S. Dmitriyev, B. B. Yegorov, V. I. Lobachik, and A. I. Brishin Mar. 1980 11 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), v. 10, no. 2, May 1974, p 42-46 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75987) Avail: NTIS HC A02/MF A01 CSCL 06C

A 30 day hypokinesia in rabbits led to a considerable lag in weight gain for the skeletal bones, reduction in Ca45 uptake, and an increase in isotope resorption rate in the rapidly metabolized fraction of extremity bones. On the other hand, Ca45 content in the teeth and maxillae increased, which may be explained by redistribution of isotope among the various *mineralized tissues. Injection of thyrocalcitonin (50 IU/day)* produced a distinct normalizing effect on Ca45 uptake and resorption in the mineralized tissues of rabbits kept hypokinetic. Author

N80-19752*# National Aeronautics and Space Administration, Washington, D. C.

DYNAMICS OF ERYTHROCYTE COUNT, HEMOGLOBIN, AND CATALASE ACTIVITY IN RAT BLOOD IN HYPOKINESIA, MUSCULAR ACTIVITY AND RESTORATION

G. V. Taneyeva, G. M. Potapovich, N. A. Voloshko, and A. B. Uteshev Feb. 1980 8 p refs Transl. into ENGLISH from Izv. Akad. Nauk Kaz. SSR, Ser. Biol., (USSR), no. 1, 1979 p 71-74 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76058) Avail: NTIS HC A02/MF A01 CSCL 06C

Tests were conducted to prove that muscular exertion (in this instance swimming) of different duration and intensity, as well as hypodynamia, result in an increase of hemoglobin and number of red blood cells in peripheral blood rats. Catalase activity increased with an increase in the duration of swimming, but only up to 6 hr; with 7-9 hr of swimming as well as in hypodynamia, catalase activity decreased. It was also observed that under hypodynamia as well as in 3, 5 and 6 hr exertion (swimming) the color index of blood decreased. Pressure chamber treatment (for 8 min each day for one week), alternating a 2 min negative pressure up to 35 mm Hg with 1 min positive pressure, increased the erythrocyte count and hemoglobin content. R.E.S.

N80-19753*# National Aeronautics and Space Administration, Washington, D. C.

STATE OF THE MINERAL COMPONENT OF RAT BONE TISSUE DURING HYPOKINESIA AND THE RECOVERY PERIOD

A. I. Volozhin, G. P. Stupakov, M. N. Pavlova, and I. Sh. Muradov Mar. 1980 8 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter., (USSR), no. 2, 1979 p 30-33 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76059) Avail: NTIS HC A02/MF A01 CSCL 06C

Experiments were conducted on young growing rats. Hypokinesia lasting from 20 to 200 days caused retarded gain in weight and volume of the femur and delayed development of the cortical layer of the diaphysis. In contrast, the density of the cortical layer of the femoral diaphysis increased due to elevation of the mineral saturation of the bone tissue microstructures. Incorporation of Ca into the bone tissue in hypokinesia had a tendency to reduce. Partial normalization of the bone tissue mineral component occurred during a 20 day recovery period following hypokinesia. R.E.S.

N80-19754*# National Aeronautics and Space Administration, Washington, D. C.

REACTION OF CHICKENS TO GRADUATED LENGTH OF EXPOSURE TO STRESS

J. Nvota, A. Grom, and A. Faberova Mar. 1980 14 p refs Transl. into ENGLISH from Biologia (Bratislava)(Czechoslovakia), v. 25, no. 11, 1970 p 797-803 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Slovak Acad. of Sci. and the Res. Inst. for Poultry breeding
(NASA-TM-76071) Avail: NTIS HC A02/MF A01 CSCL 06C

The reactions of 60 day old chickens Arbor Acres 60 X Vantress to immobilization stress lasting 1/2, 1, 2, 4 hours and to application of ACTH, manifested by activity changes in the systems hypophysis-adrenal gland and hypophysis-thyroid gland were studied. The highest activity increase in the two neuroendocrine systems of the chickens was found to occur after 1/2 hour exposure to stress. With prolonged stress the responses weakened and after 4 hours most of the values gradually regressed to their initial level. The responses of both systems were synchronized. Reactions of the chickens differed from those of laboratory rats in which an increased activity of the hypophysis-adrenal gland system coincided with attenuation of the hypophysis-thyroid gland system. R.E.S.

N80-19755# Joint Publications Research Service, Arlington, Va.

USSR REPORT: SPACE BIOLOGY AND AEROSPACE MEDICINE, V. 14, NO. 1

O. G. Gazenko, ed. 5 Mar. 1980 148 p refs Transl. into ENGLISH of Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina (Moscow) 88 p
(JPRS-75251) Avail: NTIS HC A07/MF A01

Physiological and biological effects of manned space flight are considered with emphasis on long duration space flight. Reactions to altering work-rest cycles, hypocia, hypokinesia, and to head-pelvis accelerations are among the topics covered.

N80-19756# Joint Publications Research Service, Arlington, Va.

SCHEDULING WORK AND REST PERIODS DURING LONG-TERM SPACE FLIGHTS

B. S. Alyakrinskiy *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1 (JPRS-75251) 5 Mar. 1980 p 1-14 refs Transl. into ENGLISH from Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 3-8

Avail: NTIS HC A07/MF A01

A brief survey of space ergonomics, a field of science studying man's work capacity and methods of increasing efficiency is given. Emphasis is placed on the proper arrangement of work-rest cycles of crewmembers in long-duration space flight in order to optimize cosmonauts' activities in space. The usefulness of the laws of biorhythmology is also discussed. It is recommended that work-rest cycles in a prolonged space flight be arranged on a 24 hour basis with a normal day-night alternation, including an 8 hour night sleep and a 2 hour day rest. J.M.S.

N80-19757# Joint Publications Research Service, Arlington, Va.

EFFECTS OF FLIGHTS DIFFERING IN DURATION ON PROTEIN COMPOSITION OF COSMONAUTS BLOOD

Ye. V. Guseva and R. Yu. Tashpulatov *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 15-20 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 13-17

Avail: NTIS HC A07/MF A01

Adaptive changes in the protein composition of cosmonaut's blood detected after space flights of varying duration are examined. A short-term 2 day flight induced a decline of gamma-globulin (immunoglobulins G and A) and beta 2-glycoprotein fractions. Longer-term 16 and 18 day flights caused an increase in albumin and most globulin fractions. A long duration 49 day flight brought about an increase in the content of C sub 3c and C sub 4 factors of the complement and immunoglobulins G, A, and M. It is shown that return of the blood protein composition to normal after prolonged space flights takes a long period of time. J.M.S.

N80-19758# Joint Publications Research Service, Arlington, Va.

EFFECTS OF UNUSUAL SCHEDULES OF DAILY ACTIVITY AND SLEEP DEPRIVATION ON MAN'S FUNCTIONAL STATE AND WORK FITNESS

A. N. Litsov and I. F. Sarayev *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 21-29 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 17-23

Avail: NTIS HC A07/MF A01

Physiological functions, work capacity, and sleep characteristics of six healthy test subjects were studied for 30 days. The test subjects adhered to one of the three different regiments, (1) sleep from 2.00 a. m. to 10.00 a. m., (2) sleep from 6.00 p. m. to 2.00 a. m., and (3) sleep from 10.00 a. m. to 6.00 p. m. which were aggravated by 64 hr or 72 hr vigilance during the experiment. Demonstrated general and specific changes in physiological functions, work capacity and sleep are shown to be associated with how far work-rest cycles were shifted and how long they were applied. Prolonged vigilance caused similar changes in physiological functions, work capacity, and sleep. The test subjects showed very poor tolerance to an alteration in the work-rest cycle combined with sleep deprivation. J.M.S.

N80-19759# Joint Publications Research Service, Arlington, Va.

EFFECTS OF LONG-TERM SPACE FLIGHTS ON REACTIONS OF ADRENAL CORTEX AND MEDULLA

R. Kvetnyanski, R. A. Tigranyan, T. Torda, D. Repchekova, Ye. Yakhnova, and K. Murgash *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 30-35 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 24-27

Avail: NTIS HC A07/MF A01

Concentrations of corticosteron and catecholamines, and activities of catecholamine synthesizing enzymes, tyrosine hydroxylase, dopamine-beta-hydroxylase, and phenyl ethanol amine-N-methyl-transferase, were measured in the adrenals of rats flown for 19.5 days abroad the biosatellite Cosmos-782, synchronous and vivarium control animals sacrified on R + 0 and R + 26 days. The flown rats showed a moderate but significant increase in the adrenal weight, corticosteron concentration, and tyrosine hydroxylase activity on R + 0 day. These parameters returned to the normal on R + 26 day. These data give evidence that the adrenocortical and sympathoadrenal systems were not significantly stimulated by the space flight effects; therefore, weightlessness cannot be considered as a potent stressful agent. J.M.S.

N80-19760# Joint Publications Research Service, Arlington, Va.

CARDIOVASCULAR REACTION TO PERIODIC HEAD-PELVIS ACCELERATIONS ON A SHORT-ARM CENTRIFUGE

I. F. Vil-Vilyams and Ye. B. Shulzhenko *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 36-42 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 27-31

Avail: NTIS HC A07/MF A01

A result of 370 experiments in a 2 m-arm centrifuge, high human tolerance to acceleration of +0.8, 1.2, and 1.6 Gz (at the level of feet) was demonstrated. Cardiovascular reactions depended on the value, duration, and frequency of acceleration exposures. Cardiovascular responses included, primarily, changes in regional circulation of the legs. Author

N80-19761# Joint Publications Research Service, Arlington, Va.

REACTION OF HUMAN BLOOD TO CHRONIC EXPOSURE TO LOW DOSES OF CARBON MONOXIDE IN A CONFINED ENVIRONMENT

V. V. Zhuravlev, Z. M. Karelina, Ye. I. Nikitin, and V. P. Savina *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 43-48 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 43-48

Avail: NTIS HC A07/MF A01

The morphology, biochemistry, and acid-base equilibrium of blood of test subjects during chronic exposure to low doses of carbon monoxide in an enclosed environment was studied. R.E.S.

N80-19762# Joint Publications Research Service, Arlington, Va.

PROBABILITY OF ALTITUDE DECOMPRESSION DISORDERS WHEN BREATHING OXYGEN CONTAINING HUMAN WASTE GASES

A. V. Sedov, A. N. Mazin, and N. A. Surovtsev *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 49-53 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 36-39

Avail: NTIS HC A07/MF A01

The probability of altitude decompression disease in a hypobaric oxygen environment containing gaseous human wastes was explored. It was found that the development of the disease does not depend on the presence of wastes in the environment. Its frequency increases with exercises. The decrease of the barometric pressure to 308 mm Hg causes decompression disease only in the test subjects having traumatized limbs. The frequency of the disease during further decrease in the pressure down to 198 mm Hg increases substantially. R.E.S.

N80-19763# Joint Publications Research Service, Arlington, Va.

EFFECT OF HYPEROXIA ON OXYGEN TRANSPORT PROPERTIES OF BLOOD

L. A. Ivanov and N. D. Chebotarev *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 54-59 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med (Moscow), no. 1, 1980 p 39-42

Avail: NTIS HC A07/MF A01

In nine normal test subjects, aged 19-32, pO2, pCO2 and pH of arterial and venous blood were measured. The curve of oxyhemoglobin dissociation during 20 min inhalation of a 95% O2 containing mixture was analyzed. The studies demonstrate that during hyperoxia there is a shift to the left of the dissociation curve in native blood and standard curve (i.e., normalized to pH 7.4). This shift of the curve of oxyhemoglobin dissociation indicating an increase in hemoglobin affinity for oxygen seems to be one of the factors responsible for an increase in the pO2 arteriovenous difference and a much lower increment of venous pO2 than that of arterial pO2. Author

N80-19764# Joint Publications Research Service, Arlington, Va.

EXTERNAL RESPIRATION AND ACID-BASE BALANCE OF HUMAN BLOOD DURING LONG-TERM ANTIORTHOSTATIC HYPOKINESIA AND IN THE RECOVERY PERIOD

A. P. Golikov, V. Ye. Vorobyev, V. R. Abdrakhmanov, L. L. Stazhadze, V. V. Bogomolov, and S. C. Voronina *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 60-66 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 42-46

Avail: NTIS HC A07/MF A01

The external respiration and acid-base equilibrium of blood of 35 test subjects exposed to 49 day head-down (-4 deg) tilting and of 6 test subjects exposed to 182 day head-down (-4 deg) tilting was studied. The investigation found that a trend for a decrease in the respiration rate, lung ventilation, oxygen consumption occurred along with a relative increase in the exhalation time. With respect to the arterialized blood gases, a significant decrease in Pa sub O2, an increase in Pa sub CO2, and in the O2 alveolar-arterial difference were seen during the 49 day head-down tilting. During the 182 day head-down tilting a further increase in the CO2 arterio-alveolar difference was noted. These changes suggest shifts of the ventilation-perfusion ration in the lungs and, probably, disturbances of central regulation of respiration induced by head-down tilting. During the recovery period the above changes diminished gradually and disappeared by the 14th and 30th day after the 49 and 182 day head-down tilting, respectively. R.E.S.

N80-19765# Joint Publications Research Service, Arlington, Va.

DISTINCTIONS IN DEVELOPMENT OF PYROGENAL FEVER IN ANIMALS FOLLOWING PROLONGED HYPOKINESIA

P. V. Vasilyev, G. D. Glod, S. I. Sytnik, N. N. Uglova, and Y. P. Melnikova *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 67-72 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 46-50

Avail: NTIS HC A07/MF A01

Experiments on rabbits with pyrogenal fever and amidopyrine injection were conducted. It was found that 15 and 30 day exposure to hypokinesia produced changes in the reactivity of thermoregulating centers -- overexcitation and depletion. These changes were more distinct after 15 day hypokinesia. R.E.S.

N80-19767# Joint Publications Research Service, Arlington, Va.

EFFECTS OF 25 AND 50 MeV PROTONS ON HUMAN PERIPHERAL BLOOD LYMPHOCYTE CHROMOSONES IN VITRO

A. M. Totseva, N. I. Ryzhov, V. N. Garasimfnko, and Ye. Dermendzhiyev *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 80-87 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 54-60

Avail: NTIS HC A07/MF A01

The frequency and type of chromosomal abberations in human lymphocytes induced by 25, 50, 645 MeV protons and 200 kv X-rays were studied. It was shown that the yield of one-hit acentric fragments increased linearly and that of double-break aberrations increased exponentially with the irradiation dose. It was demonstrated that under the influence of radiations with high linear energy transfer the number of paired fragments increased and that of dicentrics and rings decreased. The test of total yield of chromosomal aberrations and their specific types helped to derive coefficients of relative biological effectiveness of the above irradiations. There was a quantitative correlation between the dose and yield of individual aberration types. R.C.T.

N80-19768# Joint Publications Research Service, Arlington, Va.

DEVELOPMENT OF PROGRAM FOR THE CONTROL OF THE AUTOTROPHIC COMPONENT OF AN ECOLOGICAL SYSTEM THAT IS CLOSED WITH REGARD TO EXCHANGE OF GASES

A. S. Nasonov and V. S. Toroptsov *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 88-93 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. Moscow), no. 1, 1980 p 60-63

Avail: NTIS HC A07/MF A01

The requirements for the programmed control and performance of auotrophic and heterotrophic components of a closed ecological system were determined. Examples of pertinent computations are given. R.C.T.

N80-19769# Joint Publications Research Service, Arlington, Va.

EFFECT OF SODIUM BICARBONATE ON REACTIVITY AND TROPHICS OF VESTIBULAR ANALYZER

N. I. Arlashchenko *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 94-100 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 64-68

Avail: NTIS HC A07/MF A01

It is shown that prevention of motion sickness by intravenous injections of sodium bicarbonate is a direct result of trophic changes or effect of the chemical on the functional activity of central formations. Significant observations and results are reported. R.C.T.

N80-19770# Joint Publications Research Service, Arlington, Va.

EVALUATION AND FORECASTING OF MENTAL FITNESS OF FLIGHT PERSONNEL IN THE PRESENCE OF NEUROSIS

K. K. Ioseliani *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 101-106 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 68-72

Avail: NTIS HC A07/MF A01

Features of psychic functions and mental performance of flight personnel suffering from various neuroses were examined by clinical and psychological methods. The most severe and persistent changes in mental performance were found in neurasthenics. Higher mental productivity was detected in 80% of subjects with other neuroses (neurotic states and reactions, asthenic state, emotional-vegetative instability) ($P < 0.001$). R.C.T.

N80-19771# Joint Publications Research Service, Arlington, Va.

DYNAMICS OF STRESS REACTION OF RATS DURING EXPERIMENTAL HYPOKINESIA VARYING IN DURATION, AND POSSIBILITY OF CORRECTION THEREOF

L. Y. Kirichek *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 107-111 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 72-74

Avail: NTIS HC A07/MF A01

The dynamic intensity of the stress reaction in rats as a function of time of restriction of movement was surveyed. The time of maximum manifestation of stress was determined and the nature of change therein under the influence of some central neurotropic agents was demonstrated. R.C.T.

N80-19772# Joint Publications Research Service, Arlington, Va.

EFFECT OF BRIEF ANTIORTHOSTATIC HYPOKINESIA ON BLOOD IMMUNOGLOBULIN CONTENT

N. N. Mukhina, V. V. Chestukhin, V. Ye. Katlov, and A. P. Karpov *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75521) 5 Mar. 1980 p 112-115 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 74-75

Avail: NTIS HC A07/MF A01

Proteins were assayed with antibody activity in blood samples from different organs, and the effect on levels thereof of brief antiorthostatic (head-down) hypokinesia, which simulates the acute period of adaptation to weightlessness was tested. R.C.T.

N80-19773# Joint Publications Research Service, Arlington, Va.

RAT PLASMA AND TISSUE LIPIDS AFTER A LONG-TERM SPACE FLIGHT

J. Ahlers, R. A. Tigranyan, E. Ahlers, E. Paulikova, and M. Praslicka *In its* USSR Rept.: Space Biol. and Aerospace Med., V. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 116-119 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 76-78

Avail: NTIS HC A07/MF A01

Changes in the plasma and lipid metabolism of rats were studied one day after the rats had completed a flight aboard the Cosmos 782. The data were compared with the results of studies on animals involved in a ground based, synchronous experiment. Nonesterified fatty tissues were bioassayed. Results indicate there were changes in some parameters of lipid metabolism in rats such as signs of increased lipolysis in fatty tissue and increased mobilization of lipids. The changes in the spectrum of blood plasma and tissue lipids under the influence of prolonged weightlessness are discussed. A.W.H.

N80-19774# Joint Publications Research Service, Arlington, Va.

FUNCTIONAL CHANGES IN THE ADRENAL CORTEX DURING SIMULATION OF STRESS SITUATIONS IN THE PRESENCE OF HIGH CARBON MONOXIDE LEVELS

S. K. Kalandarov, V. P. Bychkov, and V. P. Savina *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, 1980 p 78-80 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 78-80

Avail: NTIS HC A07/MF A01

Experiments conducted in a pressure chamber to study the combined effects of a high concentration of carbon monoxide, high temperature, and humidty on the functional state of the human adrenal cortex during a prolonged period are described. The experiments were a simulation of a malfunction of the life support systems during space flight. The experimental period varied from one to ninety days. The effects of these conditions upon the potassium and sodium content of erythrocytes, the blood plasma, and the glucocorticoid and mineralocorticoid functions of the adrenal cortex are discussed. A.W.H.

N80-19775# Joint Publications Research Service, Arlington, Va.
EFFECT OF HYPOXIA AND HYPERCAPNIA ON LACTATE AND PYRUVATE LEVELS IN RAT BLOOD AND MYCARDIUM
N. I. Mikhalkina *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 125-129 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 80-82

Avail: NTIS HC A07/MF A01

The dynamics of the lactate and pyruvate levels of rats during brief, recurrent exposures to hypoxia and hypercapnia were studied. Changes in the glycolytic metabolism in the heart of a rat under the influence of these conditions are discussed. Changes in the blood and tissue of the left chamber of the heart versus changes in the right chamber are described. A.W.H.

N80-19776# Joint Publications Research Service, Arlington, Va.
STUDY OF RADIOPROTECTIVE EFFECT OF HIGH-INTENSITY MAGNETIC FIELDS ON MAMMALIAN CELL CULTURES
Z. Ya. Vnukova *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 130-133 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 83-84

Avail: NTIS HC A07/MF A01

The combined effects of ionizing radiation and stationary magnetic fields on fibroblasts cultured in medium 199 and in Eagle's medium with 10% bovine serum and antibiotics are discussed. The radiation effect was evaluated according to the rate of restoration of cell division, the level of chromosomal aberrations in the first postradiation mitosis, and the cell survival. The cells were exposed to radiation from a Cs-137 source. An improvement in hematological parameters and a higher animal survival rate with a certain combination of these factors is discussed. A.W.H.

N80-19777# Joint Publications Research Service, Arlington, Va.
STUDIES OF THE EFFECTS OF STATIONARY MAGNETIC FIELDS ON RAT ERYTHRON
A. D. Pavlov, A. I. Solovyev, Yu. D. Goncharenko, and Ye. N. Pashukov *In its* USSR Rept.: Space Biol. and Aerospace Med., v. 14, no. 1, (JPRS-75251) 5 Mar. 1980 p 134-139 refs Transl. into ENGLISH of Kosm. Biol. Aviakosmicheskaya Med. (Moscow), no. 1, 1980 p 84-87

Avail: NTIS HC A07/MF A01

The dynamics of erythropoiesis and erythropoietic activity of serum in rats under the influrnce of a stationary magnetic field are examined. Bioassayed results of the erythrocytes, reticulocytes, hemoglobin, and hematocrit are presented. The life span of erythrocytes was determined using Cr-51. Increased and/or decreases in the count of the erythrocytes, reticulocytes, hemoglobin, and hematocrit after certain periods of exposure are discussed. A.W.H.

N80-19778 California Univ., Davis.
A CONTINUUM MODEL OF PROTEIN TRANSPORT ACROSS THE ENDOTHELIUM IN THE LUNGS AND IN THE BODY OF HUMANS Ph.D. Thesis
James Paul Kohler 1979 433 p
Avail: Univ. Microfilms Order No. 8003517

A model of protein transport between two compartments of a multiphase, porous system is developed by volume averaging the species education of continuity over each of the two phases. The equation obtained by this method contains a mass transport parameter which represents the ratio of a complex function of diffusive and convective processes to a function of purely convective transport. The transport equation is used with experimental data obtained from a group of human subjects to model transport of the blood Beta globulin transferrin (MW = 76000, labeled with the radioisotopes In113) from the vascular to the interstitial compartment in the lung and to the extravascular compartment in the body as a whole. The experimental data are obtained from normal subjects and a heterogeneous group of patients by means of a noninvasive scintillation detection technique and blood sampling.
Dissert. Abstr.

N80-19780 Royal Aircraft Establishment, Farnborough (England).
ULTRASONIC DOPPLER DIRECTIONAL BLOOD FLOW VELOCITY METER
V. S. Postnikov, L. I. Yakimenkov, Yu. N. Gusev, and P. M. Zykov 13 Oct. 1978 7 p refs Transl. into ENGLISH from Izv. vuz Priboorostroenie (USSR), v. 19, no. 4, 1976 p 5-8
(RAE-Lib-Trans-1918) Avail: Royal Aircraft Estab. Farnborough, Engl.

A principle for detecting the sense of the velocity of a blood flow using ultrasonic Doppler (USD) meters is described. The USD meter operates in single frequency, continuous-signal conditions with a combined piezoelectric sender/receiver. R.C.T.

N80-19782*# Pennsylvania State Univ., University Park.
KIDNEY CELL ELECTROPHORESIS Progress Report
Paul Todd Jan. 1980 28 p
(Contract NAS9-15584)
(NASA-CR-160555) Avail: NTIS HC A03/MF A01 CSCL 06B

The following aspects of kidney cell electrophoresis are discussed: (1) the development and testing of electrophoresis solutions; (2) optimization of freezing and thawing; (3) procedures for evaluation of separated kidney cells; and (4) electrophoretic mobility characterization of kidney cells. R.E.S.

N80-19783*# National Aeronautics and Space Administration, Washington, D. C.
EFFECT OF HYPOKINESIA ON CARDIAC CONTRACTILE FUNCTION AND NERVOUS REGULATION OF THE HEART
F. Z. Meyerson, V. I. Kapelko, M. S. Gorina, A. N. Shchegolkov, and N. P. Larinov Feb. 1980 13 p refs Transl. into ENGLISH from Fiziol. Zh. SSSR. (USSR), no. 8, Aug. 1978 p 1138-1144 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75970) Avail: NTIS HC A02/MF A01 CSCL 06P

Longterm hypokinesia caused cardiac deadaptation in rabbits, which resulted in the diminishing of the left ventricular rate of contraction and relaxation, joined later by decreased vascular resistance. As a results, the ejection rate as well as stroke volume and cardiac output were normal. The decrease of the relaxation speed was more obvious at a high heart rate and results in shortening of the diastolic pause and diminishing of cardiac output. Hearts of the hypokinetic animals were characterized by normal maximal pressure developed by a unit of muccardial mass aorta clamping, decreased adrenoreactivity, and increased cholinoreactivity. This complex of changes is contrary to changes observed in adaptation to exercise, but is similar to changes observed in compensatory hypertrophy of the heart.
R.C.T.

N80-19784*# National Aeronautics and Space Administration, Washington, D. C.
ALIMENTARY HYPOKINESIA
K. S. Petrovskiy Mar. 1980 8 p Transl. into ENGLISH from Gig. Sanit. (USSR), no. 2, Feb. 1974, p 18-22 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75989) Avail: NTIS HC A02/MF A01 CSCL 06P

The problem of possible conservation of the natural activity of food products is discussed. The struggle for the preservation of the natural activity of food products is an important means of preventing the unfavorable consequences of long term hypokinesia. R.E.S.

N80-19785*# National Aeronautics and Space Administration, Washington, D. C.

METABOLISM DURING HYPODYNAMIA

I. V. Federov Feb. 1980 29 p refs Transl. into ENGLISH from Biol. Nauki (USSR), v. 15, no. 12, 1972 p 24-36 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75996) Avail: NTIS HC A03/MF A01 CSCL 06S

Physical immobilization, inaction due to space travel, a sedentary occupation, or bed confinement due to a chronic illness elicit similar alternations in the metabolism of man and animals (rat, rabbit, dog, mouse). After a preliminary period of weight loss, there is eventually weight gain due to increased lipid storage. Protein catabolism is enhanced and anabolism depressed, with elevated urinary excretion of amino acids, creatine, and ammonia. Glycogen stores are depleted and glyconeogenesis is accelerated. Polyuria develops with subsequent redistribution of body fluids in which the blood volume of the systemic circulation is decreased and that of pulmonary circulation increased. This results in depressed production of vasopressin by the posterior pituitary which further enhances urinary water and salt loss. Author

N80-19786*# National Aeronautics and Space Administration, Washington, D. C.

BLOOD CIRCULATION UNDER CONDITIONS OF WEIGHTLESSNESS

I. I. Kastyan and V. I. Kopanev Mar. 1980 25 p refs Transl. into ENGLISH from Izv. Akad. Nauk SSSR, Seriya Biol. (USSR), no. 3, 1964 p 352-368 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76036) Avail: NTIS HC A02/MF A01 CSCL 06S

Experimental materials and published data on the problem of blood circulation in man and animals under conditions of short and long term weightlessness are summarized. The data obtained allow the conclusion, that when humans spent 5 days in a weightless state their blood circulation was not essentially distributed. Some features of the functioning of the cardiovascular system are pointed out: delay of adaptation rate, increase in lability, etc. There is a discussion of the physiological mechanisms for the direct and indirect effect of weightlessness. The direct effect comprise the complex of reactions caused by the significant fall in hydrostatic pressure and the indirect embraces all the reactions arising in the organism resulting from disturbance of the systematic character of the analyzers that take part in the analysis of space realtions and the body's orientation in space. R.E.S.

N80-19787*# National Aeronautics and Space Administration, Washington, D. C.

CERTAIN QUESTIONS OF THE ACCLIMATIZATION OF CONSTRUCTION WORKERS TO THE CONDITIONS OF A SUBTROPICAL CLIMATE

A. Babayev Sep. 1979 11 p refs Transl. into ENGLISH from Gig. Sanit. (USSR), no. 6, 1978 p 106-108 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75728) Avail: NTIS HC A02/MF A01 CSCL 06P

The period of active acclimatization was determined for construction workers coming into a subtropical climate. Changes were observed in metabolic processes, oxygen needs, pulse rate, arterial pressure, body and skin temperature, body weight, water consumption and loss, and the comfort zone of heat sensitivity. It was concluded that acclimatization is facilitated if introduction to the hot climate occurs in the mild cool season, rather than the summer. This also prevents heat prostration and improves the development of adaptive mechanisms. Author

N80-19788# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio. Aviation Vision Lab.

SPATIAL FILTERING AND MECHANISMS OF PERCEPTION

Arthur P. Ginsburg Apr. 1979 9 p refs Presented at the Conf. on Modeling and Simulation, Pittsburgh, 25-27 Apr. 1979
(AF Proj. 2313)
(AD-A077622; AMRL-TR-79-47) Avail: NTIS HC A02/MF A01 CSCL 14/5

Attempts have been made to distinguish between visual mechanisms as being space domain feature detectors or transform domain spatial frequency detectors. Those descriptions can be considered equivalent in terms of producing similar filtered images. However, Fourier-like transformation appears to be a more accurate description of the filtering process when biological data is considered. The two-dimensional discrete Fourier transform is a process that requires the input object to be multiplied by a bank of even symmetric cosinusoidal and odd symmetric sinusoidal space functions having periodicity. The periodicity corresponds to the number of cycles per receptive field width. The weighting function of the periodicity is alternating positive and negative values. These properties were related to the properties of cortical receptive fields. Certain receptive fields may functionally perform a generalized periodic analysis for spatial vision. Since these functions are two-dimensional, they are sensitive to orientation, similar to cortical receptive fields. Therefore, it was argued that the visual system contains mechanisms that can process spatial information consistent with the mathematical process of a two-dimensional discrete Fourier-like transform. This analysis of the filtering process of certain visual cortical mechanisms may lead to further understanding into visual perception. GRA

N80-19789# Naval Aerospace Medical Research Lab., Pensacola, Fla.

THE THOUSAND AVIATOR STUDY: 1969 - 1971 FOLLOW-UP PROGRAM WITH DISTRIBUTIONS AND INTERCORRELATIONS OF SELECTED VARIABLES

Neil R. MacIntyre, Albert Oberman, William Harlan, Robert E. Mitchell, and Ashton Graybiel Apr. 1979 232 p refs
(AF51524005)
(AD-A079700; NAMRL-MONOGRAPH-24) Avail: NTIS HC A11/MF A01 CSCL 01/2

The 1969-1971 evaluation of the U.S. Navy's 'Thousand Aviator' program was the fourth such follow-up examination since the study's inception in 1940. During this evaluation, follow-up status was determined in 995 of the original 1056 subjects (94.2%). In addition, the largest amount of physiologic, psychologic, and other medical data collected to date in the program was obtained on the 675 subjects tested in Pensacola, Florida. As with previous evaluations of the group, a summary of the methodologies employed and an overall view of distributions and interrelationships seemed necessary for a continued understanding of the program and its findings. This report describes in detail the methodology as well as the distributions and intercorrelations of 80 selected variables. Data are presented in the form of descriptive statistics, frequency histograms, and Pearson correlation coefficients. Comments deal exclusively with statistical considerations, and no interpretations are attempted. Author (GRA)

N80-19790# National Technical Information Service, Springfield, Va.

BIOFEEDBACK. A BIBLIOGRAPHY WITH ABSTRACTS
Progress Report, 1966 - Dec. 1979

Elizabeth A. Harrison Dec. 1979 76 p Supersedes NTIS/PS-78/1301; NTIS/PS-77/1188; NTIS/PS-76/0999; NTIS/PS-75/885; NTIS/PS-75/025
(PB80-803117; NTIS/PS-78/1301; NTIS/PS-77/1188; NTIS/PS-76/0999; NTIS/PS-75/885; NTIS/PS-75/025) Avail: NTIS HC $30.00/MF $30.00 CSCL 05J

Research reports on self-regulation of psychological and physiological processes are cited. Studies on learned control of blood pressure, motor reactions, brain waves, heart rate, and body temperature are included. This updated bibliography contains 68 abstracts, 7 of which are new entries to the previous edition. GRA

N80-19791*# Boeing Commercial Airplane Co., Seattle, Wash.
NASA TLA WORKLOAD ANALYSIS SUPPORT. VOLUME 1: DETAILED TASK SCENARIOS FOR GENERAL AVIATION AND METERING AND SPACING STUDIES
James L. Sundstrom Mar. 1980 38 p refs
(Contract NAS1-13741)
(NASA-CR-3199; D6-32872) Avail: NTIS HC A03/MF A01 CSCL 05H

The techniques required to produce and validate six detailed task timeline scenarios for crew workload studies are described. Specific emphasis is given to: general aviation single pilot instrument flight rules operations in a high density traffic area; fixed path metering and spacing operations; and comparative workload operation between the forward and aft-flight decks of the NASA terminal control vehicle. The validation efforts also provide a cursory examination of the resultant demand workload based on the operating procedures depicted in the detailed task scenarios. R.C.T.

N80-19792*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
EFFECT OF FIELD OF VIEW AND MONOCULAR VIEWING ON ANGULAR SIZE JUDGEMENTS IN AN OUTDOOR SCENE
Edward A. Denz (San Jose State Univ., Calif.), Everett A. Palmer, and Stephen R. Ellis Feb. 1980 20 p refs
(Grant NsG-2269)
(NASA-TM-81176; A-8083) Avail: NTIS HC A02/MF A01 CSCL 05I

Observers typically overestimate the angular size of distant objects. Significantly, overestimations are greater in outdoor settings than in aircraft visual-scene simulators. The effect of field of view and monocular and binocular viewing conditions on angular size estimation in an outdoor field was examined. Subjects adjusted the size of a variable triangle to match the angular size of a standard triangle set at three greater distances. Goggles were used to vary the field of view from 11.5 deg to 90 deg for both monocular and binocular viewing. In addition, an unrestricted monocular and binocular viewing condition was used. It is concluded that neither restricted fields of view similar to those present in visual simulators nor the restriction of monocular viewing causes a significant loss in depth perception in outdoor settings. Thus, neither factor should significantly affect the depth realism of visual simulators. Author

N80-19793# Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.
LEARNING BY UNDERSTANDING ANALOGIES
Patrick H. Winston Jun. 1979 90 p refs
(Contracts N00014-75-C-0643; N00014-77-C-0389)
(AD-A078123; AI-M-520) Avail: NTIS HC A05/MF A01 CSCL 06/4

We use analogy when we say something is a Cinderella story and when we learn about resistors by thinking about water pipes. Experts use analogy when they learn Economics, Medicine, and Law. This paper presents a theory of analogy and describes an implemented system that embodies the theory. The specific competence to be understood is that of using analogies to deal with an unfamiliar situation. A teacher may supply the analogy or may not. The analogy may be between situations in a single domain or between situations in very different domains. Frames represent the situations. Relations are expressed in a way that is reminiscent of the case-grammar view of simple sentences. The essential computations tie pairs of frame-described situations together and make knowledge about one become knowledge about the other. GRA

N80-19794# National Technical Information Service, Springfield, Va.
STRESS FACTORS ON PILOT PERFORMANCE. A BIBLIOGRAPHY WITH ABSTRACTS Progress Report, 1964 - Dec. 1979
Elizabeth A. Harrison Dec. 1979 222 p Supersedes NTIS/PS-78/1289; NTIS/PS-77/1160; NTIS/PS-76/1043; NTIS/PS-75/033
(PB80-803075; NTIS/PS-78/1289; NTIS/PS-77/1160; NTIS/PS-76/1043; NTIS/PS-75/033) Avail: NTIS HC $30.00/MF $30.00 CSCL 06S

The selected abstracts of research reports cover acceleration, circadian rhythms, physiology, psychology, neurology, man-machine systems, high altitude effects, noise effects, and vibration effects as related to stress factors on pilot performance. This updated bibliography contains 215 abstracts, 25 of which are new entries to the previous edition. GRA

N80-19795*# Grumman Aerospace Corp., Bethpage, N.Y. Advanced Development Dept.
PROJECT FIRES - FIREFIGHTERS INTEGRATED RESPONSE EQUIPMENT SYSTEM. VOLUME 1: PROGRAM OVERVIEW AND SUMMARY, PHASE 1A Final Report
Fred Abeles, Arnold Bruno, Robert Delvecchio, and Victor Himel Dec. 1978 48 p
(Contract NAS8-32329)
(NASA-CR-161399; PB-299050/5) Avail: NTIS HC A03/MF A01 CSCL 06Q

Current firefighters protective equipment was tested and evaluated against the protective ensemble performance standards (PEPS) requirements. A technology demonstration ensemble (TDE) was fabricated to demonstrate how the use of advanced equipment and technology could satisfy, to the fullest extent possible, the protective needs of the firefighter described by the PEPS. The TDE utilizes innovative approaches, advanced materials and equipment, and systems integration technology. Using the results of the test program and the PEPS document, a preliminary design of a prototype protective ensemble was performed. This design features materials and components that are available now and would offer increased firefighter protection in the near future. Author

N80-19796*# Grumman Aerospace Corp., Bethpage, N.Y. Advanced Development Dept.
PROJECT FIRES - FIREFIGHTERS INTEGRATED RESPONSE EQUIPMENT SYSTEM. VOLUME 2: PROTECTIVE ENSEMBLE PERFORMANCE STANDARDS GOALS FOR FIREFIGHTER PROTECTION, PHASE 1A Final Report
Fred Abeles, Arnold Bruno, Robert Delvecchio, and Victor Himel Dec. 1978 143 p Revised
(Contract NAS8-32329)
(NASA-CR-161400; PB-299051/3) Avail: NTIS HC A07/MF A01 CSCL 06Q

The performance goals needed for the development of a structural firefighter's protective ensemble are presented. The protective ensemble is comprised of five integrated systems and provides body protection, breathing gas, cooling, illumination, and a communications capability. The performance requirements are defined along with associated methods for their evaluation. J.M.S.

N80-19797*# Grumman Aerospace Corp., Bethpage, N.Y. Advanced Development Dept.
PROJECT FIRES - FIREFIGHTERS INTEGRATED RESPONSE EQUIPMENT SYSTEM. VOLUME 3: TEST AND EVALUATION REPORT, PHASE 1A Final Report
Fred Abeles, Arnold Bruno, Robert Delvecchio, and Victor Himel Dec. 1978 94 p
(Contract NAS8-32329)
(NASA-CR-161401; PB-299052/1) Avail: NTIS HC A05/MF A01 CSCL 06Q

Existing turnout gear was evaluated against the protective ensemble performance standards (PEPS). The equipment tested included eight models of helmets, four models of eyeshields, five representative turnout coats, ten pairs of gloves, five pairs of boots, four full-up combinations of turnout gear, and one personal cooling system. Physical testing and evaluation included impact, penetration, heat, flame, and cut resistance. Human factors testing and evaluation included mobility and dexterity, grip, cold insulation, heat insulation, fit, and retention. Performance of each individual item is rated in terms of the PEPS criteria. J.M.S.

N80-19798*# Grumman Aerospace Corp., Bethpage, N.Y. Advanced Development Dept.

PROJECT FIRES - FIREFIGHTERS INTEGRATED RESPONSE EQUIPMENT SYSTEM. VOLUME 4: TECHNOLOGY DEMONSTRATION ENSEMBLE, PHASE 1A Final Report

Fred Abeles, Arnold Bruno, Robert Delvecchio, and Victor Himel Dec. 1978 24 p
(Contract NAS8-32329)
(NASA-CR-161402; PB-299053/9) Avail: NTIS HC A02/MF A01 CSCL 06Q

The Technology Demonstration Ensemble (TDE) demonstrates advanced concepts in a structural firefighter's personal protection system. This innovative design was conceived of as an integrated lightweight system that provides head-to-toes protection. Some of the features provided include: an ultralightweight breathing system built right into the turnout garment; conecpts which insure wrist, neck, and ankle protection; a helmet that incorporates a radio, public address system; and an emergency warning device. These and other features of the design are described. J.M.S.

N80-19799*# Grumman Aerospace Corp., Bethpage, N.Y. Advanced Technology Dept.

PROJECT FIRES - FIREFIGHTERS INTEGRATED RESPONSE EQUIPMENT SYSTEM. VOLUME 5: PROTOTYPE PROTECTIVE ENSEMBLE DATA PACKAGE, PHASE 1A Final Report

Fred Abeles, Arnold Bruno, Robert Delvecchio, and Victor Himel Dec. 1978 94 p refs
(Contract NAS8-32329)
(NASA-CR-161403; PB-299054/7) Avail: NTIS HC A05/MF A01 CSCL 06Q

The preliminary design of a prototype protective ensemble for structural firefighters is presented. The protective garment system is comprised of five subsystems. Sketches and preliminary layout-type drawings used as a basis for defining the design characteristics of the protective garment subsystem are included. The design is based on the requirements of the protective ensemble performance standard, available materials characteristics, and on maintaining cost at a reasonable level. J.M.S.

N80-19800*# Life Systems, Inc., Cleveland, Ohio

DEVELOPMENT OF A NITROGEN GENERATION SYSTEM Final Report

D. B. Heppner, R. D. Marshall, J. D. Powell, III, and F. H. Schubert Jan. 1980 63 p refs
(Contract NAS2-10096)
(NASA-CR-152333; LSI-TR-353-4) Avail: NTIS HC A04/MF A01 CSCL 06K

An eight-stage nitrogen generation module was developed. The design integrated a hydrazine catalytic dissociator, three ammonia dissociation stages and four palladium/silver hydrogen separator stages. Alternating ammonia dissociation and hydrogen separation stages are used to remove hydrogen and ammonia formed in the dissociation of hydrazine which results in negligible ammonia and hydrogen concentrations in the product nitrogen stream. An engineering breadboard nitrogen supply subsystem was also developed. It was developed as an integratable subsystem for a central spacecraft air revitalization system. The subsystem consists of the hydrazine storage and feed mechanism, the nitrogen generation module, the peripheral mechanical and electrical components required to control and monitor subsystem performance, and the instrumentation required to interface with other subsystems of an air revitalization system. The breadboard nitrogen supply subsystem was integrated and tested with a one-person capacity experimental air revitalization system. The integration, checkout and testing was successfully accomplished. R.E.S.

N80-19801*# National Aeronautics and Space Administration, Washington, D. C.

A DEVICE FOR DETERMINING THE INTENSITY OF PARTIAL SWEATING

V. A. Rayskiy, Ye. A. Vinogradov, and O. A. Safonov Mar. 1979 7 p Transl. into ENGLISH from Russian Patent no. 249546 (Appl. No. 1199864/31-16, 30 Nov. 1967) 3 p Submitted for publication Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75429) Avail: NTIS HC A02/MF A01 CSCL 06B

An invention which can measure partial perspiration is disclosed. The partial perspiration is measured with a specially shaped device tightly fastened to the body but not touching the skin area being studied. A special grid is used to keep the moisture-absorbing agent from touching the skin. R.E.S.

N80-19802*# Virginia Univ., Charlottesville. Research Labs. for the Engineering Sciences.

HUMAN COMFORT RESPONSE TO RANDOM MOTIONS WITH COMBINED YAWING AND ROLLING MOTIONS

Ralph W. Stone, Jr. Aug. 1979 129 p refs
(Contract NAS1-14908)
(NASA-CR-159187; UVA/528156/MAE-CE79/128) Avail: NTIS HC A07/MF A01 CSCL 05H

The effects of random yawing and rolling velocities on passenger ride comfort responses were examined on a visual motion simulator. The effects of power spectral density shape and frequency ranges of peak power from 0 to 2 Hz were studied. The subjective rating data and the physical motion data obtained are presented. No attempt at interpretation or detailed analysis of the data is made. There existed during this study motions in all other degrees of freedom as well as the yawing and rolling motions, because of the characteristics of the simulator. These unwanted motions may have introduced some interactive effects on passenger responses which should be considered in any analysis of the data. R.E.S.

N80-19803# Army Research Inst. for the Behavioral and Social Sciences, Alexandria, Va.

HELICOPTER PILOT DETECTION OF THE TWO DIFFERENT CAMOUFLAGED HAWK BATTERIES

Charles C. Jorgensen and Nadean R. Jones Jul. 1978 10 p refs
(AD-A077954; ARI-RM-78-5) Avail: NTIS HC A02/MF A01 CSCL 15/7

The purpose of this study was to collect data comparing the camouflage effectiveness of the cage-supported light-weight camouflage screen (LCS) and the experimental shape disrupter system produced by the Mobility Equipment Research and Development Command (MERADCOM). The camouflaged Hawk battery systems were contrasted with a control Hawk battery having no camouflage. The data reported in this paper were collected by ARI for use by the US Army Air Defense Board (ADB) as part of a larger scale study for the US Army Air Defense School (USAADS). ARI was specifically tasked with determining the human pilot detectability of the batteries in contrast to other portions of the study dealing with satellite and photoimagery interpretations. The data presented refer only to helicopter pilots and the associated Hawk ground crews. The data that were collected appear to consistently support one camouflage system over the other. GRA

N80-19804# Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.

TOWARD A REMOTELY-MANNED ENERGY AND PRODUCTION ECONOMY

Marvin Minsky Sep. 1979 20 p
(Contract N00014-79-C-0260)
(AD-A078069; AI-M-544) Avail: NTIS HC A02/MF A01 CSCL 05/8

We can solve many problems of energy, health, productivity, and environmental quality by improving the technology of remote control. This will produce nuclear safety and security, advances in mining, increases in productivity, economies in transportation, new industries and markets. By creating 'mechanical hands' that are versatile and economical enough, we shape a new world of health, energy and security. It will take 10 to 20 years, and cost about a billion dollars. GRA

N80-19805# Human Engineering Labs., Aberdeen Proving Ground, Md.

EFFECTS OF ARTILLERY NOISE ON THE HEARING OF PROTECTED CREW PERSONNEL Final Report, May - Jun. 1979

David C. Hodge, G. Richard Price, Nancy L. Dukes, and Samuel J. Murff Oct. 1979 40 p refs
(DA Proj. 1L1-61102-B-74A)
(AD-A078664; HEL-TM-17-79) Avail: NTIS HC A03/MF A01 CSCL 06/19

A test was conducted to determine loading rates for three artillery systems, and both male and female crews participated. Audiometric and acoustical support were provided to assess the crews: noise exposure, look for trends in the threshold shift data, and compare the threshold shifts with that permitted under present damage risk criteria. The impulse noise exposures were quite variable, due to crew mobility and low zone charges. There were no instances of excessive threshold shift, and only a few instances of threshold shift approaching the allowable limits. There were no obvious trends across test conditions. The main auditory goal of the test, viz., to avoid excessive hearing losses, was achieved. GRA

N80-19806# Army Command and General Staff Coll., Fort Leavenworth, Kansas.

LIGHTWEIGHT PILOT HELMETS: THE ISSUE OF WEIGHT VERSUS PROTECTION M.S. Thesis Final Report

Richard W. Himmel 8 Jun. 1979 63 p refs
(AD-A076325) Avail: NTIS HC A04/MF A01 CSCL 06/17

This study addresses the problem of reducing the weight of pilot helmets while retaining relevant protective qualities. Existing helmet development standards are synthesized and compared in light of compatability, objectivity and standardization. The issue of decreased protection, as a result of weight reduction, is discussed in view of pilot opinion, accident experience, contemporary research and recent compromises in helmet development. The investigation reveals distinct ambiguities in helmet development standards and incongruities between standards. The study recommends the deletion of penetration standards since they are incompatible with impact standards and prevent industry from using new materials to achieve light weight. Further, the study proposes a change to military specification MIL-H-83147 (USAF) that reflects the deletion of penetration standards and recognizes current technological developments. GRA

N80-19807# National Technical Information Service, Springfield, Va.

HUMAN WORK MEASUREMENT. A BIBLIOGRAPHY WITH ABSTRACTS Progress Report, 1964 - Nov. 1979

Edith Kenton Dec. 1979 218 p Supersedes NTIS/PS-78/1197, NTIS/PS-77/1054; NTIS/PS-76/0945; NTIS/PS-75/797
(PB80-803166; NTIS/PS-78/1197; NTIS/PS-77/1054; NTIS/PS-76/0945; NTIS/PS-75/797) Avail: NTIS HC $30.00/MF $30.00 CSCL 05I

Reports dealing with measurement techniques of human work at jobs and tasks are summarized. Specific topics included are work, analysis and evaluation, workload management, operations analysis, task complexity, and performance measurement. This updated bibliography contains 211 abstracts, 43 of which are new entries to the previous edition. GRA

N80-19808# Rhode Island Univ., Kingston. Dept. of Electrical Engineering.

GENERAL METHODS TO ENABLE ROBOTS WITH VISION TO ACQUIRE, ORIENT AND TRANSPORT WORKPIECES Technical Report 5

J. Birk, R. Kelley, and T. Brownell Aug. 1979 245 p refs
(Grants NSF APR-74-13935; Grants NSF DAR-14-13935)
(PB80-106388; NSF/RA-790230; TR-5) Avail: NTIS HC A11/MF A01 CSCL 13I

The problem of giving robots the ability to work with unoriented objects is discussed in relation to automated batch manufacturing systems, particularly those in which unoriented parts in containers are transported between machines and storage. Some examples of robot systems are an automatic method of visually estimating the pose of an object held in a robot hand and a system employing vision which feeds workpieces directly from supply bins into machines and which can be reprogrammed to service different workpieces. GRA

N80-19813# Department of the Air Force, Washington, D.C. Tactical Systems Div.

REPRESENTING HUMAN THOUGHT AND RESPONSE IN MILITARY CONFLICT SIMULATION MODELS

Dennis K. Leedom *In* AGARD Modeling and Simulation of Avionics Systems and Command, Control and Commun. Jan. 1980 15 p refs
Avail: NTIS HC A24/MF A01

Conflict simulation models and the representation of human thought and response in such models are considered. The ideas presented relate to the modeling of conflict situations from single combat unit level up through theater force level. In particular, the use of such models for assessing the utility of tactical command and control (C2) systems is emphasized. J.M.S.

N80-19828# Defense Advanced Research Projects Agency, Arlington, Va.

AVIATION TRAINING USING VIDEO DISK TECHNOLOGY

Craig Fields and Steven Levin *In* AGARD Modeling and Simulation of Avionics Systems and Command, Control and Commun. Jan. 1980 2 p Prepared in cooperation with Interactive Television Co., Arlington, Va.

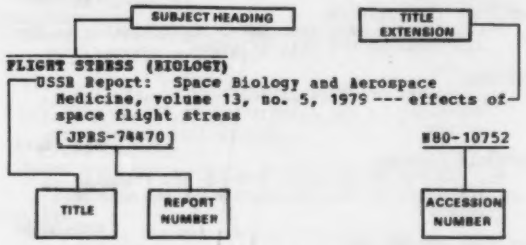
Avail: NTIS HC A24/MF A01

Video disks are a new technology that provide inexpensive storage (65 cent/disk) and rapid access (as little as 1/8 sec.) to large numbers (54,000 pictures/disk side) of photographs. For a typical airport, it is possible to store on a video disk compressed movies showing all runway, take-off, landing, circling, and approach paths. When such a disk is viewed on a player and television controlled by a simple microprocessor, the pilot can vicariously fly himself around an airport, land, take-off, taxi and circle. The pilot sees an image with photographic realism, can choose his own path and speed, and can choose time of day or weather conditions for the simulation trip. Such a system is one hundred times less expensive than a conventional flight simulator. Author

SUBJECT INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 207)* **JUNE 1980**

Typical Subject Index Listing


SUBJECT HEADING
TITLE EXTENSION
FLIGHT STRESS (BIOLOGY)
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979 --- effects of space flight stress
[JPRS-74470]
N80-10752
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABIOGENESIS
Cyanamide mediated synthesis under plausible primitive earth conditions. VI - The synthesis of glycerol and glycerophosphates A80-25201
Self-condensation of activated dinucleotides on polynucleotide templates with alternating sequences A80-25202
Role of interstellar molecules in prebiological evolution A80-26219
Chemical evolution and the origin of life - Bibliography supplement 1977 A80-26220

ACCELERATION (PHYSICS)
A new anti-G value for high-performance aircraft [AD-A076904] N80-18719

ACCELERATION STRESSES (PHYSIOLOGY)
Objective measurement of human tolerance to +G sub z acceleration stress [NASA-TM-81166] N80-18709

ACCELERATION TOLERANCE
Cardiovascular reaction to periodic head-pelvis accelerations on a short-arm centrifuge N80-19760

ACCLIMATIZATION
Certain questions of the acclimatization of construction workers to the conditions of a subtropical climate [NASA-TM-75728] N80-19787

ACTIVITY CYCLES (BIOLOGY)
Scheduling work and rest periods during long-term space flights N80-19756

ADAPTATION
A comparison of accommodative responsiveness and contrast sensitivity for sinusoidal gratings A80-27075

ADENOSINE TRIPHOSPHATE
The effects of hypoxia and hypercapnia on myocardial adenosine triphosphatase activity A80-28350

ADRENAL GLAND
Functional changes in the adrenal cortex during simulation of stress situations in the presence of high carbon monoxide levels N80-19774

ADRENAL METABOLISM
Effects of long-term space flights on reactions of adrenal cortex and medulla N80-19759

ADRENOCORTICOTROPIN (ACTH)
Reaction of chickens to graduated length of exposure to stress [NASA-TM-76071] N80-19754

AERODYNAMIC FORCES
Studies of limb-dislodging forces acting on an ejection seat occupant A80-25895

AERONAUTICAL ENGINEERING
Human comfort response to random motions with combined yawing and rolling motions [NASA-CR-159187] N80-19802

AEROSPACE MEDICINE
Spatial summation of monochromatic light in the visual system A80-25828
Investigation of the functional state of the CNS under conditions of altitude decompression A80-25836
Evaluation of the relationship between motion sickness symptomatology and blood pressure, heart rate, and body temperature A80-25890
Motion sickness in the squirrel monkey A80-25891
Visual and postural motion aftereffects following parabolic flight A80-25892
Body fluid compartments in humans during acute high-altitude exposure A80-25893
Aviation medicine. Volume 2 - Health and clinical aspects --- Book A80-27029
Interaction of pre- and postsaccadic patterns having the same coordinates in space A80-27074
A comparison of accommodative responsiveness and contrast sensitivity for sinusoidal gratings A80-27075
Methods for identifying respiratory oscillations disclose altitude effects A80-23190
Some aspects concerning the dynamic evaluation of oxygen consumption in exercise tests A80-28555
Electroretinographic and psychophysical measures of cone spectral mechanisms using the two-color threshold technique A80-28786
Objective measurement of human tolerance to +G sub z acceleration stress [NASA-TM-81166] N80-18709
A new anti-G value for high-performance aircraft [AD-A076904] N80-18719
USSR report: Space biology and aerospace medicine, v. 14, no. 1 [JPRS-75251] N80-19755
Reaction of human blood to chronic exposure to low doses of carbon monoxide in a confined environment N80-19761
Probability of altitude decompression disorders when breathing oxygen containing human waste gases N80-19762
Effect of hyperoxia on oxygen transport properties of blood N80-19763
External respiration and acid-base balance of human blood during long-term antiorthostatic hypokinesia and in the recovery period N80-19764

Distinctions in development of pyrogenal fever in animals following prolonged hypokinesia
N80-19765

Blood circulation under conditions of weightlessness
[NASA-TM-76036] N80-19786

The Thousand Aviator study: 1969 - 1971 follow-up program with distributions and intercorrelations of selected variables
[AD-A079700] N80-19789

AFFERENT NERVOUS SYSTEMS

Responses of the primary vestibular afferents of the frog to direct vibratory stimulation of the semicircular canal
A80-26030

AGE FACTOR

Vital capacity, exercise performance, and blood gases at altitude as related to age
A80-25988

AGING (BIOLOGY)

The Thousand Aviator study: 1969 - 1971 follow-up program with distributions and intercorrelations of selected variables
[AD-A079700] N80-19789

AIR PURIFICATION

Development of a nitrogen generation system
[NASA-CR-152333] N80-19800

AIRCRAFT EQUIPMENT

NASA TLA workload analysis support. Volume 1: Detailed task scenarios for general aviation and metering and spacing studies
[NASA-CR-3199] N80-19791

AIRCRAFT INSTRUMENTS

A method of determination of scale numbering taking into account the carrying capacity of an operator
A80-27065

AIRCRAFT PILOTS

The prolapsed mitral valve syndrome and the flyer
A80-25898

Pilot selection using psychological methods
[FOA-C-55024-H7] N80-18716

AIRLINE OPERATIONS

Aviation medicine. Volume 2 - Health and clinical aspects --- Book
A80-27029

ALTITUDE ACCLIMATIZATION

Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders
A80-25763

Investigation of the functional state of the CNS under conditions of altitude decompression
A80-25836

ALTITUDE SICKNESS

Intravascular hemolysis in acute mountain sickness
A80-25896

Probability of altitude decompression disorders when breathing oxygen containing human waste gases
N80-19762

ANALOGIES

Learning by understanding analogies
[AD-A078123] N80-19793

ANGIOGRAPHY

Detection of coronary artery disease - Comparison of exercise stress radionuclide angiocardiography and thallium stress perfusion scanning
A80-25822

Nuclear cardiology. I - Radionuclide angiographic assessment of left ventricular contraction: Uses, limitations and future directions. II - The role of myocardial perfusion imaging using thallium-201 in diagnosis of coronary heart disease
A80-25824

ANGLES (GEOMETRY)

Effect of field of view and monocular viewing on angular size judgements in an outdoor scene
[NASA-TM-81176] N80-19792

ANTIBODIES

Effect of brief antiorthostatic hypokinesia on blood immunoglobulin content
N80-19772

ANTIGRAVITY

A new anti-G value for high-performance aircraft
[AD-A076904] N80-18719

ARTIFICIAL GRAVITY

Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936
A80-25283

ARTIFICIAL INTELLIGENCE

Learning by understanding analogies
[AD-A078123] N80-19793

ASTRONAUT TRAINING

Astronaut crew selection
[AAS 79-207] A80-28699

ATTITUDE (INCLINATION)

The influence of colour and contour rivalry on the magnitude of the tilt illusion
A80-28787

AUDIOLOGY

The effects of spectral density and stimulus intensity on the elicitation of the acoustic reflex
N80-18692

AUDITORY DEFECTS

The effects of spectral density and stimulus intensity on the elicitation of the acoustic reflex
N80-18692

AUDITORY PERCEPTION

Rate of acoustic change may underlie hemispheric specialization for speech perception
A80-27260

On the audition coordinating cerebral activity
A80-27830

Continuous real-time auditory evoked potentials using a sliding window of averages
N80-18699

AUDITORY STIMULI

Audiokinesthetic relationships and the time of simple motor response to auditory and kinesthetic stimuli
A80-25831

Continuous real-time auditory evoked potentials using a sliding window of averages
N80-18699

AUTOMATA THEORY

Toward a remotely-manned energy and production economy
[AD-A078069] N80-19804

AUTOMATIC CONTROL

General methods to enable robots with vision to acquire, orient and transport workpieces
[PB80-106388] N80-19808

AUTOMATIC PILOTS

NASA TLA workload analysis support. Volume 1: Detailed task scenarios for general aviation and metering and spacing studies
[NASA-CR-3199] N80-19791

AUTOMATION

Shuttle payload, manual vs. automated functions
[AAS 79-210] A80-28700

AUTONOMIC NERVOUS SYSTEM

The effect of vasoactive agents on the resistance and capacitance vessels of the small intestine at high altitude
A80-26029

Features of cholinergic cardia regulation under conditions of hypokinesia
[NASA-TM-76044] N80-18687

The effects of stimulation of the anterior cingulate gyrus in cats with freedom of movement
[NASA-TM-76055] N80-18688

AUTOTROPHS

Development of program for the control of the autotrophic component of an ecological system that is closed with regard to exchange of gases
N80-19768

B

BACTERIA

Common properties of bacterial and visual rhodopsines - The conversion of optical energy into electric-potential difference
A80-25026

Spectrophotometric identification of the pigment associated with light-driven primary sodium translocation in Halobacterium halobium
A80-26015

The role of Na/+/ in transport processes of bacterial membranes
A80-27077

BANDWIDTH
Models of human vision in digital image bandwidth compression N80-18697
BED REST
Exercise thermoregulation after 14 days of bed rest A80-25989
BEHAVIOR
Effect of habituation on the susceptibility of the rat to restraint ulcers [NASA-TM-76072] N80-19748
BIBLIOGRAPHIES
Chemical evolution and the origin of life - Bibliography supplement 1977 A80-26220
Biofeedback. A bibliography with abstracts [PB80-803117] N80-19790
Stress factors on pilot performance. A bibliography with abstracts [PB80-803075] N80-19794
Human work measurement. A bibliography with abstracts [PB80-803166] N80-19807
BIOASSAY
Methodology for estimation of total body composition in laboratory mammals [NASA-CR-162806] N80-18679
BIOASTRONAUTICS
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936 A80-25283
Blood circulation under conditions of weightlessness [NASA-TM-76036] N80-19786
BIOCHEMISTRY
Cyanamide mediated synthesis under plausible primitive earth conditions. VI - The synthesis of glycerol and glycerophosphates A80-25201
Self-condensation of activated dinucleotides on polynucleotide templates with alternating sequences A80-25202
Spectrophotometric identification of the pigment associated with light-driven primary sodium translocation in Halobacterium halobium A80-26015
Chemical evolution and the origin of life - Bibliography supplement 1977 A80-26220
Methodology for estimation of total body composition in laboratory mammals [NASA-CR-162806] N80-18679
BIOCONTROL SYSTEMS
Investigation of the self-regulation of sensorimotor activity A80-25832
BIODYNAMICS
Studies of limb-dislodging forces acting on an ejection seat occupant A80-25895
BIOELECTRIC POTENTIAL
Common properties of bacterial and visual rhodopsines - The conversion of optical energy into electric-potential difference A80-25026
BIOELECTRICITY
Individual peculiarities of the space-time organization of the bioelectric activity of the brain in a probalilistic prediction situation A80-25838
The effects of stimulation of the anterior cingulate gyrus in cats with freedom of movement [NASA-TM-76055] N80-18688
BIOENGINEERING
Comparative analysis of lung models used to study the mechanics of breathing A80-25835
BIOGEOCHEMISTRY
The carbon isotope biogeochemistry of the individual hydrocarbons in bat guano and the ecology of insectivorous bats in the region of Carlsbad, New Mexico [NASA-TM-81164] N80-18680
BIOINSTRUMENTATION
Contact ring for registering the turning of the eyeball A80-25839
Multipurpose rotating machine for immobilization and conducting studies on small laboratory animals [NASA-TM-76049] N80-18682
Induction powered biological radiosonde [NASA-CASE-ARC-11120-1] N80-18691
A device for determining the intensity of partial sweating [NASA-TM-75429] N80-19801
BIOLOGICAL EFFECTS
USSR report: Space biology and aerospace medicine, v. 14, no. 1 [JPRS-75251] N80-19755
Reaction of human blood to chronic exposure to low doses of carbon monoxide in a confined environment N80-19761
Functional changes in the adrenal cortex during simulation of stress situations in the presence of high carbon monoxide levels N80-19774
Effect of hypoxia and hypercapnia on lactate and pyruvate levels in rat blood and myocardium N80-19775
Study of radioprotective effect of high-intensity magnetic fields on mammalian cell cultures N80-19776
Studies of the effects of stationary magnetic fields on rat erythron N80-19777
The Thousand Aviator study: 1969 - 1971 follow-up program with distributions and intercorrelations of selected variables [AD-A079700] N80-19789
BIOLOGICAL EVOLUTION
A conformational rationale for the origin of the mechanism of nucleicacid-directed protein synthesis of 'living' organisms A80-26215
The evolution of the protein synthesis system. II - From chemical evolution to biological evolution A80-26216
Operational description of microsystems formation in prebiological molecular evolution A80-26217
Role of interstellar molecules in prebiological evolution A80-26219
Chemical evolution and the origin of life - Bibliography supplement 1977 A80-26220
BIOMEDICAL DATA
The Thousand Aviator study: 1969 - 1971 follow-up program with distributions and intercorrelations of selected variables [AD-A079700] N80-19789
BIONICS
Mass transfer studies of pulmonary function N80-18700
Application of mutual amount of information for time delay estimation --- its use in the diagnosis of epilepsy [THT-210] N80-18714
BIOSYNTHESIS
Early assignments of the genetic code dependent upon protein structure A80-26214
A conformational rationale for the origin of the mechanism of nucleicacid-directed protein synthesis of 'living' organisms A80-26215
The evolution of the protein synthesis system. II - From chemical evolution to biological evolution A80-26216
BIOTECHNOLOGY
Multipurpose rotating machine for immobilization and conducting studies on small laboratory animals [NASA-TM-76049] N80-18682
BLOOD
Effects of flights differing in duration on protein composition of cosmonauts blood N80-19757
Reaction of human blood to chronic exposure to low doses of carbon monoxide in a confined environment N80-19761
Effect of hyperoxia on oxygen transport properties of blood N80-19763

External respiration and acid-base balance of human blood during long-term antiorthostatic hypokinesia and in the recovery period
N80-19764

Effect of brief antiorthostatic hypokinesia on blood immunoglobulin content
N80-19772

Effect of hypoxia and hypercapnia on lactate and pyruvate levels in rat blood and myocardium
N80-19775

BLOOD CIRCULATION
Mathematical analysis of carbon dioxide transport by blood
N80-18698

Studies of the effects of stationary magnetic fields on rat erythron
N80-19777

Effect of hypokinesia on cardiac contractile function and nervous regulation of the heart
[NASA-TM-75970] N80-19783

Blood circulation under conditions of weightlessness
[NASA-TM-76036] N80-19786

BLOOD COAGULATION
The effects of adrenalectomy and corticosteroid injection on the fibrinolytic activity of complex heparin compounds in the blood during immobilization
[NASA-TM-75985] N80-18685

BLOOD FLOW
Ultrasonic Doppler directional blood flow velocity meter
[RAE-LIB-TRANS-1918] N80-19780

BLOOD PLASMA
Rat plasma and tissue lipids after a long-term space flight
N80-19773

BLOOD PRESSURE
Evaluation of the relationship between motion sickness symptomatology and blood pressure, heart rate, and body temperature
A80-25890

BODY COMPOSITION (BIOLOGY)
Methodology for estimation of total body composition in laboratory mammals
[NASA-CR-162806] N80-18679

BODY FLUIDS
Body fluid compartments in humans during acute high-altitude exposure
A80-25893

Fluid shifts and endocrine responses during chair rest and water immersion in man
A80-25990

BODY MEASUREMENT (BIOLOGY)
Methodology for estimation of total body composition in laboratory mammals
[NASA-CR-162806] N80-18679

BODY TEMPERATURE
Evaluation of the relationship between motion sickness symptomatology and blood pressure, heart rate, and body temperature
A80-25890

Exercise thermoregulation after 14 days of bed rest
A80-25989

Changes in body temperature and metabolic rate after injection of calcium into the caudal hypothalamus of the rabbit
A80-27078

Microwaves induce peripheral vasodilation in squirrel monkey
A80-27261

Variable open-loop gain in the control of thermogenesis in cold-exposed rabbits
A80-28189

The human body temperature regulation system --- closed control loop
[RAE-LIB-TRANS-2019] N80-18702

BODY WEIGHT
Body fluid compartments in humans during acute high-altitude exposure
A80-25893

BONE MINERAL CONTENT
State of the mineral component of rat bone tissue during hypokinesia and the recovery period
[NASA-TM-76059] N80-19753

BRAIN
Individual peculiarities of the space-time organization of the bioelectric activity of the brain in a probalilistic prediction situation
A80-25838

On the audition coordinating cerebral activity
A80-27830

BREATHING
Comparative analysis of lung models used to study the mechanics of breathing
A80-25835

C

CALCIUM
Spectral analysis of conduction fluctuations of calcium channels in a nerve-cell membrane
A80-26424

Changes in body temperature and metabolic rate after injection of calcium into the caudal hypothalamus of the rabbit
A80-27078

CALCIUM METABOLISM
Effectiveness of using thyrocalcitonin for the prevention of a calcium metabolic disorder in the mineralized tissues of rabbits with 30 days hypokinesia
[NASA-TM-75987] N80-19751

CALIBRATING
A method of determination of scale numbering taking into account the carrying capacity of an operator
A80-27065

CAMOUFLAGE
Helicopter pilot detection of the two different camouflaged hawk batteries
[AD-A077954] N80-19803

CARBOHYDRATE METABOLISM
Circadian rhythmicity in ventricular myocardial and diaphragmatic metabolism
N80-18695

CARBON DIOXIDE
Mathematical analysis of carbon dioxide transport by blood
N80-18698

CARBON DIOXIDE TENSION
Vital capacity, exercise performance, and blood gases at altitude as related to age
A80-25988

CARBON ISOTOPES
The carbon isotope biogeochemistry of the individual hydrocarbons in bat guano and the ecology of insectivorous bats in the region of Carlsbad, New Mexico
[NASA-TM-81164] N80-18680

CARBON MONOXIDE
Reaction of human blood to chronic exposure to low doses of carbon monoxide in a confined environment
N80-19761

Functional changes in the adrenal cortex during simulation of stress situations in the presence of high carbon monoxide levels
N80-19774

CARDIAC VENTRICLES
Nuclear cardiology. I - Radionuclide angiographic assessment of left ventricular contraction: Uses, limitations and future directions. II - The role of myocardial perfusion imaging using thallium-201 in diagnosis of coronary heart disease
A80-25824

Mitral valve prolapse - A review
A80-25897

Echocardiographic left ventricular masses in distance runners and weight lifters
A80-25991

Chronic propranolol treatment blunts right ventricular hypertrophy in rats at high altitude
A80-28187

CARDIOGRAPHY
Detection of coronary artery disease - Comparison of exercise stress radionuclide angiocardiography and thallium stress perfusion scanning
A80-25822

CARDIOLOGY
Detection of coronary artery disease - Comparison of exercise stress radionuclide angiocardiography and thallium stress perfusion scanning
A80-25822

Nuclear cardiology. I - Radionuclide angiographic assessment of left ventricular contraction: Uses, limitations and future directions. II - The role of myocardial perfusion imaging using thallium-201 in diagnosis of coronary heart disease
A80-25824

CARDIOVASCULAR SYSTEM
Objective measurement of human tolerance to +G sub z acceleration stress
[NASA-TM-81166] N80-18709
Cosmos 81 US/USSR cardiovascular study: Experiment implementation plan
[NASA-TM-81178] N80-18710
Cardiovascular reaction to periodic head-pelvis accelerations on a short-arm centrifuge
N80-19760

CATABOLISM
A model for hypokinesia: Effects on muscle atrophy in the rat
A80-28188

CATECHOLAMINE
Effect of consecutive cooling and immobilization on catecholamine metabolism in rat tissues
[NASA-TM-75962] N80-18684

CATHODE RAY TUBES
Effect of cursor characteristics on pilots' tracking performance on a cathode-ray tube in dynamic simulation
A80-28556

CELLS (BIOLOGY)
Spectral analysis of conduction fluctuations of calcium channels in a nerve-cell membrane
A80-26424
Kidney cell electrophoresis
[NASA-CR-160555] N80-19782

CENTRAL NERVOUS SYSTEM
Investigation of the functional state of the CNS under conditions of altitude decompression
A80-25836

CENTRIFUGING STRESS
Effects of centrifugation stress on pituitary-gonadal function in male rats
A80-25987
Cardiovascular reaction to periodic head-pelvis accelerations on a short-arm centrifuge
N80-19760

CEREBRAL CORTEX
Rate of acoustic change may underlie hemispheric specialization for speech perception
A80-27260

CHEMICAL EVOLUTION
Cyanamide mediated synthesis under plausible primitive earth conditions. VI - The synthesis of glycerol and glycerophosphates
A80-25201
Self-condensation of activated dinucleotides on polynucleotide templates with alternating sequences
A80-25202
Operational description of microsystems formation in prebiological molecular evolution
A80-26217
Chemical evolution and the origin of life - Bibliography supplement 1977
A80-26220

CHROMOSOMES
Effects of 25 and 50 MeV protons on human peripheral blood lymphocyte chromosomes in vitro
N80-19767

CIRCADIAN RHYTHMS
Circadian rhythmicity in ventricular myocardial and diaphragmatic metabolism
N80-18695

CLINICAL MEDICINE
Aviation medicine. Volume 2 - Health and clinical aspects --- Book
A80-27029

CLOSED ECOLOGICAL SYSTEMS
Development of program for the control of the autotrophic component of an ecological system that is closed with regard to exchange of gases
N80-19768

COGNITIVE PSYCHOLOGY
The power process: A synthesis theory of power
N80-18715

COLOR
The influence of colour and contour rivalry on the magnitude of the tilt illusion
A80-28787

COLOR VISION
Spatial summation of monochromatic light in the visual system
A80-25828
Thresholds of recognition of various features of color stimuli
A80-25829
Visual search through color displays - Effects of target-background similarity and background uniformity
A80-28101
Electroretinographic and psychophysical measures of cone spectral mechanisms using the two-color threshold technique
A80-28786

COMFORT
Human comfort response to random motions with combined yawing and rolling motions
[NASA-CR-159187] N80-19802

COMMAND AND CONTROL
Representing human thought and response in military conflict simulation models
N80-19813

COMPUTERIZED SIMULATION
Modeling requirements for network simulation of human-machine systems
N80-18717
Representing human thought and response in military conflict simulation models
N80-19813

CONCENTRATION (COMPOSITION)
Effects of flights differing in duration on protein composition of cosmonauts blood
N80-19757

CONDENSATION
Self-condensation of activated dinucleotides on polynucleotide templates with alternating sequences
A80-25202

CONGENITAL ANOMALIES
Mitral valve prolapse - A review
A80-25897

CONTINUUM MECHANICS
A continuum model of protein transport across the endothelium in the lungs and in the body of humans
N80-19778

CONTOURS
The influence of colour and contour rivalry on the magnitude of the tilt illusion
A80-28787

CORONARY ARTERY DISEASE
Detection of coronary artery disease - Comparison of exercise stress radionuclide angiocardiography and thallium stress perfusion scanning
A80-25822
Mitral valve prolapse - A review
A80-25897

COSMOS 936 SATELLITE
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936
A80-25283

CROP GROWTH
Determination of ethylene produced by pea seedlings under near-zero gravity conditions - Preliminary studies
[AAS 79-216] A80-28707

CULTURE TECHNIQUES
NASA standard procedures for the microbiological examination of space hardware
[NASA-TM-80756] N80-19749

CYTOLOGY
The role of Na/+/ in transport processes of bacterial membranes
A80-27077

D

DECOMPRESSION SICKNESS
Investigation of the functional state of the CNS under conditions of altitude decompression
A80-25836

Probability of altitude decompression disorders when breathing oxygen containing human waste gases N80-19762

DIAGNOSIS
Application of mutual amount of information for time delay estimation --- its use in the diagnosis of epilepsy [THT-210] N80-18714

DIAPHRAGM (ANATOMY)
Circadian rhythmicity in ventricular myocardial and diaphragmatic metabolism N80-18695

DIETS
Alimentary hypokinesia [NASA-TM-75989] N80-19784

DIFFUSION
A continuum model of protein transport across the endothelium in the lungs and in the body of humans N80-19778

DIGESTIVE SYSTEM
Alimentary hypokinesia [NASA-TM-75989] N80-19784

DISPLACEMENT
Illusory reversal of extrafoveally perceived displacement A80-28775

DISPLAY DEVICES
Visual search through color displays - Effects of target-background similarity and background uniformity A80-28101

DOPPLER EFFECT
Ultrasonic Doppler directional blood flow velocity meter [RAE-LIB-TRANS-1918] N80-19780

E

EAR PROTECTORS
Effects of artillery noise on the hearing of protected crew personnel [AD-A078664] N80-19805

EATING
Effects of fasting and refeeding on the metabolic response to a standard meal in man A80-25175

ECHOCARDIOGRAPHY
Echocardiography in assessing acute pulmonary hypertension due to pulmonary embolism A80-25823
The prolapsed mitral valve syndrome and the flyer A80-25898
Echocardiographic left ventricular masses in distance runners and weight lifters A80-25991

ECOLOGY
The carbon isotope biogeochemistry of the individual hydrocarbons in bat guano and the ecology of insectivorous bats in the region of Carlsbad, New Mexico [NASA-TM-81164] N80-18680

ECONOMIC ANALYSIS
Shuttle payload, manual vs. automated functions [AAS 79-210] A80-28700

EFFERENT NERVOUS SYSTEMS
The effects of stimulation of the anterior cingulate gyrus in cats with freedom of movement [NASA-TM-76055] N80-18688
Topochemical differences in the amount of RNA in the motoneurons of the spinal chord in hypoxia and hypokinesia [NASA-TM-75994] N80-18689

EJECTION SEATS
Studies of limb-dislodging forces acting on an ejection seat occupant A80-25895

ELECTROCONDUCTIVITY
Spectral analysis of conduction fluctuations of calcium channels in a nerve-cell membrane A80-26424

ELECTROLYTE METABOLISM
Experimental investigation of the role of thyrocalcitonin in the prophylaxis of disturbances in the water-salt and mineral metabolism during a 30-day hypokinesia [NASA-TM-75938] N80-18704

ELECTROPHORESIS
Kidney cell electrophoresis [NASA-CR-160555] N80-19782

ELECTROPHYSIOLOGY
The effects of stimulation of the anterior cingulate gyrus in cats with freedom of movement [NASA-TM-76055] N80-18688

ELECTRORETINOGRAPHY
Electroretinographic and psychophysical measures of cone spectral mechanisms using the two-color threshold technique A80-28786

EMBOLISMS
Echocardiography in assessing acute pulmonary hypertension due to pulmonary embolism A80-25823

EMERGENCY LIFE SUSTAINING SYSTEMS
Prototype: Preliminary study on emergency breathing apparatus [FOA-C-40103-C2] N80-18720

ENDOCRINE SYSTEMS
Fluid shifts and endocrine responses during chair rest and water immersion in man A80-25990

ENDOTHELIUM
A continuum model of protein transport across the endothelium in the lungs and in the body of humans N80-19778

ENZYME ACTIVITY
The effect of SQ-20881, an inhibitor of carboxycathepsin /angiotensin of 1-transforming enzyme/ on the peripheral blood circulation during the early postresuscitation period A80-26425

ENZYMOLOGY
Effect of the enzymatic inhibitor of Kunitz on the gastric lesions from reserpine, from phenylbutazone, from pyloric ligation and by restraint in the rat [NASA-TM-76027] N80-18681
Effect of restricted motion in high temperature on enzymatic activity of the pancreas [NASA-TM-76063] N80-18683

EPILEPSY
Application of mutual amount of information for time delay estimation --- its use in the diagnosis of epilepsy [THT-210] N80-18714

ERYTHROCYTES
Studies of the effects of stationary magnetic fields on rat erythron N80-19777

ETHYLENE
Determination of ethylene produced by pea seedlings under near-zero gravity conditions - Preliminary studies [AAS 79-216] A80-28707

EVOKED RESPONSE (PSYCHOPHYSIOLOGY)
Continuous real-time auditory evoked potentials using a sliding window of averages N80-18699

EXOBIOLOGY
USSR report: Space biology and aerospace medicine, v. 14, no. 1 [JPRS-75251] N80-19755

EXPLOSIONS
Effects of artillery noise on the hearing of protected crew personnel [AD-A078664] N80-19805

EXTRATERRESTRIAL LIFE
Some final conclusions and supporting experiments related to the search for organic compounds on the surface of Mars A80-26390

EYE (ANATOMY)
Intra-ocular pressure normalization technique and equipment [NASA-CASE-LEW-12723-1] N80-18690

EYE MOVEMENTS
Contact ring for registering the turning of the eyeball A80-25839

F

F-15 AIRCRAFT
A new anti-G value for high-performance aircraft [AD-A076904] N80-18719

FATIGUE (BIOLOGY)
Peripheral fatigue under local static work of varying intensity A80-25833

Functional stability of the trained organism under prolonged uniform loads in standard conditions
A80-25834

FEEDBACK CONTROL
On the structural and kinematic synthesis of open-loop manipulators. I - Basic structural and kinematic procedures
A80-26335
The human body temperature regulation system --- closed control loop
[RAE-LIB-TRANS-2019] N80-18702
Biofeedback. A bibliography with abstracts
[PB80-803117] N80-19790

FEVER
Distinctions in development of pyrogenal fever in animals following prolonged hypokinesia
N80-19765

FIBROBLASTS
Study of radioprotective effect of high-intensity magnetic fields on mammalian cell cultures
N80-19776

FIRE FIGHTING
Project FIRES - Firefighters Integrated Response Equipment System. Volume 1: Program overview and summary, phase 1A
[NASA-CR-161399] N80-19795
Project FIRES - Firefighters Integrated Response Equipment System. Volume 2: Protective ensemble performance standards goals for firefighter protection, phase 1A
[NASA-CR-161400] N80-19796
Project FIRES - Firefighters Integrated Response Equipment System. Volume 3: Test and evaluation report, phase 1A
[NASA-CR-161401] N80-19797
Project FIRES - Firefighters Integrated Response Equipment System. Volume 4: Technology demonstration ensemble, phase 1A
[NASA-CR-161402] N80-19798
Project FIRES - Firefighters Integrated Response Equipment System. Volume 5: Prototype protective ensemble data package, phase 1A
[NASA-CR-161403] N80-19799

FLIGHT CLOTHING
Lightweight pilot helmets: The issue of weight versus protection
[AD-A076325] N80-19806

FLIGHT CREWS
Suggestions for the contents of the Aviation Board survival kit
[FOA-A-59004-H3(E9)] N80-18721
Evaluation and forecasting of mental fitness of flight personnel in the presence of neurosis
N80-19770
Human work measurement. A bibliography with abstracts
[PB80-803166] N80-19807

FLIGHT HAZARDS
Aviation medicine. Volume 2 - Health and clinical aspects --- Book
A80-27029

FLIGHT SIMULATION
Effect of cursor characteristics on pilots' tracking performance on a cathode-ray tube in dynamic simulation
A80-28556

FLIGHT TRAINING
Aviation training using video disk technology
N80-19828

FLOW MEASUREMENT
Investigation of flow rates of oxygen systems used in general aviation
A80-25899

FLOW VELOCITY
Investigation of flow rates of oxygen systems used in general aviation
A80-25899
Ultrasonic Doppler directional blood flow velocity meter
[RAE-LIB-TRANS-1918] N80-19780

FOOD INTAKE
Effects of fasting and refeeding on the metabolic response to a standard meal in man
A80-25175

FOVEA
Spatial summation of monochromatic light in the visual system
A80-25828
Illusory reversal of extrafoveally perceived displacement
A80-28775

G

GAS EXCHANGE
Viking gas exchange reaction - Simulation on UV-irradiated manganese dioxide substrate
A80-26391
Development of program for the control of the autotrophic component of an ecological system that is closed with regard to exchange of gases
N80-19768

GENETIC CODE
Early assignments of the genetic code dependent upon protein structure
A80-26214

GLYCEROLS
Cyanamide mediated synthesis under plausible primitive earth conditions. VI - The synthesis of glycerol and glycerophosphates
A80-25201

GLYCINE
Oligo-glycine synthesis in an aqueous solution of glycine under oxidative conditions --- prebiotic
A80-26218

GONADS
Effects of centrifugation stress on pituitary-gonadal function in male rats
A80-25987

GRAVITATIONAL EFFECTS
Determination of ethylene produced by pea seedlings under near-zero gravity conditions - Preliminary studies
[AAS 79-216] A80-28707

GUIDANCE (MOTION)
On the structural and kinematic synthesis of open-loop manipulators. I - Basic structural and kinematic procedures
A80-26335

H

HABITABILITY
STS mission duration enhancement study: (orbiter habitability)
[NASA-CR-160535] N80-18718

HABITUATION (LEARNING)
Effect of habituation on the susceptibility of the rat to restraint ulcers
[NASA-TM-76072] N80-19748

HALOCARBONS
Spectrophotometric identification of the pigment associated with light-driven primary sodium translocation in Halobacterium halobium
A80-26015

HAWK MISSILE
Helicopter pilot detection of the two different camouflaged hawk batteries
[AD-A077954] N80-19803

HEARING
The effects of spectral density and stimulus intensity on the elicitation of the acoustic reflex
N80-18692
Effects of artillery noise on the hearing of protected crew personnel
[AD-A078664] N80-19805

HEART
Features of cholinergic cardia regulation under conditions of hypokinesia
[NASA-TM-76044] N80-18687
Effect of hypokinesia on contractile function of cardiac muscle
[NASA-TM-76061] N80-18708

HEART DISEASES
Detection of coronary artery disease - Comparison of exercise stress radionuclide angiocardiography and thallium stress perfusion scanning
A80-25822
Echocardiography in assessing acute pulmonary hypertension due to pulmonary embolism
A80-25823

Nuclear cardiology. I - Radionuclide angiographic assessment of left ventricular contraction: Uses, limitations and future directions. II - The role of myocardial perfusion imaging using thallium-201 in diagnosis of coronary heart disease
A80-25824

HEART FUNCTION
The prolapsed mitral valve syndrome and the flyer
A80-25898

HEART RATE
Evaluation of the relationship between motion sickness symptomatology and blood pressure, heart rate, and body temperature
A80-25890
Effect of hypokinesia on cardiac contractile function and nervous regulation of the heart
[NASA-TM-75970] N80-19783

HEART VALVES
Mitral valve prolapse - A review
A80-25897
The prolapsed mitral valve syndrome and the flyer
A80-25898

HEAT ACCLIMATIZATION
Physiologic reactions during five weeks of continuous residence in an artificial humid and hot climate
[NASA-TM-75356] N80-18707

HELMETS
Lightweight pilot helmets: The issue of weight versus protection
[AD-A076325] N80-19806

HEMODYNAMIC RESPONSES
Cardiovascular reaction to periodic head-pelvis accelerations on a short-arm centrifuge
N80-19760

HEMODYNAMICS
Dynamics of erythrocyte count, hemoglobin, and catalase activity in rat blood in hypokinesia, muscular activity and restoration
[NASA-TM-76058] N80-19752

HEMOLYSIS
Intravascular hemolysis in acute mountain sickness
A80-25896

HEMOSTATICS
The effects of adrenalectomy and corticsteroid injection on the fibrinolytic activity of complex heparin compounds in the blood during immobilization
[NASA-TM-75985] N80-18685

HIGH ALTITUDE BREATHING
Vital capacity, exercise performance, and blood gases at altitude as related to age
A80-25988
Chronic propranolol treatment blunts right ventricular hypertrophy in rats at high altitude
A80-28187
Methods for identifying respiratory oscillations disclose altitude effects
A80-28190

HIGH ALTITUDE ENVIRONMENTS
Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders
A80-25763
Body fluid compartments in humans during acute high-altitude exposure
A80-25893
Intravascular hemolysis in acute mountain sickness
A80-25896

HIGH ALTITUDE TESTS
The effect of vasoactive agents on the resistance and capacitance vessels of the small intestine at high altitude
A80-26029

HOMEOSTASIS
Functional stability of the trained organism under prolonged uniform loads in standard conditions
A80-25834
Certain questions of the acclimatization of construction workers to the conditions of a subtropical climate
[NASA-TM-75728] N80-19787

HORMONE METABOLISMS
Effect of consecutive cooling and immobilization on catecholamine metabolism in rat tissues
[NASA-TM-75962] N80-18684

HORMONES
Effects of centrifugation stress on pituitary-gonadal function in male rats
A80-25987
The effects of adrenalectomy and corticsteroid injection on the fibrinolytic activity of complex heparin compounds in the blood during immobilization
[NASA-TM-75985] N80-18685
Experimental investigation of the role of thyrocalcitonin in the prophylaxis of disturbances in the water-salt and mineral metabolism during a 30-day hypokinesia
[NASA-TM-75938] N80-18704
Hormone supply of the organism in prolonged emotional stress
[NASA-TM-76046] N80-18706
Effectiveness of using thyrocalcitonin for the prevention of a calcium metabolic disorder in the mineralized tissues of rabbits with 30 days hypokinesia
[NASA-TM-75987] N80-19751

HUMAN BEHAVIOR
The power process: A synthesis theory of power
N80-18715

HUMAN BEINGS
Effects of fasting and refeeding on the metabolic response to a standard meal in man
A80-25175
Contact ring for registering the turning of the eyeball
A80-25839
Models of human vision in digital image bandwidth compression
N80-18697

HUMAN BODY
Studies of limb-dislodging forces acting on an ejection seat occupant
A80-25895
The human body temperature regulation system --- closed control loop
[BAE-LIB-TRANS-2019] N80-18702

HUMAN FACTORS ENGINEERING
A method of determination of scale numbering taking into account the carrying capacity of an operator
A80-27065
A dual task investigation of pilots' skill level
A80-28554
Shuttle payload, manual vs. automated functions
[AAS 79-210] A80-28700
A new anti-G valve for high-performance aircraft
[AD-A076904] N80-18719
Spatial filtering and mechanisms of perception
[AD-A077622] N80-19788
Stress factors on pilot performance. A bibliography with abstracts
[PB80-803075] N80-19794
Human comfort response to random motions with combined yawing and rolling motions
[NASA-CR-159187] N80-19802
Representing human thought and response in military conflict simulation models
N80-19813

HUMAN PATHOLOGY
Some aspects of the organization of nocturnal sleep in normal and pathological states
A80-25837

HUMAN PERFORMANCE
Individual peculiarities of the space-time organization of the bioelectric activity of the brain in a probalilistic prediction situation
A80-25838
Modeling requirements for network simulation of human-machine systems
N80-18717
Helicopter pilot detection of the two different camouflaged hawk batteries
[AD-A077954] N80-19803

HUMAN REACTIONS
Ventilatory control during exercise with increased external dead space
A80-25725
Concerning some mechanisms of visual recognition
A80-25826
Neurophysiological mechanisms of filtering in the visual system
A80-25827

Thresholds of recognition of various features of color stimuli
A80-25829

The dependence of thresholds of detection of moving single bands of light on their spectrum and speed
A80-25830

Audiokinesthetic relationships and the time of simple motor response to auditory and kinesthetic stimuli
A80-25831

Investigation of the self-regulation of sensorimotor activity
A80-25832

Peripheral fatigue under local static work of varying intensity
A80-25833

Investigation of the functional state of the CNS under conditions of altitude decompression
A80-25836

HUMAN TOLERANCES

Objective measurement of human tolerance to +G sub z acceleration stress
[NASA-TM-81166] N80-18709

Vibration injuries of the hand and arm: Their occurence and the evolution of standards and limits
[ISVR-TR-101] N80-18713

HYDROCARBONS

The carbon isotope biogeochemistry of the individual hydrocarbons in bat guano and the ecology of insectivorous bats in the region of Carlsbad, New Mexico
[NASA-TM-81164] N80-18680

HYDROLYSIS

Operational description of microsystems formation in prebiological molecular evolution
A80-26217

Oligo-glycine synthesis in an aqueous solution of glycine under oxidative conditions --- prebiotic
A80-26218

HYPERCAPNIA

The effects of hypoxia and hypercapnia on myocardial adenosine triphosphatase activity
A80-28350

Effect of hypoxia and hypercapnia on lactate and pyruvate levels in rat blood and mycardium
N80-19775

HYPEROXIA

Effect of hyperoxia on oxygen transport properties of blood
N80-19763

HYPERTENSION

Echocardiography in assessing acute pulmonary hypertension due to pulmonary embolism
A80-25823

HYPODYNAMIA

A model for hypokinesia: Effects on muscle atrophy in the rat
A80-28188

Effect of restricted motion in high temperature on enzymatic activity of the pancreas
[NASA-TM-76063] N80-18683

Effects of gravitational stress, hypokinesia and hypodynamia on the structure of the vascular bed of the spleen
[NASA-TM-75934] N80-18711

Metabolism during hypodynamia
[NASA-TM-75996] N80-19785

HYPOKINESIA

A model for hypokinesia: Effects on muscle atrophy in the rat
A80-28188

Effect of restricted motion in high temperature on enzymatic activity of the pancreas
[NASA-TM-76063] N80-18683

The effects of adrenalectomy and corticsteroid injection on the fibrinolytic activity of complex heparin compounds in the blood during immobilization
[NASA-TM-75985] N80-18685

Influence of ambient temperatures on the production of restraint ulcers in the rat
[NASA-TM-76028] N80-18686

Features of cholinergic cardia regulation under conditions of hypokinesia
[NASA-TM-76044] N80-18687

Topochemical differences in the amount of RNA in the motoneurons of the spinal chord in hypoxia and hypokinesia
[NASA-TM-75994] N80-18689

Experimental investigation of the role of thyrocalcitonin in the prophylaxis of disturbances in the water-salt and mineral metabolism during a 30-day hypokinesia
[NASA-TM-75938] N80-18700

Restraint ulcers in the rat. 1: Influence on ulcer frequency of fasting and of environmental temperature associated with immobilization of varying durations
[NASA-TM-76031] N80-18705

Effect of hypokinesia on contractile function of cardiac muscle
[NASA-TM-76061] N80-18708

Effects of gravitational stress, hypokinesia and hypodynamia on the structure of the vascular bed of the spleen
[NASA-TM-75934] N80-18711

Effect of graded physical load on the state of the liver from morphometric data and biochemical blood indices of rats against a background of hypokinesia
[NASA-TM-75969] N80-19750

Effectiveness of using thyrocalcitonin for the prevention of a calcium metabolic disorder in the mineralized tissues of rabbits with 30 days hypokinesia
[NASA-TM-75987] N80-19751

Dynamics of erythrocyte count, hemoglobin, and catalase activity in rat blood in hypokinesia, muscular activity and restoration
[NASA-TM-76058] N80-19752

State of the mineral component of rat bone tissue during hypokinesia and the recovery period
[NASA-TM-76059] N80-19753

External respiration and acid-base balance of human blood during long-term antiorthostatic hypokinesia and in the recovery period
N80-19764

Distinctions in development of pyrogenal fever in animals following prolonged hypokinesia
N80-19765

Dynamics of stress reaction of rats during experimental hypokinesia varying in duration, and possibility of correction thereof
N80-19771

Effect of brief antiorthostatic hypokinesia on blood immunoglobulin content
N80-19772

Effect of hypokinesia on cardiac contractile function and nervous regulation of the heart
[NASA-TM-75970] N80-19783

Alimentary hypokinesia
[NASA-TM-75989] N80-19784

HYPOTHALAMUS

Changes in body temperature and metabolic rate after injection of calcium into the caudal hypothalamus of the rabbit
A80-27078

HYPOTHERMIA

Variable open-loop gain in the control of thermogenesis in cold-exposed rabbits
A80-28189

HYPOXIA

Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders
A80-25763

Chronic propranolol treatment blunts right ventricular hypertrophy in rats at high altitude
A80-28187

The effects of hypoxia and hypercapnia on myocardial adenosine triphosphatase activity
A80-28350

Topochemical differences in the amount of RNA in the motoneurons of the spinal chord in hypoxia and hypokinesia
[NASA-TM-75994] N80-18689

Effect of hypoxia and hypercapnia on lactate and pyruvate levels in rat blood and mycardium
N80-19775

I

IMAGE PROCESSING
Models of human vision in digital image bandwidth compression
N80-18697

IMMOBILIZATION
Multipurpose rotating machine for immobilization and conducting studies on small laboratory animals
[NASA-TM-76049] N80-18682
Effect of habituation on the susceptibility of the rat to restraint ulcers
[NASA-TM-76072] N80-19748
Reaction of chickens to graduated length of exposure to stress
[NASA-TM-76071] N80-19754

IMMUNITY
Effect of simulated weightlessness on the immune system in rats
A80-25894

INDICATING INSTRUMENTS
A method of determination of scale numbering taking into account the carrying capacity of an operator
A80-27065

INFORMATION THEORY
Application of mutual amount of information for time delay estimation --- its use in the diagnosis of epilepsy
[TRT-210] N80-18714

INHIBITORS
The effect of SQ-20881, an inhibitor of carboxycathepsin /angiotensin of 1-transforming enzyme/ on the peripheral blood circulation during the early postresuscitation period
A80-26425

INJURIES
Vibration injuries of the hand and arm: Their occurence and the evolution of standards and limits
[ISVR-TR-101] N80-18713

INSTRUMENT ERRORS
A method of determination of scale numbering taking into account the carrying capacity of an operator
A80-27065

INTERNATIONAL COOPERATION
Cosmos 81 US/USSR cardiovascular study: Experiment implementation plan
[NASA-TM-81178] N80-18710

INTERSTELLAR MATTER
Role of interstellar molecules in prebiological evolution
A80-26219

INTESTINES
The effect of vasoactive agents on the resistance and capacitance vessels of the small intestine at high altitude
A80-26029

INTRACRANIAL PRESSURE
Induction p[illegible] biological radiosonde
[NASA-CASE-[illegible]] N80-18691

INTRAOCULAR PRESSURE
Intra-ocular pressure normalization technique and equipment
[NASA-CASE-LEW-12723-1] N80-18690

INTRAVASCULAR SYSTEM
Intravascular hemolysis in acute mountain sickness
A80-25896

IONIC MOBILITY
The role of Na/+/ in transport processes of bacterial membranes
A80-27077

K

KIDNEYS
Kidney cell electrophoresis
[NASA-CR-160555] N80-19782

KINEMATICS
On the structural and kinematic synthesis of open-loop manipulators. I - Basic structural and kinematic procedures
A80-26335

KINESTHESIA
Audiokinesthetic relationships and the time of simple motor response to auditory and kinesthetic stimuli
A80-25831

KITS
Suggestions for the contents of the Aviation Board survival kit
[FOA-A-59004-H3(H9)] N80-18721

L

LACTATES
Effect of hypoxia and hypercapnia on lactate and pyruvate levels in rat blood and myocardium
N80-19775

LEARNING
Biofeedback. A bibliography with abstracts
[PB80-803117] N80-19790

LEARNING THEORY
Learning by understanding analogies
[AD-A078123] N80-19793

LIFE SUPPORT SYSTEMS
A potassium superoxide /KO2/ life support system for Deep Quest
A80-28270
Life support in the Shuttle Era
[AAS 79-253] A80-28713
Development of a nitrogen generation system
[NASA-CR-152333] N80-19800

LIGHT (VISIBLE RADIATION)
Spatial summation of monochromatic light in the visual system
A80-25828
The dependence of thresholds of detection of moving single bands of light on their spectrum and speed
A80-25830

LIMBS (ANATOMY)
Studies of limb-dislodging forces acting on an ejection seat occupant
A80-25895
Vibration injuries of the hand and arm: Their occurence and the evolution of standards and limits
[ISVR-TR-101] N80-18713

LIPID METABOLISM
Circadian rhythmicity in ventricular myocardial and diaphragmatic metabolism
N80-18695
Rat plasma and tissue lipids after a long-term space flight
N80-19773

LIVER
Effect of graded physical load on the state of the liver from morphometric data and biochemical blood indices of rats against a background of hypokinesia
[NASA-TM-75969] N80-19750

LONG DURATION SPACE FLIGHT
Scheduling work and rest periods during long-term space flights
N80-19756
Effects of flights differing in duration on protein composition of cosmonauts blood
N80-19757
Effects of long-term space flights on reactions of adrenal cortex and medulla
N80-19759

LOW TEMPERATURE ENVIRONMENTS
Variable open-loop gain in the control of thermogenesis in cold-exposed rabbits
A80-28189

LUMINANCE
Size and luminance discrimination in the peripheral visual field
[NBL-R-760] N80-18703

LUNGS
Comparative analysis of lung models used to study the mechanics of breathing
A80-25835
Mass transfer studies of pulmonary function
N80-18700
A continuum model of protein transport across the endothelium in the lungs and in the body of humans
N80-19778

LYMPHOCYTES

Effects of 25 and 50 MeV protons on human peripheral blood lymphocyte chromosomes in vitro N80-19767

M

MAGNETIC FIELDS

Study of radioprotective effect of high-intensity magnetic fields on mammalian cell cultures N80-19776

Studies of the effects of stationary magnetic fields on rat erythron N80-19777

MAN MACHINE SYSTEMS

Modeling requirements for network simulation of human-machine systems N80-18717

Toward a remotely-manned energy and production economy [AD-A078069] N80-19804

MANGANESE OXIDES

Viking gas exchange reaction - Simulation on UV-irradiated manganese dioxide substrate A80-26391

MANIPULATORS

On the structural and kinematic synthesis of open-loop manipulators. I - Basic structural and kinematic procedures A80-26335

MANNED SPACE FLIGHT

STS mission duration enhancement study: (orbiter habitability) [NASA-CR-160535] N80-18718

USSR report: Space biology and aerospace medicine, v. 14, no. 1 [JPRS-75251] N80-19755

Development of a nitrogen generation system [NASA-CR-152333] N80-19800

MANPOWER

Human work measurement. A bibliography with abstracts [PB80-803166] N80-19807

MANUAL CONTROL

Shuttle payload, manual vs. automated functions [AAS 79-210] A80-28700

MARS SURFACE SAMPLES

Some final conclusions and supporting experiments related to the search for organic compounds on the surface of Mars A80-26390

Viking gas exchange reaction - Simulation on UV-irradiated manganese dioxide substrate A80-26391

MASS TRANSFER

Mass transfer studies of pulmonary function N80-18700

MATHEMATICAL MODELS

On the audition coordinating cerebral activity A80-27830

The human body temperature regulation system --- closed control loop [RAE-LIB-TRANS-2019] N80-18702

MEASURING INSTRUMENTS

A device for determining the intensity of partial sweating [NASA-TM-75429] N80-19801

MECHANICAL ENGINEERING

Shuttle payload, manual vs. automated functions [AAS 79-210] A80-28700

MECHANIZATION

General methods to enable robots with vision to acquire, orient and transport workpieces [PB80-106388] N80-19808

MEDICAL EQUIPMENT

Intra-ocular pressure normalization technique and equipment [NASA-CASE-LEW-12723-1] N80-18690

MEMBRANES

Spectral analysis of conduction fluctuations of calcium channels in a nerve-cell membrane A80-26424

MENTAL HEALTH

Evaluation and forecasting of mental fitness of flight personnel in the presence of neurosis N80-19770

MENTAL PERFORMANCE

Analysis of mental load by applying polynomially related measurement structures --- German thesis A80-25677

Individual peculiarities of the space-time organization of the bioelectric activity of the brain in a probalilistic prediction situation A80-25838

METABOLISM

Effects of fasting and refeeding on the metabolic response to a standard meal in man A80-25175

Changes in body temperature and metabolic rate after injection of calcium into the caudal hypothalamus of the rabbit A80-27078

Metabolism during hypodynamia [NASA-TM-75996] N80-19785

MICROBIOLOGY

NASA standard procedures for the microbiological examination of space hardware [NASA-TM-80756] N80-19749

MICROWAVES

Microwaves induce peripheral vasodilation in squirrel monkey A80-27261

MILITARY OPERATIONS

Representing human thought and response in military conflict simulation models N80-19813

MILITARY PSYCHOLOGY

Pilot selection using psychological methods [FOA-C-55024-H7] N80-18716

MINERAL METABOLISM

Experimental investigation of the role of thyrocalcitonin in the prophylaxis of disturbances in the water-salt and mineral metabolism during a 30-day hypokinesia [NASA-TM-75938] N80-18704

MODELS

Comparative analysis of lung models used to study the mechanics of breathing A80-25835

MOLECULAR BIOLOGY

Role of interstellar molecules in prebiological evolution A80-26219

MOLECULAR INTERACTIONS

A conformational rationale for the origin of the mechanism of nucleicacid-directed protein synthesis of 'living' organisms A80-26215

MONOCHROMATIC RADIATION

Spatial summation of monochromatic light in the visual system A80-25828

MONOCULAR VISION

Effect of field of view and monocular viewing on angular size judgements in an outdoor scene [NASA-TM-81176] N80-19792

MOTION AFTEREFFECTS

Visual and postural motion aftereffects following parabolic flight A80-25892

MOTION PERCEPTION

The dependence of thresholds of detection of moving single bands of light on their spectrum and speed A80-25830

Effect of cursor characteristics on pilots' tracking performance on a cathode-ray tube in dynamic simulation A80-28556

Illusory reversal of extrafoveally perceived displacement A80-28775

MOTION PICTURES

Aviation training using video disk technology N80-19828

MOTION SICKNESS

Evaluation of the relationship between motion sickness symptomatology and blood pressure, heart rate, and body temperature A80-25890

Motion sickness in the squirrel monkey A80-25891

Effect of sodium bicarbonate on reactivity and trophics of vestibular analyzer N80-19769

MOUNTAIN INHABITANTS
Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders A80-25763
MUSCLES
Fatigue in skeletal muscle N80-18693
MUSCULAR FATIGUE
Peripheral fatigue under local static work of varying intensity A80-25833
Fatigue in skeletal muscle N80-18693
MUSCULAR FUNCTION
A model for hypokinesia: Effects on muscle atrophy in the rat A80-28188
Fatigue in skeletal muscle N80-18693
Microvascular determinants of oxygen supply in resting and contracting striated muscle N80-18694
Effect of hypokinesia on contractile function of cardiac muscle [NASA-TM-76061] N80-18708
Dynamics of stress reaction of rats during experimental hypokinesia varying in duration, and possibility of correction thereof N80-19771
MUSCULAR STRENGTH
Muscular force-velocity alterations consequent to slow and fast velocity power training N80-18696
MYOCARDIUM
The effects of hypoxia and hypercapnia on myocardial adenosine triphosphatase activity A80-28350
Circadian rhythmicity in ventricular myocardial and diaphragmatic metabolism N80-18695
Effect of hypokinesia on contractile function of cardiac muscle [NASA-TM-76061] N80-18708
Effect of hypoxia and hypercapnia on lactate and pyruvate levels in rat blood and myocardium N80-19775

N

NEUROPHYSIOLOGY
Neurophysiological mechanisms of filtering in the visual system A80-25827
Investigation of the functional state of the CNS under conditions of altitude decompression A80-25836
Some aspects of the organization of nocturnal sleep in normal and pathological states A80-25837
Spectral analysis of conduction fluctuations of calcium channels in a nerve-cell membrane A80-26424
Effect of consecutive cooling and immobilization on catecholamine metabolism in rat tissues [NASA-TM-75962] N80-18684
The effects of stimulation of the anterior cingulate gyrus in cats with freedom of movement [NASA-TM-76055] N80-18688
Reaction of chickens to graduated length of exposure to stress [NASA-TM-76071] N80-19754
Effect of hypokinesia on cardiac contractile function and nervous regulation of the heart [NASA-TM-75970] N80-19783
NEUROSES
Evaluation and forecasting of mental fitness of flight personnel in the presence of neurosis N80-19770
NIGHT VISION
A comparison of accommodative responsiveness and contrast sensitivity for sinusoidal gratings A80-27075
NITROGEN
Development of a nitrogen generation system [NASA-CR-152333] N80-19800
NOISE (SOUND)
Effects of artillery noise on the hearing of protected crew personnel [AD-A078664] N80-19805
NUCLEAR REACTORS
Activities report on reactor physics, 1977 to 1978 N80-18712
NUCLEIC ACIDS
A conformational rationale for the origin of the mechanism of nucleicacid-directed protein synthesis of 'living' organisms A80-26215
NUCLEOTIDES
Self-condensation of activated dinucleotides on polynucleotide templates with alternating sequences A80-25202
Early assignments of the genetic code dependent upon protein structure A80-26214
NUMERICAL CONTROL
On the structural and kinematic synthesis of open-loop manipulators. I - Basic structural and kinematic procedures A80-26335

O

OCULOMETERS
Contact ring for registering the turning of the eyeball A80-25839
OPERATOR PERFORMANCE
A method of determination of scale numbering taking into account the carrying capacity of an operator A80-27065
OPTICAL ILLUSION
Illusory reversal of extrafoveally perceived displacement A80-28775
The influence of colour and contour rivalry on the magnitude of the tilt illusion A80-28787
ORGANIC COMPOUNDS
Some final conclusions and supporting experiments related to the search for organic compounds on the surface of Mars A80-26390
OXIDATION
Oligo-glycine synthesis in an aqueous solution of glycine under oxidative conditions --- prebiotic A80-26218
OXYGEN CONSUMPTION
Some aspects concerning the dynamic evaluation of oxygen consumption in exercise tests A80-28555
Effect of hyperoxia on oxygen transport properties of blood N80-19763
OXYGEN MASKS
Prototype: Preliminary study on emergency breathing apparatus [POA-C-40103-C2] N80-18720
OXYGEN REGULATORS
Microvascular determinants of oxygen supply in resting and contracting striated muscle N80-18694
OXYGEN SUPPLY EQUIPMENT
Investigation of flow rates of oxygen systems used in general aviation A80-25899

P

PANCREAS
Effect of restricted motion in high temperature on enzymatic activity of the pancreas [NASA-TM-76063] N80-18683
PARABOLIC FLIGHT
Visual and postural motion aftereffects following parabolic flight A80-25892
PASSENGER AIRCRAFT
Human comfort response to random motions with combined yawing and rolling motions [NASA-CR-159187] N80-19802

PEPTIDES
Operational description of microsystems formation in prebiological molecular evolution
A80-26217
Oligo-glycine synthesis in an aqueous solution of glycine under oxidative conditions --- prebiotic
A80-26218
The effect of SQ-20881, an inhibitor of carboxycathepsin /angiotensin of 1-transforming enzyme/ on the peripheral blood circulation during the early postresuscitation period
A80-26425

PERCEPTUAL TIME CONSTANT
Illusory reversal of extrafoveally perceived displacement
A80-28775

PERIPHERAL CIRCULATION
The effect of SQ-20881, an inhibitor of carboxycathepsin /angiotensin of 1-transforming enzyme/ on the peripheral blood circulation during the early postresuscitation period
A80-26425

PERIPHERAL NERVOUS SYSTEM
Microwaves induce peripheral vasodilation in squirrel monkey
A80-27261

PERIPHERAL VISION
Size and luminance discrimination in the peripheral visual field
[MRL-R-760] N80-18703

PERSONALITY
The power process: A synthesis theory of power
N80-18715

PERSONNEL SELECTION
Astronaut crew selection
[AAS 79-207] A80-28699

PERSPIRATION
A device for determining the intensity of partial sweating
[NASA-TM-75429] N80-19801

PHARMACOLOGY
The effect of vasoactive agents on the resistance and capacitance vessels of the small intestine at high altitude
A80-26029

PHOTOELECTRIC GENERATORS
Common properties of bacterial and visual rhodopsines - The conversion of optical energy into electric-potential difference
A80-25026

PHYSICAL EXERCISE
Ventilatory control during exercise with increased external dead space
A80-25725
Vital capacity, exercise performance, and blood gases at altitude as related to age
A80-25988
Exercise thermoregulation after 14 days of bed rest
A80-25989
Echocardiographic left ventricular masses in distance runners and weight lifters
A80-25991
Some aspects concerning the dynamic evaluation of oxygen consumption in exercise tests
A80-28555
Muscular force-velocity alterations consequent to slow and fast velocity power training
N80-18696
Effect of graded physical load on the state of the liver from morphometric data and biochemical blood indices of rats against a background of hypokinesia
[NASA-TM-75969] N80-19750
Dynamics of erythrocyte count, hemoglobin, and catalase activity in rat blood in hypokinesia, muscular activity and restoration
[NASA-TM-76058] N80-19752

PHYSICAL FITNESS
Muscular force-velocity alterations consequent to slow and fast velocity power training
N80-18696

PHYSICAL WORK
Peripheral fatigue under local static work of varying intensity
A80-25833
Functional stability of the trained organism under prolonged uniform loads in standard conditions
A80-25834

PHYSIOLOGICAL EFFECTS
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936
A80-25283
The effects of hypoxia and hypercapnia on myocardial adenosine triphosphatase activity
A80-28350
Effect of restricted motion in high temperature on enzymatic activity of the pancreas
[NASA-TM-76063] N80-18683
Effect of consecutive cooling and immobilization on catecholamine metabolism in rat tissues
[NASA-TM-75962] N80-18684
Features of cholinergic cardia regulation under conditions of hypokinesia
[NASA-TM-76044] N80-18687
Muscular force-velocity alterations consequent to slow and fast velocity power training
N80-18696
Hormone supply of the organism in prolonged emotional stress
[NASA-TM-76046] N80-18706
Physiologic reactions during five weeks of continuous residence in an artificial humid and hot climate
[NASA-TM-75356] N80-18707
Effects of gravitational stress, hypokinesia and hypodynamia on the structure of the vascular bed of the spleen
[NASA-TM-75934] N80-18711
Effect of habituation on the susceptibility of the rat to restraint ulcers
[NASA-TM-76072] N80-19748
Effect of graded physical load on the state of the liver from morphometric data and biochemical blood indices of rats against a background of hypokinesia
[NASA-TM-75969] N80-19750
Effectiveness of using thyrocalcitonin for the prevention of a calcium metabolic disorder in the mineralized tissues of rabbits with 30 days hypokinesia
[NASA-TM-75987] N80-19751
Dynamics of erythrocyte count, hemoglobin, and catalase activity in rat blood in hypokinesia, muscular activity and restoration
[NASA-TM-76058] N80-19752
State of the mineral component of rat bone tissue during hypokinesia and the recovery period
[NASA-TM-76059] N80-19753
Reaction of chickens to graduated length of exposure to stress
[NASA-TM-76071] N80-19754
USSR report: Space biology and aerospace medicine, v. 14, no. 1
[JPRS-75251] N80-19755
Effects of unusual schedules of daily activity and sleep deprivation on man's functional state and work fitness
N80-19758
Effect of hyperoxia on oxygen transport properties of blood
N80-19763
External respiration and acid-base balance of human blood during long-term antiorthostatic hypokinesia and in the recovery period
N80-19764
Distinctions in development of pyrogenal fever in animals following prolonged hypokinesia
N80-19765
Alimentary hypokinesia
[NASA-TM-75989] N80-19784
Metabolism during hypodynamia
[NASA-TM-75996] N80-19785
Blood circulation under conditions of weightlessness
[NASA-TM-76036] N80-19786
Effects of artillery noise on the hearing of protected crew personnel
[AD-A078664] N80-19805

PHYSIOLOGICAL RESPONSES
Ventilatory control during exercise with increased external dead space
A80-25725
Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders
A80-25763

Audiokinesthetic relationships and the time of simple motor response to auditory and kinesthetic stimuli
A80-25831

Peripheral fatigue under local static work of varying intensity
A80-25833

Functional stability of the trained organism under prolonged uniform loads in standard conditions
A80-25834

Investigation of the functional state of the CNS under conditions of altitude decompression
A80-25836

Some aspects of the organization of nocturnal sleep in normal and pathological states
A80-25837

Individual peculiarities of the space-time organization of the bioelectric activity of the brain in a probalilistic prediction situation
A80-25838

Effects of centrifugation stress on pituitary-gonadal function in male rats
A80-25987

Fluid shifts and endocrine responses during chair rest and water immersion in man
A80-25990

Effects of long-term space flights on reactions of adrenal cortex and medulla
N80-19759

PHYSIOLOGICAL TESTS

Effects of centrifugation stress on pituitary-gonadal function in male rats
A80-25987

Vital capacity, exercise performance, and blood gases at altitude as related to age
A80-25988

Exercise thermoregulation after 14 days of bed rest
A80-25989

Chronic propranolol treatment blunts right ventricular hypertrophy in rats at high altitude
A80-28187

A model for hypokinesia: Effects on muscle atrophy in the rat
A80-28188

Variable open-loop gain in the control of thermogenesis in cold-exposed rabbits
A80-28189

PHYSIOLOGY

Concerning some mechanisms of visual recognition
A80-25826

Investigation of the self-regulation of sensorimotor activity
A80-25832

Contact ring for registering the turning of the eyeball
A80-25839

Cosmos 81 US/USSR cardiovascular study: Experiment implementation plan
[NASA-TM-81178] N80-18710

PIEZOELECTRIC TRANSDUCERS

Ultrasonic Doppler directional blood flow velocity meter
[RAE-LIB-TRANS-1918] N80-19780

PIGMENTS

Common properties of bacterial and visual rhodopsines - The conversion of optical energy into electric-potential difference
A80-25026

Spectrophotometric identification of the pigment associated with light-driven primary sodium translocation in Halobacterium halobium
A80-26015

PILOT PERFORMANCE

A dual task investigation of pilots' skill level
A80-28554

Effect of cursor characteristics on pilots' tracking performance on a cathode-ray tube in dynamic simulation
A80-28556

Stress factors on pilot performance. A bibliography with abstracts
[PB80-803075] N80-19794

PILOT SELECTION

Pilot selection using psychological methods
[FOA-C-55024-H7] N80-18716

PILOT TRAINING

Aviation training using video disk technology
N80-19828

PITUITARY GLAND

Effects of centrifugation stress on pituitary-gonadal function in male rats
A80-25987

PLANTS (BOTANY)

Determination of ethylene produced by pea seedlings under near-zero gravity conditions - Preliminary studies
[AAS 79-216] A80-28707

POLAR REGIONS

Suggestions for the contents of the Aviation Board survival kit
[FOA-A-59004-H3(H9)] N80-18721

POLYCYTHEMIA

Chronic propranolol treatment blunts right ventricular hypertrophy in rats at high altitude
A80-28187

POLYMER CHEMISTRY

Self-condensation of activated dinucleotides on polynucleotide templates with alternating sequences
A80-25202

POLYMERIZATION

Operational description of microsystems formation in prebiological molecular evolution
A80-26217

Oligo-glycine synthesis in an aqueous solution of glycine under oxidative conditions --- prebiotic
A80-26218

POLYPEPTIDES

Effect of the enzymatic inhibitor of Kunitz on the gastric lesions from reserpine, from phenylbutazone, from pyloric ligation and by restraint in the rat
[NASA-TM-76027] N80-18681

PORTABLE EQUIPMENT

Project FIRES - Firefighters Integrated Response Equipment System. Volume 1: Program overview and summary, phase 1A
[NASA-CR-161399] N80-19795

Project FIRES - Firefighters Integrated Response Equipment System. Volume 2: Protective ensemble performance standards goals for firefighter protection, phase 1A
[NASA-CR-161400] N80-19796

Project FIRES - Firefighters Integrated Response Equipment System. Volume 3: Test and evaluation report, phase 1A
[NASA-CR-161401] N80-19797

Project FIRES - Firefighters Integrated Response Equipment System. Volume 4: Technology demonstration ensemble, phase 1A
[NASA-CR-161402] N80-19798

Project FIRES - Firefighters Integrated Response Equipment System. Volume 5: Prototype protective ensemble data package, phase 1A
[NASA-CR-161403] N80-19799

POSTURE

Visual and postural motion aftereffects following parabolic flight
A80-25892

POTASSIUM OXIDES

A potassium superoxide /KO2/ life support system for Deep Quest
A80-28270

POWER

The power process: A synthesis theory of power
N80-18715

PRESSURE REGULATORS

Intra-ocular pressure normalization technique and equipment
[NASA-CASE-LEW-12723-1] N80-18690

PRODUCTION ENGINEERING

General methods to enable robots with vision to acquire, orient and transport workpieces
[PB80-106388] N80-19808

PROJECT PLANNING

Cosmos 81 US/USSR cardiovascular study: Experiment implementation plan
[NASA-TM-81178] N80-18710

PROTECTION

Lightweight pilot helmets: The issue of weight versus protection
[AD-A076325] N80-19806

PROTECTIVE CLOTHING

A new anti-G value for high-performance aircraft
[AD-A076904] N80-18719

Project FIRES - Firefighters Integrated Response Equipment System. Volume 1: Program overview and summary, phase 1A [NASA-CR-161399] N80-19795

Project FIRES - Firefighters Integrated Response Equipment System. Volume 2: Protective ensemble performance standards goals for firefighter protection, phase 1A [NASA-CR-161400] N80-19796

Project FIRES - Firefighters Integrated Response Equipment System. Volume 3: Test and evaluation report, phase 1A [NASA-CR-161401] N80-19797

Project FIRES - Firefighters Integrated Response Equipment System. Volume 4: Technology demonstration ensemble, phase 1A [NASA-CR-161402] N80-19798

Project FIRES - Firefighters Integrated Response Equipment System. Volume 5: Prototype protective ensemble data package, phase 1A [NASA-CR-161403] N80-19799

PROTEINS

Early assignments of the genetic code dependent upon protein structure A80-26214

A conformational rationale for the origin of the mechanism of nucleicacid-directed protein synthesis of 'living' organisms A80-26215

The evolution of the protein synthesis system. II - From chemical evolution to biological evolution A80-26216

Effects of flights differing in duration on protein composition of cosmonauts blood N80-19757

A continuum model of protein transport across the endothelium in the lungs and in the body of humans N80-19778

PROTONS

Effects of 25 and 50 MeV protons on human peripheral blood lymphocyte chromosones in vitro N80-19767

PROTOTYPES

Prototype: Preliminary study on emergency breathing apparatus [FOA-C-40103-C2] N80-18720

PSYCHOACOUSTICS

Rate of acoustic change may underlie hemispheric specialization for speech perception A80-27260

PSYCHOLOGICAL TESTS

Pilot selection using psychological methods [FOA-C-55024-H7] N80-18716

PSYCHOMETRICS

Analysis of mental load by applying polynomially related measurement structures --- German thesis A80-25677

PSYCHOPHYSIOLOGY

Electroretinographic and psychophysical measures of cone spectral mechanisms using the two-color threshold technique A80-28786

Biofeedback. A bibliography with abstracts [PB80-803117] N80-19790

PULMONARY CIRCULATION

Echocardiography in assessing acute pulmonary hypertension due to pulmonary embolism A80-25823

PULMONARY FUNCTIONS

Vital capacity, exercise performance, and blood gases at altitude as related to age A80-25988

Mass transfer studies of pulmonary function N80-18700

PYRUVATES

Effect of hypoxia and hypercapnia on lactate and pyruvate levels in rat blood and myocardium N80-19775

R

RADIATION DOSAGE

Microwaves induce peripheral vasodilation in squirrel monkey A80-27261

RADIATION EFFECTS

The radiation protection program [EUR-5972] N80-18701

Effects of 25 and 50 MeV protons on human peripheral blood lymphocyte chromosones in vitro N80-19767

Study of radioprotective effect of high-intensity magnetic fields on mammalian cell cultures N80-19776

RADIATION MEDICINE

Activities report on reactor physics, 1977 to 1978 N80-18712

RADIATION PROTECTION

The radiation protection program [EUR-5972] N80-18701

RADIOACTIVE ISOTOPES

Nuclear cardiology. I - Radionuclide angiographic assessment of left ventricular contraction: Uses, limitations and future directions. II - The role of myocardial perfusion imaging using thallium-201 in diagnosis of coronary heart disease A80-25824

RADIOSONDES

Induction powered biological radiosonde [NASA-CASE-ARC-11120-1] N80-18691

REACTION TIME

Audiokinesthetic relationships and the time of simple motor response to auditory and kinesthetic stimuli A80-25831

REACTOR PHYSICS

Activities report on reactor physics, 1977 to 1978 N80-18712

REMOTE CONTROL

Toward a remotely-manned energy and production economy [AD-A078069] N80-19804

RESEARCH AND DEVELOPMENT

The radiation protection program [EUR-5972] N80-18701

RESPIRATION

Ventilatory control during exercise with increased external dead space A80-25725

RESPIRATORY PHYSIOLOGY

Ventilatory control during exercise with increased external dead space A80-25725

Comparative analysis of lung models used to study the mechanics of breathing A80-25835

Methods for identifying respiratory oscillations disclose altitude effects A80-28190

REST

Fluid shifts and endocrine responses during chair rest and water immersion in man A80-25990

RESUSCITATION

The effect of SQ-20881, an inhibitor of carboxycathepsin /angiotensin of 1-transforming enzyme/ on the peripheral blood circulation during the early postresuscitation period A80-26425

RIBONUCLEIC ACIDS

Topochemical differences in the amount of RNA in the motoneurons of the spinal chord in hypoxia and hypokinesia [NASA-TM-75994] N80-18689

ROBOTS

General methods to enable robots with vision to acquire, orient and transport workpieces [PB80-106388] N80-19808

RUNNING

Echocardiographic left ventricular masses in distance runners and weight lifters A80-25991

S

SACCADIC EYE MOVEMENTS

Interaction of pre- and postsaccadic patterns having the same coordinates in space A80-27074

SCALE (RATIO)

A method of determination of scale numbering taking into account the carrying capacity of an operator A80-27065

SEEDS
Determination of ethylene produced by pea seedlings under near-zero gravity conditions - Preliminary studies
[AAS 79-216] A80-28707
SEIZURES
Application of mutual amount of information for time delay estimation --- its use in the diagnosis of epilepsy
[TRT-210] N80-18714
SEMICIRCULAR CANALS
Responses of the primary vestibular afferents of the frog to direct vibratory stimulation of the semicircular canal
A80-26030
SENSORIMOTOR PERFORMANCE
Audiokinesthetic relationships and the time of simple motor response to auditory and kinesthetic stimuli
A80-25831
Investigation of the self-regulation of sensorimotor activity
A80-25832
SIGNAL PROCESSING
On the audition coordinating cerebral activity
A80-27830
SIZE (DIMENSIONS)
Size and luminance discrimination in the peripheral visual field
[NRL-R-760] N80-18703
SLEEP
Some aspects of the organization of nocturnal sleep in normal and pathological states
A80-25837
SLEEP DEPRIVATION
Effects of unusual schedules of daily activity and sleep deprivation on man's functional state and work fitness
N80-19758
SODIUM
Spectrophotometric identification of the pigment associated with light-driven primary sodium translocation in Halobacterium halobium
A80-26015
The role of Na/+/ in transport processes of bacterial membranes
A80-27077
SODIUM CARBONATES
Effect of sodium bicarbonate on reactivity and trophics of vestibular analyzer
N80-19769
SOLAR ENERGY CONVERSION
Common properties of bacterial and visual rhodopsines - The conversion of optical energy into electric-potential difference
A80-25026
SPACE FLIGHT
Rat plasma and tissue lipids after a long-term space flight
N80-19773
SPACE FLIGHT STRESS
Motion sickness in the squirrel monkey
A80-25891
SPACE FLIGHT TRAINING
Astronaut crew selection
[AAS 79-207] A80-28699
SPACE PERCEPTION
Effect of field of view and monocular viewing on angular size judgements in an outdoor scene
[NASA-TM-81176] N80-19792
SPACE SHUTTLE ORBITERS
STS mission duration enhancement study: (orbiter habitability)
[NASA-CR-160535] N80-18718
SPACE SHUTTLE PAYLOADS
Shuttle payload, manual vs. automated functions
[AAS 79-210] A80-28700
Life support in the Shuttle Era
[AAS 79-253] A80-28713
SPACE TRANSPORTATION SYSTEM
STS mission duration enhancement study: (orbiter habitability)
[NASA-CR-160535] N80-18718
SPACEBORNE EXPERIMENTS
Viking gas exchange reaction - Simulation on UV-irradiated manganese dioxide substrate
A80-26391
Determination of ethylene produced by pea seedlings under near-zero gravity conditions - Preliminary studies
[AAS 79-216] A80-28707
SPACECRAFT CABIN ATMOSPHERES
Probability of altitude decompression disorders when breathing oxygen containing human waste gases
N80-19762
Development of a nitrogen generation system
[NASA-CR-152333] N80-19800
SPACECRAFT CONTAMINATION
NASA standard procedures for the microbiological examination of space hardware
[NASA-TM-80756] N80-19749
SPACECRAFT ENVIRONMENTS
Life support in the Shuttle Era
[AAS 79-253] A80-28713
STS mission duration enhancement study: (orbiter habitability)
[NASA-CR-160535] N80-18718
Rat plasma and tissue lipids after a long-term space flight
N80-19773
Functional changes in the adrenal cortex during simulation of stress situations in the presence of high carbon monoxide levels
N80-19774
SPACECREWS
Astronaut crew selection
[AAS 79-207] A80-28699
Life support in the Shuttle Era
[AAS 79-253] A80-28713
SPATIAL FILTERING
Spatial filtering and mechanisms of perception
[AD-A077622] N80-19788
SPECTRAL SENSITIVITY
Electroretinographic and psychophysical measures of cone spectral mechanisms using the two-color threshold technique
A80-28786
SPECTROPHOTOMETRY
Spectrophotometric identification of the pigment associated with light-driven primary sodium translocation in Halobacterium halobium
A80-26015
SPEECH RECOGNITION
Rate of acoustic change may underlie hemispheric specialization for speech perception
A80-27260
SPINAL CORD
Topochemical differences in the amount of RNA in the motoneurons of the spinal chord in hypoxia and hypokinesia
[NASA-TM-75994] N80-18689
SPLEEN
Effects of gravitational stress, hypokinesia and hypodynamia on the structure of the vascular bed of the spleen
[NASA-TM-75934] N80-18711
STANDARDS
Vibration injuries of the hand and arm: Their occurence and the evolution of standards and limits
[ISVR-TR-101] N80-18713
STRESS (PHYSIOLOGY)
Effect of the enzymatic inhibitor of Kunitz on the gastric lesions from reserpine, from phenylbutazone, from pyloric ligation and by restraint in the rat
[NASA-TM-76027] N80-18681
Effect of restricted motion in high temperature on enzymatic activity of the pancreas
[NASA-TM-76063] N80-18683
Effect of consecutive cooling and immobilization on catecholamine metabolism in rat tissues
[NASA-TM-75962] N80-18684
The effects of adrenalectomy and corticsteroid injection on the fibrinolytic activity of complex heparin compounds in the blood during immobilization
[NASA-TM-75985] N80-18685
Influence of ambient temperatures on the production of restraint ulcers in the rat
[NASA-TM-76028] N80-18686
Features of cholinergic cardia regulation under conditions of hypokinesia
[NASA-TM-76044] N80-18687

Experimental investigation of the role of thyrocalcitonin in the prophylaxis of disturbances in the water-salt and mineral metabolism during a 30-day hypokinesia
[NASA-TM-75938] N80-18704
Restraint ulcers in the rat. 1: Influence on ulcer frequency of fasting and of environmental temperature associated with immobilization of varying durations
[NASA-TM-76031] N80-18705
Hormone supply of the organism in prolonged emotional stress
[NASA-TM-76046] N80-18706
Physiologic reactions during five weeks of continuous residence in an artificial humid and hot climate
[NASA-TM-75356] N80-18707
Effect of hypokinesia on contractile function of cardiac muscle
[NASA-TM-76061] N80-18708
Effects of gravitational stress, hypokinesia and hypodynamia on the structure of the vascular bed of the spleen
[NASA-TM-75934] N80-18711
Effect of habituation on the susceptibility of the rat to restraint ulcers
[NASA-TM-76072] N80-19748
Effect of graded physical load on the state of the liver from morphometric data and biochemical blood indices of rats against a background of hypokinesia
[NASA-TM-75969] N80-19750
Effectiveness of using thyrocalcitonin for the prevention of a calcium metabolic disorder in the mineralized tissues of rabbits with 30 days hypokinesia
[NASA-TM-75987] N80-19751
Dynamics of erythrocyte count, hemoglobin, and catalase activity in rat blood in hypokinesia, muscular activity and restoration
[NASA-TM-76058] N80-19752
State of the mineral component of rat bone tissue during hypokinesia and the recovery period
[NASA-TM-76059] N80-19753
Reaction of chickens to graduated length of exposure to stress
[NASA-TM-76071] N80-19754
Reaction of human blood to chronic exposure to low doses of carbon monoxide in a confined environment
N80-19761
Effect of hyperoxia on oxygen transport properties of blood
N80-19763
External respiration and acid-base balance of human blood during long-term antiorthostatic hypokinesia and in the recovery period
N80-19764
Distinctions in development of pyrogenal fever in animals following prolonged hypokinesia
N80-19765
Dynamics of stress reaction of rats during experimental hypokinesia varying in duration, and possibility of correction thereof
N80-19771
Effect of brief antiorthostatic hypokinesia on blood immunoglobulin content
N80-19772
Functional changes in the adrenal cortex during simulation of stress situations in the presence of high carbon monoxide levels
N80-19774
Alimentary hypokinesia
[NASA-TM-75989] N80-19784
Metabolism during hypodynamia
[NASA-TM-75996] N80-19785
Blood circulation under conditions of weightlessness
[NASA-TM-76036] N80-19786
Certain questions of the acclimatization of construction workers to the conditions of a subtropical climate
[NASA-TM-75728] N80-19787
Stress factors on pilot performance. A bibliography with abstracts
[PB80-803075] N80-19794

STRESS (PSYCHOLOGY)
Hormone supply of the organism in prolonged emotional stress
[NASA-TM-76046] N80-18706
Evaluation and forecasting of mental fitness of flight personnel in the presence of neurosis
N80-19770

STRESS RELAXATION
State of the mineral component of rat bone tissue during hypokinesia and the recovery period
[NASA-TM-76059] N80-19753

STRUCTURAL ENGINEERING
On the structural and kinematic synthesis of open-loop manipulators. I - Basic structural and kinematic procedures
A80-26335

SUBMARINES
A potassium superoxide /KO2/ life support system for Deep Quest
A80-28270

SUBMERGING
Fluid shifts and endocrine responses during chair rest and water immersion in man
A80-25990

SURVIVAL EQUIPMENT
Suggestions for the contents of the Aviation Board survival kit
[FOA-A-59004-H3(H9)] N80-18721

SWITCHING
Microvascular determinants of oxygen supply in resting and contracting striated muscle
N80-18694

SYMPATHETIC NERVOUS SYSTEM
Effect of consecutive cooling and immobilization on catecholamine metabolism in rat tissues
[NASA-TM-75962] N80-18684

SYMPTOMOLOGY
Evaluation of the relationship between motion sickness symptomatology and blood pressure, heart rate, and body temperature
A80-25890

SYNTHESIS
Cyanamide mediated synthesis under plausible primitive earth conditions. VI - The synthesis of glycerol and glycerophosphates
A80-25201

SYSTOLE
Mitral valve prolapse - A review
A80-25897

T

TARGET RECOGNITION
Visual search through color displays - Effects of target-background similarity and background uniformity
A80-28101
Helicopter pilot detection of the two different camouflaged hawk batteries
[AD-A077954] N80-19803

TASKS
A dual task investigation of pilots' skill level
A80-28554

TELEOPERATORS
Toward a remotely-manned energy and production economy
[AD-A078069] N80-19804

TEMPERATURE EFFECTS
Influence of ambient temperatures on the production of restraint ulcers in the rat
[NASA-TM-76028] N80-18686

THERMOREGULATION
Exercise thermoregulation after 14 days of bed rest
A80-25989
Changes in body temperature and metabolic rate after injection of calcium into the caudal hypothalamus of the rabbit
A80-27078
Variable open-loop gain in the control of thermogenesis in cold-exposed rabbits
A80-28189
The human body temperature regulation system --- closed control loop
[RAE-LIB-TRANS-2019] N80-18702

THRESHOLDS (PERCEPTION)
Thresholds of recognition of various features of color stimuli
A80-25829
The dependence of thresholds of detection of moving single bands of light on their spectrum and speed
A80-25830

THYROID GLAND
  Experimental investigation of the role of thyrocalcitonin in the prophylaxis of disturbances in the water-salt and mineral metabolism during a 30-day hypokinesia
  [NASA-TM-75938] N80-18704
TIME SERIES ANALYSIS
  Application of mutual amount of information for time delay estimation --- its use in the diagnosis of epilepsy
  [THT-210] N80-18714
TISSUES (BIOLOGY)
  Rat plasma and tissue lipids after a long-term space flight
  N80-19773
  Kidney cell electrophoresis
  [NASA-CR-160555] N80-19782
TOXICOLOGY
  Reaction of human blood to chronic exposure to low doses of carbon monoxide in a confined environment
  N80-19761
  Probability of altitude decompression disorders when breathing oxygen containing human waste gases
  N80-19762
TRACKING (POSITION)
  Effect of cursor characteristics on pilots' tracking performance on a cathode-ray tube in dynamic simulation
  A80-28556
TRAINING DEVICES
  Aviation training using video disk technology
  N80-19828
TRANSPORT PROPERTIES
  The role of Na/+/ in transport processes of bacterial membranes
  A80-27077
TRANSPORT THEORY
  Mathematical analysis of carbon dioxide transport by blood
  N80-18698
TROPICAL REGIONS
  Certain questions of the acclimatization of construction workers to the conditions of a subtropical climate
  [NASA-TM-75728] N80-19787

U

ULCERS
  Effect of the enzymatic inhibitor of Kunitz on the gastric lesions from reserpine, from phenylbutazone, from pyloric ligation and by restraint in the rat
  [NASA-TM-76027] N80-18681
  Influence of ambient temperatures on the production of restraint ulcers in the rat
  [NASA-TM-76028] N80-18686
  Restraint ulcers in the rat. 1: Influence on ulcer frequency of fasting and of environmental temperature associated with immobilization of varying durations
  [NASA-TM-76031] N80-18705
  Effect of habituation on the susceptibility of the rat to restraint ulcers
  [NASA-TM-76072] N80-19748
ULTRASONICS
  Ultrasonic Doppler directional blood flow velocity meter
  [RAE-LIB-TRANS-1918] N80-19780
ULTRAVIOLET RADIATION
  Viking gas exchange reaction - Simulation on UV-irradiated manganese dioxide substrate
  A80-26391
UNDERWATER ENGINEERING
  A potassium superoxide /KO2/ life support system for Deep Quest
  A80-28270

V

VASCULAR SYSTEM
  The effect of vasoactive agents on the resistance and capacitance vessels of the small intestine at high altitude
  A80-26029
  Effects of gravitational stress, hypokinesia and hypodynamia on the structure of the vascular bed of the spleen
  [NASA-TM-75934] N80-18711
VASODILATION
  Microwaves induce peripheral vasodilation in squirrel monkey
  A80-27261
VESTIBULAR TESTS
  Responses of the primary vestibular afferents of the frog to direct vibratory stimulation of the semicircular canal
  A80-26030
  Effect of sodium bicarbonate on reactivity and trophics of vestibular analyzer
  N80-19769
VIBRATION EFFECTS
  Responses of the primary vestibular afferents of the frog to direct vibratory stimulation of the semicircular canal
  A80-26030
VIBRATIONAL STRESS
  Vibration injuries of the hand and arm: Their occurence and the evolution of standards and limits
  [ISVR-TR-101] N80-18713
VIDEO EQUIPMENT
  Aviation training using video disk technology
  N80-19828
VIEW EFFECTS
  Effect of field of view and monocular viewing on angular size judgements in an outdoor scene
  [NASA-TM-81176] N80-19792
VIKING LANDER 1
  Viking gas exchange reaction - Simulation on UV-irradiated manganese dioxide substrate
  A80-26391
VISION
  Visual and postural motion aftereffects following parabolic flight
  A80-25892
  Models of human vision in digital image bandwidth compression
  N80-18697
VISUAL DISCRIMINATION
  Concerning some mechanisms of visual recognition
  A80-25826
  Neurophysiological mechanisms of filtering in the visual system
  A80-25827
  Spatial summation of monochromatic light in the visual system
  A80-25828
  The dependence of thresholds of detection of moving single bands of light on their spectrum and speed
  A80-25830
  Visual search through color displays - Effects of target-background similarity and background uniformity
  A80-28101
  Size and luminance discrimination in the peripheral visual field
  [NRL-R-760] N80-18703
VISUAL FIELDS
  Size and luminance discrimination in the peripheral visual field
  [NRL-R-760] N80-18703
VISUAL PERCEPTION
  Thresholds of recognition of various features of color stimuli
  A80-25829
  Interaction of pre- and postsaccadic patterns having the same coordinates in space
  A80-27074
  A comparison of accommodative responsiveness and contrast sensitivity for sinusoidal gratings
  A80-27075
  The influence of colour and contour rivalry on the magnitude of the tilt illusion
  A80-28787
  Spatial filtering and mechanisms of perception
  [AD-A077622] N80-19788
  Effect of field of view and monocular viewing on angular size judgements in an outdoor scene
  [NASA-TM-81176] N80-19792
  Helicopter pilot detection of the two different camouflaged hawk batteries
  [AD-A077954] N80-19803
VISUAL STIMULI
  Concerning some mechanisms of visual recognition
  A80-25826

Thresholds of recognition of various features of color stimuli
A80-25829
Interaction of pre- and postsaccadic patterns having the same coordinates in space
A80-27074

VOMITING
Motion sickness in the squirrel monkey
A80-25891

W

WATER PRESSURE
Fluid shifts and endocrine responses during chair rest and water immersion in man
A80-25990

WEIGHT REDUCTION
Lightweight pilot helmets: The issue of weight versus protection
[AD-A076325] N80-19806

WEIGHTLESSNESS
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936
A80-25283
External respiration and acid-base balance of human blood during long-term antiorthostatic hypokinesia and in the recovery period
N80-19764
Blood circulation under conditions of weightlessness
[NASA-TM-76036] N80-19786

WEIGHTLESSNESS SIMULATION
Effect of simulated weightlessness on the immune system in rats
A80-25894

WORK CAPACITY
Effects of unusual schedules of daily activity and sleep deprivation on man's functional state and work fitness
N80-19758

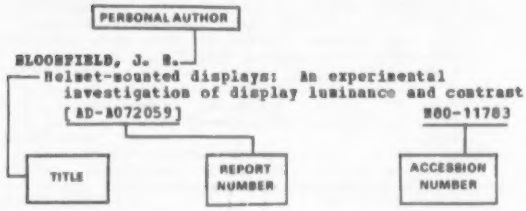
WORK-REST CYCLE
Scheduling work and rest periods during long-term space flights
N80-19756

WORKLOADS (PSYCHOPHYSIOLOGY)
Analysis of mental load by applying polynomially related measurement structures --- German thesis
A80-25677
Functional stability of the trained organism under prolonged uniform loads in standard conditions
A80-25834
NASA TLA workload analysis support. Volume 1: Detailed task scenarios for general aviation and metering and spacing studies
[NASA-CR-3199] N80-19791
Human work measurement. A bibliography with abstracts
[PB80-803166] N80-19807

blank page

PERSONAL AUTHOR INDEX

Typical Personal Author Index Listing


PERSONAL AUTHOR
BLOOMFIELD, J. R.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059]
N80-11783
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABDRAKHMANOV, V. R.
External respiration and acid-base balance of human blood during long-term antiorthostatic hypokinesia and in the recovery period
N80-19764

ABDUSATTAROV, A.
Effect of restricted motion in high temperature on enzymatic activity of the pancreas
[NASA-TM-76063] N80-18683

ABELES, F.
Project FIRES - Firefighters Integrated Response Equipment System. Volume 1: Program overview and summary, phase 1A
[NASA-CR-161399] N80-19795
Project FIRES - Firefighters Integrated Response Equipment System. Volume 2: Protective ensemble performance standards goals for firefighter protection, phase 1A
[NASA-CR-161400] N80-19796
Project FIRES - Firefighters Integrated Response Equipment System. Volume 3: Test and evaluation report, phase 1A
[NASA-CR-161401] N80-19797
Project FIRES - Firefighters Integrated Response Equipment System. Volume 4: Technology demonstration ensemble, phase 1A
[NASA-CR-161402] N80-19798
Project FIRES - Firefighters Integrated Response Equipment System. Volume 5: Prototype protective ensemble data package, phase 1A
[NASA-CR-161403] N80-19799

ADAIR, E. R.
Microwaves induce peripheral vasodilation in squirrel monkey
A80-27261

ADAMOVICH, B. A.
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936
A80-25283

ADAMS, B. W.
Microwaves induce peripheral vasodilation in squirrel monkey
A80-27261

AHLERS, E.
Rat plasma and tissue lipids after a long-term space flight
N80-19773

AHLERS, J.
Rat plasma and tissue lipids after a long-term space flight
N80-19773

ALBERT, P.
On the audition coordinating cerebral activity
A80-27830

ALEKSEEV, V. V.
Some aspects of the organization of nocturnal sleep in normal and pathological states
A80-25837

ALLIK, IU. K.
Contact ring for registering the turning of the eyeball
A80-25839

ALYAKRINSKIY, B. S.
Scheduling work and rest periods during long-term space flights
N80-19756

AMIRAGOVA, M. G.
Hormone supply of the organism in prolonged emotional stress
[NASA-TM-76046] N80-18706

ANDREEV, V. L.
Some aspects of the organization of nocturnal sleep in normal and pathological states
A80-25837

ARLASHCHENKO, N. I.
Effect of sodium bicarbonate on reactivity and trophics of vestibular analyzer
N80-19769

B

BABAYEV, A.
Certain questions of the acclimatization of construction workers to the conditions of a subtropical climate
[NASA-TM-75728] N80-19787

BABINSKAYA, L. N.
Features of cholinergic cardia regulation under conditions of hypokinesia
[NASA-TM-76044] N80-18687

BALANESCU, F.
Some aspects concerning the dynamic evaluation of oxygen consumption in exercise tests
A80-28555

BALASUBRAMANIAN, R.
A conformational rationale for the origin of the mechanism of nucleicacid-directed protein synthesis of 'living' organisms
A80-26215

BALMUKHANOV, S. B.
The effects of hypoxia and hypercapnia on myocardial adenosine triphosphatase activity
A80-28350

BANKA, V. S.
Nuclear cardiology. I - Radionuclide angiographic assessment of left ventricular contraction: Uses, limitations and future directions. II - The role of myocardial perfusion imaging using thallium-201 in diagnosis of coronary heart disease
A80-25824

BARDHAN, J.
Body fluid compartments in humans during acute high-altitude exposure
A80-25893

BEILOCK, M. M.
Shuttle payload, manual vs. automated functions
[AAS 79-210] A80-28700

BEL, C.
Effect of the enzymatic inhibitor of Kunitz on the gastric lesions from reserpine, from phenylbutazone, from pyloric ligation and by restraint in the rat
[NASA-TM-76027] N80-18681

BERGLUND, T.
Prototype: Preliminary study on emergency breathing apparatus
[FOA-C-40103-C2] N80-18720

BERRY, G. L.
Modeling requirements for network simulation of human-machine systems
N80-18717

BERTULIS, A. V.
Spatial summation of monochromatic light in the visual system
A80-25828
Thresholds of recognition of various features of color stimuli
A80-25829

BIEMANN, K.
Some final conclusions and supporting experiments related to the search for organic compounds on the surface of Mars
A80-26390

BINIAURISHVILI, R. G.
Some aspects of the organization of nocturnal sleep in normal and pathological states
A80-25837

BIRK, J.
General methods to enable robots with vision to acquire, orient and transport workpieces
[PB80-106388] N80-19808

BLACKBURN, T. R.
Viking gas exchange reaction - Simulation on UV-irradiated manganese dioxide substrate
A80-26391

BODENHEIMER, M. M.
Nuclear cardiology. I - Radionuclide angiographic assessment of left ventricular contraction: Uses, limitations and future directions. II - The role of myocardial perfusion imaging using thallium-201 in diagnosis of coronary heart disease
A80-25824

BOGOMOLOV, V. V.
External respiration and acid-base balance of human blood during long-term antiorthostatic hypokinesia and in the recovery period
N80-19764

BOLSHAKOV, V. I.
Common properties of bacterial and visual rhodopsines - The conversion of optical energy into electric-potential difference
A80-25026

BOLYARSKAYA, V. A.
Features of cholinergic cardia regulation under conditions of hypokinesia
[NASA-TM-76044] N80-18687

BONDARENKO, Y. I.
Features of cholinergic cardia regulation under conditions of hypokinesia
[NASA-TM-76044] N80-18687

BRANTIGAN, J. W.
Investigation of flow rates of oxygen systems used in general aviation
A80-25899

BRISMIN, A. I.
Effectiveness of using thyrocalcitonin for the prevention of a calcium metabolic disorder in the mineralized tissues of rabbits with 30 days hypokinesia
[NASA-TM-75987] N80-19751

BRIZENDINE, M.
Detection of coronary artery disease - Comparison of exercise stress radionuclide angiocardiography and thallium stress perfusion scanning
A80-25822

BRIZZEE, K. R.
Motion sickness in the squirrel monkey
A80-25891

BROWNELL, T.
General methods to enable robots with vision to acquire, orient and transport workpieces
[PB80-106388] N80-19808

BRUMBERG, V. A.
Topochemical differences in the amount of RNA in the motoneurons of the spinal chord in hypoxia and hypokinesia
[NASA-TM-75994] N80-18689

BRUNO, A.
Project FIRES - Firefighters Integrated Response Equipment System. Volume 1: Program overview and summary, phase 1A
[NASA-CR-161399] N80-19795
Project FIRES - Firefighters Integrated Response Equipment System. Volume 2: Protective ensemble performance standards goals for firefighter protection, phase 1A
[NASA-CR-161400] N80-19796
Project FIRES - Firefighters Integrated Response Equipment System. Volume 3: Test and evaluation report, phase 1A
[NASA-CR-161401] N80-19797
Project FIRES - Firefighters Integrated Response Equipment System. Volume 4: Technology demonstration ensemble, phase 1A
[NASA-CR-161402] N80-19798
Project FIRES - Firefighters Integrated Response Equipment System. Volume 5: Prototype protective ensemble data package, phase 1A
[NASA-CR-161403] N80-19799

BRUSIL, P. J.
Methods for identifying respiratory oscillations disclose altitude effects
A80-28190

BUCHEL, L.
Influence of ambient temperatures on the production of restraint ulcers in the rat
[NASA-TM-76028] N80-18686
Restraint ulcers in the rat. 1: Influence on ulcer frequency of fasting and of environmental temperature associated with immobilization of varying durations
[NASA-TM-76031] N80-18705

BURTON, R. R.
A new anti-G value for high-performance aircraft
[AD-A076904] N80-18719

BUSHNEVA, I. A.
The effects of hypoxia and hypercapnia on myocardial adenosine triphosphatase activity
A80-28350

BYCHKOV, V. P.
Functional changes in the adrenal cortex during simulation of stress situations in the presence of high carbon monoxide levels
N80-19774

C

CADILHAC, J.
The effects of stimulation of the anterior cingulate gyrus in cats with freedom of movement
[NASA-TM-76055] N80-18688

CAREN, L. D.
Effect of simulated weightlessness on the immune system in rats
A80-25894

CARLSON, A. D.
STS mission duration enhancement study: (orbiter habitability)
[NASA-CR-160535] N80-18718

CARLSTEDT, L.
Pilot selection using psychological methods
[FOA-C-55024-H7] N80-18716

CEASAR, G. P.
Viking gas exchange reaction - Simulation on UV-irradiated manganese dioxide substrate
A80-26391

CHEBOTAREV, N. D.
Effect of hyperoxia on oxygen transport properties of blood
N80-19763

CHESTUKHIN, V. V.
Effect of brief antiorthostatic hypokinesia on blood immunoglobulin content
N80-19772

COYLE, E. F.
Muscular force-velocity alterations consequent to slow and fast velocity power training
N80-18696

CROSBY, J. V.
A dual task investigation of pilots' skill level
A80-28554

D

DAMASSA, D. A.
Effects of centrifugation stress on pituitary-gonadal function in male rats
A80-25987

DANIIAROV, S. B.
The effect of vasoactive agents on the resistance and capacitance vessels of the small intestine at high altitude
A80-26029

DAPRES, G.
The effects of stimulation of the anterior cingulate gyrus in cats with freedom of movement
[NASA-TM-76055] N80-18688

DAVIDSON, J. M.
Effects of centrifugation stress on pituitary-gonadal function in male rats
A80-25987

DAVIS, T. P.
A model for hypokinesia: Effects on muscle atrophy in the rat
A80-28188

DEAVERS, D. R.
A model for hypokinesia: Effects on muscle atrophy in the rat
A80-28188

DELVECCHIO, R.
Project FIRES - Firefighters Integrated Response Equipment System. Volume 1: Program overview and summary, phase 1A
[NASA-CR-161399] N80-19795
Project FIRES - Firefighters Integrated Response Equipment System. Volume 2: Protective ensemble performance standards goals for firefighter protection, phase 1A
[NASA-CR-161400] N80-19796
Project FIRES - Firefighters Integrated Response Equipment System. Volume 3: Test and evaluation report, phase 1A
[NASA-CR-161401] N80-19797
Project FIRES - Firefighters Integrated Response Equipment System. Volume 4: Technology demonstration ensemble, phase 1A
[NASA-CR-161402] N80-19798
Project FIRES - Firefighters Integrated Response Equipment System. Volume 5: Prototype protective ensemble data package, phase 1A
[NASA-CR-161403] N80-19799

DEMAILLE, A.
Effect of the enzymatic inhibitor of Kunitz on the gastric lesions from reserpine, from phenylbutazone, from pyloric ligation and by restraint in the rat
[NASA-TM-76027] N80-18681

DEMIN, N. N.
Topochemical differences in the amount of RNA in the motoneurons of the spinal chord in hypoxia and hypokinesia
[NASA-TM-75994] N80-18689

DENZ, E. A.
Effect of field of view and monocular viewing on angular size judgements in an outdoor scene
[NASA-TM-81176] N80-19792

DERMENDZHIYEV, V.
Effects of 25 and 50 MeV protons on human peripheral blood lymphocyte chromosones in vitro
N80-19767

DESMARAIS, D. J.
The carbon isotope biogeochemistry of the individual hydrocarbons in bat guano and the ecology of insectivorous bats in the region of Carlsbad, New Mexico
[NASA-TM-81164] N80-18680

DHENIN, G.
Aviation medicine. Volume 2 - Health and clinical aspects
A80-27029

DIAKIDES, N. A.
Continuous real-time auditory evoked potentials using a sliding window of averages
N80-18699

DILL, D. B.
Vital capacity, exercise performance, and blood gases at altitude as related to age
A80-25988

DMITRIYEV, B. S.
Experimental investigation of the role of thyrocalcitonin in the prophylaxis of disturbances in the water-salt and mineral metabolism during a 30-day hypokinesia
[NASA-TM-75938] N80-18704
Effectiveness of using thyrocalcitonin for the prevention of a calcium metabolic disorder in the mineralized tissues of rabbits with 30 days hypokinesia
[NASA-TM-75987] N80-19751

DONG, Z.
Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders
A80-25763

DRACHEV, A. L.
Common properties of bacterial and visual rhodopsines - The conversion of optical energy into electric-potential difference
A80-25026

DRACHEV, L. A.
Common properties of bacterial and visual rhodopsines - The conversion of optical energy into electric-potential difference
A80-25026

DUDKIN, K. N.
The dependence of thresholds of detection of moving single bands of light on their spectrum and speed
A80-25830

DUKES, N. L.
Effects of artillery noise on the hearing of protected crew personnel
[AD-A078664] N80-19805

E

EICHBERG, J.
Cyanamide mediated synthesis under plausible primitive earth conditions. VI - The synthesis of glycerol and glycerophosphates
A80-25201

EKBERGER, B.
Suggestions for the contents of the Aviation Board survival kit
[FOA-A-59004-H3(H9)] N80-18721

ELISEEVA, IU. E.
The effect of SQ-20881, an inhibitor of carboxycathepsin /angiotensin of 1-transforming enzyme/ on the peripheral blood circulation during the early postresuscitation period
A80-26425

ELLIS, S. R.
Effect of field of view and monocular viewing on angular size judgements in an outdoor scene
[NASA-TM-81176] N80-19792

ENGEL, P. J.
Mitral valve prolapse - A review
A80-25897

EPPS, D. E.
Cyanamide mediated synthesis under plausible primitive earth conditions. VI - The synthesis of glycerol and glycerophosphates
A80-25201

F

FABEROVA, A.
Reaction of chickens to graduated length of exposure to stress
[NASA-TM-76071] N80-19754

FARMER, E. W.
Visual search through color displays - Effects of target-background similarity and background uniformity
A80-28101

FAYAD, R.
Mathematical analysis of carbon dioxide transport by blood
N80-18698

FAYFURA, V. V.
Features of cholinergic cardia regulation under conditions of hypokinesia
[NASA-TM-76044] N80-18687

FEDEROV, I. V.
Metabolism during hypodynamia
[NASA-TM-75996] N80-19785

best copy available

FIELDS, C.
Aviation training using video disk technology
N80-19828
FLUGEL, C.
Life support in the Shuttle Era
[AAS 79-253] A80-28713
FREEMAN, R.
Detection of coronary artery disease - Comparison of exercise stress radionuclide angiocardiography and thallium stress perfusion scanning
A80-25822
FRYER, T. B.
Induction powered biological radiosonde
[NASA-CASE-ARC-11120-1] N80-18691

G

GALLAIRE, D.
Influence of ambient temperatures on the production of restraint ulcers in the rat
[NASA-TM-76028] N80-18686
Restraint ulcers in the rat. 1: Influence on ulcer frequency of fasting and of environmental temperature associated with immobilization of varying durations
[NASA-TM-76031] N80-18705
GALLUCCIO, R.
Life support in the Shuttle Era
[AAS 79-253] A80-28713
GARASIMPEKO, V. N.
Effects of 25 and 50 MeV protons on human peripheral blood lymphocyte chromosones in vitro
N80-19767
GARTHWAITE, S. M.
Circadian rhythmicity in ventricular myocardial and diaphragmatic metabolism
N80-18695
GAUZELMAN, V. E.
The dependence of thresholds of detection of moving single bands of light on their spectrum and speed
A80-25830
GAZENKO, O. G.
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936
A80-25283
Topochemical differences in the amount of RNA in the motoneurons of the spinal chord in hypoxia and hypokinesia
[NASA-TM-75994] N80-18689
USSR report: Space biology and aerospace medicine, v. 14, no. 1
[JPRS-75251] N80-19755
GENIN, A. M.
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936
A80-25283
GERASIMOV, M. V.
Role of interstellar molecules in prebiological evolution
A80-26219
GERBER, R. L.
Changes in body temperature and metabolic rate after injection of calcium into the caudal hypothalamus of the rabbit
A80-27078
GILLINGHAM, K. K.
A new anti-G value for high-performance aircraft
[AD-A076904] N80-18719
GINSBURG, A. P.
Spatial filtering and mechanisms of perception
[AD-A077622] N80-19788
GLOD, G. D.
Distinctions in development of pyrogenal fever in animals following prolonged hypokinesia
N80-19765
GOLIKOV, A. P.
External respiration and acid-base balance of human blood during long-term antiorthostatic hypokinesia and in the recovery period
N80-19764
GOLUBEV, V. L.
Some aspects of the organization of nocturnal sleep in normal and pathological states
A80-25837
GONCHARENKO, Y. D.
Studies of the effects of stationary magnetic fields on rat erythron
N80-19777
GONYEA, W. J.
Echocardiographic left ventricular masses in distance runners and weight lifters
A80-25991
GORINA, N. S.
Effect of hypokinesia on contractile function of cardiac muscle
[NASA-TM-76061] N80-18708
Effect of hypokinesia on cardiac contractile function and nervous regulation of the heart
[NASA-TM-75970] N80-19783
GOROIAN, G. P.
Investigation of the functional state of the CNS under conditions of altitude decompression
A80-25836
GRANRATH, D. J.
Models of human vision in digital image bandwidth compression
N80-18697
GRAUBARD, S. R.
The power process: A synthesis theory of power
N80-18715
GRAY, G. D.
Effects of centrifugation stress on pituitary-gonadal function in male rats
A80-25987
GRAYBIEL, A.
Evaluation of the relationship between motion sickness symptomatology and blood pressure, heart rate, and body temperature
A80-25890
Visual and postural motion aftereffects following parabolic flight
A80-25892
The Thousand Aviator study: 1969 - 1971 follow-up program with distributions and intercorrelations of selected variables
[AD-A079700] N80-19789
GREENLEAF, J. E.
Exercise thermoregulation after 14 days of bed rest
A80-25989
Fluid shifts and endocrine responses during chair rest and water immersion in man
A80-25990
GRIFFIN, M. J.
Vibration injuries of the hand and arm: Their occurence and the evolution of standards and limits
[ISVR-TR-101] N80-18713
GRIGGS, S. D.
Astronaut crew selection
[AAS 79-207] A80-28699
GROM, A.
Reaction of chickens to graduated length of exposure to stress
[NASA-TM-76071] N80-19754
GUERRIN, F.
Effect of the enzymatic inhibitor of Kunitz on the gastric lesions from reserpine, from phenylbutazone, from pyloric ligation and by restraint in the rat
[NASA-TM-76027] N80-18681
GULESIAN, P., JR.
Methods for identifying respiratory oscillations disclose altitude effects
A80-28190
GUROVSKII, N. N.
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936
A80-25283
GUSEV, Y. M.
Ultrasonic Doppler directional blood flow velocity meter
[RAE-LIB-TRANS-1918] N80-19780
GUSEVA, Y. V.
Effects of flights differing in duration on protein composition of cosmonauts blood
N80-19757
GUTAUSKAS, A. I.
Thresholds of recognition of various features of color stimuli
A80-25829

H

HARLAN, W.
The Thousand Aviator study: 1969 - 1971 follow-up program with distributions and intercorrelations of selected variables
[AD-A079700] N80-19789
HARRISON, E. A.
Biofeedback. A bibliography with abstracts
[PB80-803117] N80-19790
Stress factors on pilot performance. A bibliography with abstracts
[PB80-803075] N80-19794
HAUSKE, G.
Interaction of pre- and postsaccadic patterns having the same coordinates in space
A80-27074
HAYES, J. M.
The carbon isotope biogeochemistry of the individual hydrocarbons in bat guano and the ecology of insectivorous bats in the region of Carlsbad, New Mexico
[NASA-TM-81164] N80-18680
HEIMLICH, P.
Life support in the Shuttle Era
[AAS 79-253] A80-28713
HELFANT, R. H.
Nuclear cardiology. I - Radionuclide angiographic assessment of left ventricular contraction: Uses, limitations and future directions. II - The role of myocardial perfusion imaging using thallium-201 in diagnosis of coronary heart disease
A80-25824
HEPPNER, D. B.
Development of a nitrogen generation system
[NASA-CR-152333] N80-19800
HICKMAN, J. R., JR.
Mitral valve prolapse - A review
A80-25897
HILLYARD, S. D.
Vital capacity, exercise performance, and blood gases at altitude as related to age
A80-25988
HIMEL, V.
Project FIRES - Firefighters Integrated Response Equipment System. Volume 1: Program overview and summary, phase 1A
[NASA-CR-161399] N80-19795
Project FIRES - Firefighters Integrated Response Equipment System. Volume 2: Protective ensemble performance standards goals for firefighter protection, phase 1A
[NASA-CR-161400] N80-19796
Project FIRES - Firefighters Integrated Response Equipment System. Volume 3: Test and evaluation report, phase 1A
[NASA-CR-161401] N80-19797
Project FIRES - Firefighters Integrated Response Equipment System. Volume 4: Technology demonstration ensemble, phase 1A
[NASA-CR-161402] N80-19798
Project FIRES - Firefighters Integrated Response Equipment System. Volume 5: Prototype protective ensemble data package, phase 1A
[NASA-CR-161403] N80-19799
HIMMEL, R. W.
Lightweight pilot helmets: The issue of weight versus protection
[AD-A076325] N80-19806
HINES, J. W.
Cosmos 81 US/USSR cardiovascular study: Experiment implementation plan
[NASA-TM-81178] N80-18710
HOBBS, S. N.
Mass transfer studies of pulmonary function
N80-18700
HODGE, D. C.
Effects of artillery noise on the hearing of protected crew personnel
[AD-A078664] N80-19805
HOLLAND, H. D.
Viking gas exchange reaction - Simulation on UV-irradiated manganese dioxide substrate
A80-26391
HUANG, P.
Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders
A80-25763

I

IAKHNO, N. N.
Some aspects of the organization of nocturnal sleep in normal and pathological states
A80-25837
ILIN, E. A.
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936
A80-25283
INOMATA, K.
Oligo-glycine synthesis in an aqueous solution of glycine under oxidative conditions
A80-26218
IOSELIANI, K. K.
Evaluation and forecasting of mental fitness of flight personnel in the presence of neurosis
N80-19770
IVANOV, L. A.
Effect of hyperoxia on oxygen transport properties of blood
N80-19763
IVASHCHENKO, A. T.
The effects of hypoxia and hypercapnia on myocardial adenosine triphosphatase activity
A80-28350

J

JAGGARS, J. L.
A new anti-G valve for high-performance aircraft
[AD-A076904] N80-18719
JAIN, S. C.
Body fluid compartments in humans during acute high-altitude exposure
A80-25893
JENGO, J. A.
Detection of coronary artery disease - Comparison of exercise stress radionuclide angiocardiography and thallium stress perfusion scanning
A80-25822
JENKINS, S. R.
Size and luminance discrimination in the peripheral visual field
[MRL-R-760] N80-18703
JONES, N. R.
Helicopter pilot detection of the two different camouflaged hawk batteries
[AD-A077954] N80-19803
JORGENSEN, C. C.
Helicopter pilot detection of the two different camouflaged hawk batteries
[AD-A077954] N80-19803
JUNGE, M. K.
Effect of cursor characteristics on pilots' tracking performance on a cathode-ray tube in dynamic simulation
A80-28556
JUST, H.
Echocardiography in assessing acute pulmonary hypertension due to pulmonary embolism
A80-25823

K

KALAMKAROV, G. R.
Common properties of bacterial and visual rhodopsines - The conversion of optical energy into electric-potential difference
A80-25026
KALANDAROV, S. K.
Functional changes in the adrenal cortex during simulation of stress situations in the presence of high carbon monoxide levels
N80-19774
KAPELKO, V. I.
Effect of hypokinesia on contractile function of cardiac muscle
[NASA-TM-76061] N80-18708

Effect of hypokinesia on cardiac contractile function and nervous regulation of the heart
[NASA-TM-75970] N80-19783

KAPTEIN, E. A.
Determination of ethylene produced by pea seedlings under near-zero gravity conditions - Preliminary studies
[AAS 79-216] A80-28707

KARELINA, E. N.
Reaction of human blood to chronic exposure to low doses of carbon monoxide in a confined environment
N80-19761

KARPOV, A. P.
Effect of brief antiorthostatic hypokinesia on blood immunoglobulin content
N80-19772

KASPER, W.
Echocardiography in assessing acute pulmonary hypertension due to pulmonary embolism
A80-25823

KASTYAN, I. I.
Blood circulation under conditions of weightlessness
[NASA-TM-76036] N80-19786

KATLOV, V. E.
Effect of brief antiorthostatic hypokinesia on blood immunoglobulin content
N80-19772

KAULEN, A. D.
Common properties of bacterial and visual rhodopsines - The conversion of optical energy into electric-potential difference
A80-25026

KEIL, L. C.
Fluid shifts and endocrine responses during chair rest and water immersion in man
A80-25990

KELLEY, R.
General methods to enable robots with vision to acquire, orient and transport workpieces
[PB80-106388] N80-19808

KELLY, A. R.
Echocardiographic left ventricular masses in distance runners and weight lifters
A80-25991

KENTON, E.
Human work measurement. A bibliography with abstracts
[PB80-803166] N80-19807

KERSTING, F.
Echocardiography in assessing acute pulmonary hypertension due to pulmonary embolism
A80-25823

KHOROSHAVTSEV, IU. E.
A method of determination of scale numbering taking into account the carrying capacity of an operator
A80-27065

KINNEAR, G. R.
Intravascular hemolysis in acute mountain sickness
A80-25896

KIRICHEK, L. T.
Dynamics of stress reaction of rats during experimental hypokinesia varying in duration, and possibility of correction thereof
N80-19771

KLITZMAN, B. M.
Microvascular determinants of oxygen supply in resting and contracting striated muscle
N80-18694

KOGAN, B. I.
Effect of graded physical load on the state of the liver from morphometric data and biochemical blood indices of rats against a background of hypokinesia
[NASA-TM-75969] N80-19750

KOGAN, B. M.
Effect of consecutive cooling and immobilization on catecholamine metabolism in rat tissues
[NASA-TM-75962] N80-18684

KOHLER, J. P.
A continuum model of protein transport across the endothelium in the lungs and in the body of humans
N80-19778

KONDRATEVA, V. A.
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936
A80-25283

KONONETS, I. E.
The effect of vasoactive agents on the resistance and capacitance vessels of the small intestine at high altitude
A80-26029

KOPANEV, V. I.
Blood circulation under conditions of weightlessness
[NASA-TM-76036] N80-19786

KORNELISHIN, B. F.
Multipurpose rotating machine for immobilization and conducting studies on small laboratory animals
[NASA-TM-76049] N80-18682

KOROLKOV, V. I.
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936
A80-25283

KORTH, M.
Electroretinographic and psychophysical measures of cone spectral mechanisms using the two-color threshold technique
A80-28786

KOSTIUK, P. G.
Spectral analysis of conduction fluctuations of calcium channels in a nerve-cell membrane
A80-26424

KOTOVSKAIA, A. R.
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936
A80-25283

KOTS, IA. M.
Peripheral fatigue under local static work of varying intensity
A80-25833

KRAVIK, S.
Fluid shifts and endocrine responses during chair rest and water immersion in man
A80-25990

KRISHNA, B.
Body fluid compartments in humans during acute high-altitude exposure
A80-25893

KRONAUER, R. E.
Methods for identifying respiratory oscillations disclose altitude effects
A80-28190

KROTOV, D. P.
Experimental investigation of the role of thyrocalcitonin in the prophylaxis of disturbances in the water-salt and mineral metabolism during a 30-day hypokinesia
[NASA-TM-75938] N80-18704

KRYSHTAL, O. A.
Spectral analysis of conduction fluctuations of calcium channels in a nerve-cell membrane
A80-26424

KUDOW, K. E.
Determination of ethylene produced by pea seedlings under near-zero gravity conditions - Preliminary studies
[AAS 79-216] A80-28707

KUDRYASHOV, B. A.
The effects of adrenalectomy and corticsteroid injection on the fibrinolytic activity of complex heparin compounds in the blood during immobilization
[NASA-TM-75985] N80-18685

KULIKOVSKII, V. V.
Some aspects of the organization of nocturnal sleep in normal and pathological states
A80-25837

KUSHPIL, V. I.
Contact ring for registering the turning of the eyeball
A80-25839

KUZNETSOV, S. P.
Peripheral fatigue under local static work of varying intensity
A80-25833

KVETNIANSKI, R.
Effects of long-term space flights on reactions of adrenal cortex and medulla
N80-19759

L

LAASER, W.
Physiologic reactions during five weeks of continuous residence in an artificial humid and hot climate
[NASA-TM-75356] N80-18707

LACKNER, J. R.
Evaluation of the relationship between motion sickness symptomatology and blood pressure, heart rate, and body temperature
A80-25890
Visual and postural motion aftereffects following parabolic flight
A80-25892

LAMBERT, R.
Effect of habituation on the susceptibility of the rat to restraint ulcers
[NASA-TM-76072] N80-19748

LANYI, J. K.
Spectrophotometric identification of the pigment associated with light-driven primary sodium translocation in Halobacterium halobium
A80-26015
The role of Na/+/ in transport processes of bacterial membranes
A80-27077

LARIONOV, N. P.
Effect of hypokinesia on cardiac contractile function and nervous regulation of the heart
[NASA-TM-75970] N80-19783

LAVOIE, J. M., JR.
Some final conclusions and supporting experiments related to the search for organic compounds on the surface of Mars
A80-26390

LEEDOM, D. K.
Representing human thought and response in military conflict simulation models
N80-19813

LEVIN, S.
Aviation training using video disk technology
N80-19828

LI, Y. S.
A potassium superoxide /KO2/ life support system for Deep Quest
A80-28270

LIMBOURGH, P.
Echocardiography in assessing acute pulmonary hypertension due to pulmonary embolism
A80-25823

LITSOV, A. N.
Effects of unusual schedules of daily activity and sleep deprivation on man's functional state and work fitness
N80-19758

LIUBIMOV, G. A.
Comparative analysis of lung models used to study the mechanics of breathing
A80-25835

LOBACHIK, V. I.
Effectiveness of using thyrocalcitonin for the prevention of a calcium metabolic disorder in the mineralized tissues of rabbits with 30 days hypokinesia
[NASA-TM-75987] N80-19751

LOELLGEN, H.
Echocardiography in assessing acute pulmonary hypertension due to pulmonary embolism
A80-25823

LOHRMANN, R.
Self-condensation of activated dinucleotides on polynucleotide templates with alternating sequences
A80-25202

LOMOVSKAYA, E. G.
The effects of adrenalectomy and corticsteroid injection on the fibrinolytic activity of complex heparin compounds in the blood during immobilization
[NASA-TM-75985] N80-18685

LONGHURST, J. C.
Echocardiographic left ventricular masses in distance runners and weight lifters
A80-25991

LOVLIN, R. E.
Intravascular hemolysis in acute mountain sickness
A80-25896

LUPP, U.
Interaction of pre- and postsaccadic patterns having the same coordinates in space
A80-27074

LUUK, A. G.
Contact ring for registering the turning of the eyeball
A80-25839

LYAPINA, L. Y.
The effects of adrenalectomy and corticsteroid injection on the fibrinolytic activity of complex heparin compounds in the blood during immobilization
[NASA-TM-75985] N80-18685

M

MACINTOSH, B. R.
Fatigue in skeletal muscle
N80-18693

MACINTYRE, N. R.
The Thousand Aviator study: 1969 - 1971 follow-up program with distributions and intercorrelations of selected variables
[AD-A079700] N80-19789

MACKAY, D. M.
Illusory reversal of extrafoveally perceived displacement
A80-28775

MAKARENKO, S. L.
Individual peculiarities of the space-time organization of the bioelectric activity of the brain in a probalilistic prediction situation
A80-25838

MALKIN, V. B.
Topochemical differences in the amount of RNA in the motoneurons of the spinal chord in hypoxia and hypokinesia
[NASA-TM-75994] N80-18689

MANDEL, A. D.
Effect of simulated weightlessness on the immune system in rats
A80-25894

MARKOVA, Y. A.
Features of cholinergic cardia regulation under conditions of hypokinesia
[NASA-TM-76044] N80-18687

MARLBOROUGH, D. I.
Early assignments of the genetic code dependent upon protein structure
A80-26214

MARSHALL, R. D.
Development of a nitrogen generation system
[NASA-CR-152333] N80-19800

MARTIN, F.
Effect of habituation on the susceptibility of the rat to restraint ulcers
[NASA-TM-76072] N80-19748

MARTIN, N. S.
Effect of habituation on the susceptibility of the rat to restraint ulcers
[NASA-TM-76072] N80-19748

MATLINA, E. S.
Effect of consecutive cooling and immobilization on catecholamine metabolism in rat tissues
[NASA-TM-75962] N80-18684

MATSIN, T. A.
Functional stability of the trained organism under prolonged uniform loads in standard conditions
A80-25834

MATSUNO, K.
Operational description of microsystems formation in prebiological molecular evolution
A80-26217

MAZIN, A. N.
Probability of altitude decompression disorders when breathing oxygen containing human waste gases
N80-19762

MCALEER, C. A.
The effects of spectral density and stimulus intensity on the elicitation of the acoustic reflex
N80-18692

MCGANNON, W. J.
Intra-ocular pressure normalization technique and equipment
[NASA-CASE-LEW-12723-1] N80-18690

MCMURTRY, I. F.
Chronic propranolol treatment blunts right ventricular hypertrophy in rats at high altitude
A80-28187

MEERSON, IA. A.
Neurophysiological mechanisms of filtering in the visual system
A80-25827

MEINERTZ, T.
Echocardiography in assessing acute pulmonary hypertension due to pulmonary embolism
A80-25823

MEININGER, G. A.
A model for hypokinesia: Effects on muscle atrophy in the rat
A80-28188

MEINSCHEIN, W. G.
The carbon isotope biogeochemistry of the individual hydrocarbons in bat guano and the ecology of insectivorous bats in the region of Carlsbad, New Mexico
[NASA-TM-81164] N80-18680

MELNIKOVA, Y. P.
Distinctions in development of pyrogenal fever in animals following prolonged hypokinesia
N80-19765

MENA, I.
Detection of coronary artery disease - Comparison of exercise stress radionuclide angiocardiography and thallium stress perfusion scanning
A80-25822

MENITSKII, D. N.
Investigation of the self-regulation of sensorimotor activity
A80-25832

MERVEILLE, P.
Effect of the enzymatic inhibitor of Kunitz on the gastric lesions from reserpine, from phenylbutazone, from pyloric ligation and by restraint in the rat
[NASA-TM-76027] N80-18681

MEYERSON, F. Z.
Effect of hypokinesia on contractile function of cardiac muscle
[NASA-TM-76061] N80-18708
Effect of hypokinesia on cardiac contractile function and nervous regulation of the heart
[NASA-TM-75970] N80-19783

MIKHALKINA, N. I.
Effect of hypoxia and hypercapnia on lactate and pyruvate levels in rat blood and mycardium
N80-19775

MILLER, J.
Vital capacity, exercise performance, and blood gases at altitude as related to age
A80-25988

MINSKY, M.
Toward a remotely-manned energy and production economy
[AD-A078069] N80-19804

MITCHELL, J. H.
Echocardiographic left ventricular masses in distance runners and weight lifters
A80-25991

MITCHELL, J. M.
The carbon isotope biogeochemistry of the individual hydrocarbons in bat guano and the ecology of insectivorous bats in the region of Carlsbad, New Mexico
[NASA-TM-81164] N80-18680

MITCHELL, R. E.
The Thousand Aviator study: 1969 - 1971 follow-up program with distributions and intercorrelations of selected variables
[AD-A079700] N80-19789

MIZUTANI, H.
The evolution of the protein synthesis system. II - From chemical evolution to biological evolution
A80-26216

MOLCHANOVA, L. V.
The effect of SQ-20881, an inhibitor of carboxycathepsin /angiotensin of 1-transforming enzyme/ on the peripheral blood circulation during the early postresuscitation period
A80-26425

MUKHIN, L. M.
Role of interstellar molecules in prebiological evolution
A80-26219

MUKHINA, N. N.
Effect of brief antiorthostatic hypokinesia on blood immunoglobulin content
N80-19772

MURADOV, I. S.
State of the mineral component of rat bone tissue during hypokinesia and the recovery period
[NASA-TM-76059] N80-19753

MURFF, S. J.
Effects of artillery noise on the hearing of protected crew personnel
[AD-A078664] N80-19805

MURGASH, K.
Effects of long-term space flights on reactions of adrenal cortex and medulla
N80-19759

MUSACCHIA, X. J.
A model for hypokinesia: Effects on muscle atrophy in the rat
A80-28188

N

NASONOV, A. S.
Development of program for the control of the autotrophic component of an ecological system that is closed with regard to exchange of gases
N80-19768

NAYAR, H. S.
Body fluid compartments in humans during acute high-altitude exposure
A80-25893

NEGOVSKII, V. A.
The effect of SQ-20881, an inhibitor of carboxycathepsin /angiotensin of 1-transforming enzyme/ on the peripheral blood circulation during the early postresuscitation period
A80-26425

NESTERENKO, N. T.
Effects of gravitational stress, hypokinesia and hypodynamia on the structure of the vascular bed of the spleen
[NASA-TM-75934] N80-18711

NIKITIN, Y. I.
Reaction of human blood to chronic exposure to low doses of carbon monoxide in a confined environment
N80-19761

NIKITYUK, B. A.
Effect of graded physical load on the state of the liver from morphometric data and biochemical blood indices of rats against a background of hypokinesia
[NASA-TM-75969] N80-19750

NING, X.
Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders
A80-25763

NITESCU, P. N.
On the structural and kinematic synthesis of open-loop manipulators. I - Basic structural and kinematic procedures
A80-26335

NOONER, D. W.
Cyanamide mediated synthesis under plausible primitive earth conditions. VI - The synthesis of glycerol and glycerophosphates
A80-25201

NOVODERZHKINA, I. S.
The effect of SQ-20881, an inhibitor of carboxycathepsin /angiotensin of 1-transforming enzyme/ on the peripheral blood circulation during the early postresuscitation period
A80-26425

NOZDRACHEVA, L. V.
Effect of consecutive cooling and immobilization on catecholamine metabolism in rat tissues
[NASA-TM-75962] N80-18684

NUNES, J. A.
Effect of simulated weightlessness on the immune system in rats
A80-25894

NVOTA, J.
Reaction of chickens to graduated length of exposure to stress
[NASA-TM-76071] N80-19754

O

OBERMAN, A.
The Thousand Aviator study: 1969 - 1971 follow-up program with distributions and intercorrelations of selected variables
[AD-A079700] N80-19789

OCONNOR, A. J.
Determination of ethylene produced by pea seedlings under near-zero gravity conditions - Preliminary studies
[AAS 79-216] A80-28707

ORDY, J. M.
Motion sickness in the squirrel monkey
A80-25891

OREKHOVICH, V. N.
The effect of SQ-20881, an inhibitor of carboxycathepsin /angiotensin of 1-transforming enzyme/ on the peripheral blood circulation during the early postresuscitation period
A80-26425

ORGEL, L. E.
Self-condensation of activated dinucleotides on polynucleotide templates with alternating sequences
A80-25202

ORLOV, I. V.
Responses of the primary vestibular afferents of the frog to direct vibratory stimulation of the semicircular canal
A80-26030

ORO, J.
Cyanamide mediated synthesis under plausible primitive earth conditions. VI - The synthesis of glycerol and glycerophosphates
A80-25201

OSTROVSKII, M. A.
Common properties of bacterial and visual rhodopsines - The conversion of optical energy into electric-potential difference
A80-25026

OWENS, D. A.
A comparison of accommodative responsiveness and contrast sensitivity for sinusoidal gratings
A80-27075

P

PACE, N.
Methodology for estimation of total body composition in laboratory mammals
[NASA-CR-162806] N80-18679

PALMER, E. A.
Effect of field of view and monocular viewing on angular size judgements in an outdoor scene
[NASA-TM-81176] N80-19792

PARKINSON, S. R.
A dual task investigation of pilots' skill level
A80-28554

PASHUKOV, Y. N.
Studies of the effects of stationary magnetic fields on rat erythron
N80-19777

PASSOUANT, P.
The effects of stimulation of the anterior cingulate gyrus in cats with freedom of movement
[NASA-TM-76055] N80-18688

PATRICK, J. W.
Shuttle payload, manual vs. automated functions
[AAS 79-210] A80-28700

PAULIKOVA, E.
Rat plasma and tissue lipids after a long-term space flight
N80-19773

PAVLIKHINA, L. V.
The effect of SQ-20881, an inhibitor of carboxycathepsin /angiotensin of 1-transforming enzyme/ on the peripheral blood circulation during the early postresuscitation period
A80-26425

PAVLOV, A. D.
Studies of the effects of stationary magretic fields on rat erythron
N80-19777

PAVLOVA, M. N.
State of the mineral component of rat bone tissue during hypokinesia and the recovery period
[NASA-TM-76059] N80-19753

PENN, P. E.
Changes in body temperature and metabolic rate after injection of calcium into the caudal hypothalamus of the rabbit
A80-27078

PEREPECHAEV, V. V.
A method of determination of scale numbering taking into account the carrying capacity of an operator
A80-27065

PETROVSKII, K. S.
Alimentary hypokinesia
[NASA-TM-75989] N80-19784

PEVZNER, L. Z.
Topochemical differences in the amount of RNA in the motoneurons of the spinal chord in hypoxia and hypokinesia
[NASA-TM-75994] N80-18689

PIDOPLICHKO, V. I.
Spectral analysis of conduction fluctuations of calcium channels in a nerve-cell membrane
A80-26424

PLEASANT, L. G.
Chemical evolution and the origin of life - Bibliography supplement 1977
A80-26220

PONNAMPERUMA, C.
The evolution of the protein synthesis system. II - From chemical evolution to biological evolution
A80-26216

Chemical evolution and the origin of life - Bibliography supplement 1977
A80-26220

POSTNIKOV, V. S.
Ultrasonic Doppler directional blood flow velocity meter
[RAE-LIB-TRANS-1918] N80-19780

POTAPOVICH, G. M.
Dynamics of erythrocyte count, hemoglobin, and catalase activity in rat blood in hypokinesia, muscular activity and restoration
[NASA-TM-76058] N80-19752

POWELL, J. D., III
Development of a nitrogen generation system
[NASA-CR-152333] N80-19800

PRASLICKA, M.
Rat plasma and tissue lipids after a long-term space flight
N80-19773

PRICE, G. R.
Effects of artillery noise on the hearing of protected crew personnel
[AD-A078664] N80-19805

PURSIAN, R.
Analysis of mental load by applying polynomially related measurement structures
A80-25677

R

RAGHUNATHAN, G.
A conformational rationale for the origin of the mechanism of nucleicacid-directed protein synthesis of 'living' organisms
A80-26215

RAHLMANN, D. F.
Methodology for estimation of total body composition in laboratory mammals
[NASA-CR-162806] N80-18679

RAST, E.
Intravascular hemolysis in acute mountain sickness
A80-25896

RAYMAN, R. B.
The prolapsed mitral valve syndrome and the flyer
A80-25898

RAYSKIY, V. A.
A device for determining the intensity of partial sweating
[NASA-TM-75429] N80-19801

REESE, R. D.
Exercise thermoregulation after 14 days of bed rest
A80-25989

REEVES, J. T.
Chronic propranolol treatment blunts right ventricular hypertrophy in rats at high altitude A80-28187

REPCEKOVA, D.
Effects of long-term space flights on reactions of adrenal cortex and medulla N80-19759

ROSITANO, S. A.
Objective measurement of human tolerance to +G sub z acceleration stress [NASA-TM-81166] N80-18709

ROSOLOVSKII, A. P.
Features of cholinergic cardia regulation under conditions of hypokinesia [NASA-TM-76044] N80-18687

ROWLANDS, S.
Intravascular hemolysis in acute mountain sickness A80-25896

RYZHOV, N. I.
Effects of 25 and 50 MeV protons on human peripheral blood lymphocyte chromosones in vitro N80-19767

S

SAFONOV, O. A.
A device for determining the intensity of partial sweating [NASA-TM-75429] N80-19801

SARAYEV, I. F.
Effects of unusual schedules of daily activity and sleep deprivation on man's functional state and work fitness N80-19758

SAUDARGENE, D. S.
Spatial summation of monochromatic light in the visual system A80-25828

SAVINA, V. P.
Reaction of human blood to chronic exposure to low doses of carbon monoxide in a confined environment N80-19761
Functional changes in the adrenal cortex during simulation of stress situations in the presence of high carbon monoxide levels N80-19774

SCHNECK, D. J.
Studies of limb-dislodging forces acting on an ejection seat occupant A80-25895

SCHUBERT, F. H.
Development of a nitrogen generation system [NASA-CR-152333] N80-19800

SCHWARTZ, J.
Rate of acoustic change may underlie hemispheric specialization for speech perception A80-27260

SEDOV, A. V.
Probability of altitude decompression disorders when breathing oxygen containing human waste gases N80-19762

SEETHARAMULU, P.
A conformational rationale for the origin of the mechanism of nucleicacid-directed protein synthesis of 'living' organisms A80-26215

SEROVA, L. V.
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936 A80-25283

SHAFFSTALL, R. M.
A new anti-G value for high-performance aircraft [AD-A076904] N80-18719

SHAKHOVALOV, IU. A.
Spectral analysis of conduction fluctuations of calcium channels in a nerve-cell membrane A80-26424

SHAPIRO, F. B.
The effects of adrenalectomy and corticosteroid injection on the fibrinolytic activity of complex heparin compounds in the blood during immobilization [NASA-TM-75985] N80-18685

SHASHKOV, V. S.
Experimental investigation of the role of thyrocalcitonin in the prophylaxis of disturbances in the water-salt and mineral metabolism during a 30-day hypokinesia [NASA-TM-75938] N80-18704
Effectiveness of using thyrocalcitonin for the prevention of a calcium metabolic disorder in the mineralized tissues of rabbits with 30 days hypokinesia [NASA-TM-75987] N80-19751

SHCHEGOLKOV, A. N.
Effect of hypokinesia on cardiac contractile function and nervous regulation of the heart [NASA-TM-75970] N80-19783

SHERWOOD, E.
Cyanamide mediated synthesis under plausible primitive earth conditions. VI - The synthesis of glycerol and glycerophosphates A80-25201

SHI, Z.
Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders A80-25763

SHIPOV, A. A.
Study of physiological effects of weightlessness and artificial gravity in the flight of the biosatellite Cosmos-936 A80-25283

SHOCKLEY, J. W.
Determination of ethylene produced by pea seedlings under near-zero gravity conditions - Preliminary studies [AAS 79-216] A80-28707

SHOTTER, L. K.
Contact ring for registering the turning of the eyeball A80-25839

SHULZHENKO, Y. B.
Cardiovascular reaction to periodic head-pelvis accelerations on a short-arm centrifuge N80-19760

SHVARKOV, S. V.
Some aspects of the organization of nocturnal sleep in normal and pathological states A80-25837

SHVARTZ, E.
Fluid shifts and endocrine responses during chair rest and water immersion in man A80-25990

SKULACHEV, V. P.
Common properties of bacterial and visual rhodopsines - The conversion of optical energy into electric-potential difference A80-25026

SMIRNOVA, G. I.
Effect of restricted motion in high temperature on enzymatic activity of the pancreas [NASA-TM-76063] N80-18683

SMITH, A. H.
Methodology for estimation of total body composition in laboratory mammals [NASA-CR-162806] N80-18679

SMITH, E. B.
Effects of centrifugation stress on pituitary-gonadal function in male rats A80-25987

SOKOL, S.
Electroretinographic and psychophysical measures of cone spectral mechanisms using the two-color threshold technique A80-28786

SOLOVYEV, A. I.
Studies of the effects of stationary magnetic fields on rat erythron N80-19777

SPAANGBERG, C.
Suggestions for the contents of the Aviation Board survival kit [FOA-A-59004-H3(H9)] N80-18721

STAZHADZE, L. L.
External respiration and acid-base balance of human blood during long-term antiorthostatic hypokinesia and in the recovery period N80-19764

STEVENS, K. W.
A new anti-G value for high-performance aircraft [AD-A076904] N80-18719

STITT, J. T.
Variable open-loop gain in the control of thermogenesis in cold-exposed rabbits
A80-28189

STOCK, M. J.
Effects of fasting and refeeding on the metabolic response to a standard meal in man
A80-25175

STONE, R. W., JR.
Human comfort response to random motions with combined yawing and rolling motions
[NASA-CR-159187] N80-19802

STULNIKOV, B. V.
Hormone supply of the organism in prolonged emotional stress
[NASA-TM-76046] N80-18706

STUPAKOV, G. P.
State of the mineral component of rat bone tissue during hypokinesia and the recovery period
[NASA-TM-76059] N80-19753

SUNDSTROM, J. L.
NASA TLA workload analysis support. Volume 1: Detailed task scenarios for general aviation and metering and spacing studies
[NASA-CR-3199] N80-19791

SUROVTSEV, N. A.
Probability of altitude decompression disorders when breathing oxygen containing human waste gases
N80-19762

SVIRSKAYA, E. I.
Hormone supply of the organism in prolonged emotional stress
[NASA-TM-76046] N80-18706

SWAMY, Y. V.
Body fluid compartments in humans during acute high-altitude exposure
A80-25893

SWEET, H. P.
Determination of ethylene produced by pea seedlings under near-zero gravity conditions - Preliminary studies
[AAS 79-216] A80-28707

SYTNIK, S. I.
Distinctions in development of pyrogenal fever in animals following prolonged hypokinesia
N80-19765

T

TALLAL, P.
Rate of acoustic change may underlie hemispheric specialization for speech perception
A80-27260

TANKIEVA, G. V.
Dynamics of erythrocyte count, hemoglobin, and catalase activity in rat blood in hypokinesia, muscular activity and restoration
[NASA-TM-76058] N80-19752

TASHPULATOV, R. Y.
Effects of flights differing in duration on protein composition of cosmonauts blood
N80-19757

TAYLOR, R. M.
Visual search through color displays - Effects of target-background similarity and background uniformity
A80-28101

TIGRANYAN, R. A.
Effects of long-term space flights on reactions of adrenal cortex and medulla
N80-19759

Rat plasma and tissue lipids after a long-term space flight
N80-19773

TINDARE, L. V.
Effect of graded physical load on the state of the liver from morphometric data and biochemical blood indices of rats against a background of hypokinesia
[NASA-TM-75969] N80-19750

TODD, P.
Kidney cell electrophoresis
[NASA-CR-160555] N80-19782

TORDA, T.
Effects of long-term space flights on reactions of adrenal cortex and medulla
N80-19759

TOROPTSOV, V. S.
Development of program for the control of the autotrophic component of an ecological system that is closed with regard to exchange of gases
N80-19768

TOTSEVA, A. M.
Effects of 25 and 50 MeV protons on human peripheral blood lymphocyte chromosomes in vitro
N80-19767

TRIKHPOYEVA, A. S.
Effect of hypokinesia on contractile function of cardiac muscle
[NASA-TM-76061] N80-18708

TYRAN, C. K.
Determination of ethylene produced by pea seedlings under near-zero gravity conditions - Preliminary studies
[AAS 79-216] A80-28707

U

UGLOVA, N. N.
Distinctions in development of pyrogenal fever in animals following prolonged hypokinesia
N80-19765

UTESHEV, A. B.
Dynamics of erythrocyte count, hemoglobin, and catalase activity in rat blood in hypokinesia, muscular activity and restoration
[NASA-TM-76058] N80-19752

UTEULIN, K. R.
The effects of hypoxia and hypercapnia on myocardial adenosine triphosphatase activity
A80-28350

V

VANARRAGON, G. W.
Application of mutual amount of information for time delay estimation
[THT-210] N80-18714

VASILYEV, P. V.
Distinctions in development of pyrogenal fever in animals following prolonged hypokinesia
N80-19765

VEIN, A. M.
Some aspects of the organization of nocturnal sleep in normal and pathological states
A80-25837

VIL-VILYAMS, I. F.
Cardiovascular reaction to periodic head-pelvis accelerations on a short-arm centrifuge
N80-19760

VINOGRADOV, Y. A.
A device for determining the intensity of partial sweating
[NASA-TM-75429] N80-19801

VIRU, A. A.
Functional stability of the trained organism under prolonged uniform loads in standard conditions
A80-25834

VLASOV, N. A.
Some aspects of the organization of nocturnal sleep in normal and pathological states
A80-25837

VNUKOVA, Z. T.
Study of radioprotective effect of high-intensity magnetic fields on mammalian cell cultures
N80-19776

VOELKEL, N. F.
Chronic propranolol treatment blunts right ventricular hypertrophy in rats at high altitude
A80-28187

VOLOSHKO, N. A.
Dynamics of erythrocyte count, hemoglobin, and catalase activity in rat blood in hypokinesia, muscular activity and restoration
[NASA-TM-76058] N80-19752

VOLOZHIN, A. I.
Effectiveness of using thyrocalcitonin for the prevention of a calcium metabolic disorder in the mineralized tissues of rabbits with 30 days hypokinesia
[NASA-TM-75987] N80-19751

State of the mineral component of rat bone tissue during hypokinesia and the recovery period
[NASA-TM-76059] N80-19753

VOLOZHIN, A. N.
Experimental investigation of the role of thyrocalcitonin in the prophylaxis of disturbances in the water-salt and mineral metabolism during a 30-day hypokinesia
[NASA-TM-75938] N80-18704

VOROBIYEV, V. Y.
External respiration and acid-base balance of human blood during long-term antiorthostatic hypokinesia and in the recovery period
N80-19764

VORONINA, S. C.
External respiration and acid-base balance of human blood during long-term antiorthostatic hypokinesia and in the recovery period
N80-19764

W

WADE, N. J.
The influence of colour and contour rivalry on the magnitude of the tilt illusion
A80-28787

WAGGENER, T. B.
Methods for identifying respiratory oscillations disclose altitude effects
A80-28190

WANG, Y.
Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders
A80-25763

WARD, S. A.
Ventilatory control during exercise with increased external dead space
A80-25725

WAYSMAN, S. M.
Effect of consecutive cooling and immobilization on catecholamine metabolism in rat tissues
[NASA-TM-75962] N80-18684

WEBER, H. J.
Spectrophotometric identification of the pigment associated with light-driven primary sodium translocation in Halobacterium halobium
A80-26015

WERNER, J.
The human body temperature regulation system
[RAE-LIB-TRANS-2019] N80-18702

WHIPP, B. J.
Ventilatory control during exercise with increased external dead space
A80-25725

WILLIAMS, B. A.
Changes in body temperature and metabolic rate after injection of calcium into the caudal hypothalamus of the rabbit
A80-27078

WILSON, O.
Suggestions for the contents of the Aviation Board survival kit
[FOA-A-59004-H3(H9)] N80-18721

WINSTON, P. H.
Learning by understanding analogies
[AD-A078123] N80-19793

WOLF, W.
Interaction of pre- and postsaccadic patterns having the same coordinates in space
A80-27074

Y

YAKHNOVA, Y.
Effects of long-term space flights on reactions of adrenal cortex and medulla
N80-19759

YAKIMENKOV, L. I.
Ultrasonic Doppler directional blood flow velocity meter
[RAE-LIB-TRANS-1918] N80-19780

YAMAGATA, Y.
Oligo-glycine synthesis in an aqueous solution of glycine under oxidative conditions
A80-26218

YAMASHITA, A.
Oligo-glycine synthesis in an aqueous solution of glycine under oxidative conditions
A80-26218

YANG, S.
Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders
A80-25763

YEGOROV, B. B.
Experimental investigation of the role of thyrocalcitonin in the prophylaxis of disturbances in the water-salt and mineral metabolism during a 30-day hypokinesia
[NASA-TM-75938] N80-18704
Effectiveness of using thyrocalcitonin for the prevention of a calcium metabolic disorder in the mineralized tissues of rabbits with 30 days hypokinesia
[NASA-TM-75987] N80-19751

YERMOLYEV, V. A.
Effect of graded physical load on the state of the liver from morphometric data and biochemical blood indices of rats against a background of hypokinesia
[NASA-TM-75969] N80-19750

Z

ZAITSEVA, G. N.
Audiokinesthetic relationships and the time of simple motor response to auditory and kinesthetic stimuli
A80-25831

ZAKHAROVA, I. N.
Investigation of the functional state of the CNS under conditions of altitude decompression
A80-25836

ZAVIALOV, A. V.
Audiokinesthetic relationships and the time of simple motor response to auditory and kinesthetic stimuli
A80-25831

ZAYDNER, I. G.
Effect of consecutive cooling and immobilization on catecholamine metabolism in rat tissues
[NASA-TM-75962] N80-18684

ZHAO, D.
Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders
A80-25763

ZHU, S.
Comparison of physiological responses to hypoxia at high altitudes between highlanders and lowlanders
A80-25763

ZHURAVLEV, V. V.
Reaction of human blood to chronic exposure to low doses of carbon monoxide in a confined environment
N80-19761

ZINCHENKO, T. P.
Concerning some mechanisms of visual recognition
A80-25826

ZINGERMAN, A. M.
Investigation of the self-regulation of sensorimotor activity
A80-25832

ZYKOV, P. N.
Ultrasonic Doppler directional blood flow velocity meter
[RAE-LIB-TRANS-1918] N80-19780

1. Report No.
NASA-SP-7011 (207)

2. Government Accession No.

3. Recipient's Catalog No.

4. Title and Subtitle
AEROSPACE MEDICINE AND BIOLOGY
A Continuing Bibliography (Supplement 207)

5. Report Date
June 1980

6. Performing Organization Code

7. Author(s)

8. Performing Organization Report No.

9. Performing Organization Name and Address
National Aeronautics and Space Administration
Washington, D. C. 20546

10. Work Unit No.

11. Contract or Grant No.

12. Sponsoring Agency Name and Address

13. Type of Report and Period Covered

14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This bibliography lists 184 reports articles, and other documents introduced into the NASA scientific and technical information system in May 1980.

17. Key Words (Suggested by Author(s))
Aerospace Medicine
Bibliographies
Biological Effects

18. Distribution Statement
Unclassified - Unlimited

19. Security Classif. (of this report)
Unclassified

20. Security Classif. (of this page)
Unclassified

21. No. of Pages
69

22. Price*
$7.00 HC

*For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1980

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to eleven special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley
COLORADO
University of Colorado, Boulder
DISTRICT OF COLUMBIA
Library of Congress
GEORGIA
Georgia Institute of Technology, Atlanta
ILLINOIS
The John Crerar Library, Chicago
MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge
MISSOURI
Linda Hall Library, Kansas City
NEW YORK
Columbia University, New York
OKLAHOMA
University of Oklahoma, Bizzell Library
PENNSYLVANIA
Carnegie Library of Pittsburgh
WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library
COLORADO
Denver Public Library
CONNECTICUT
Hartford Public Library
MARYLAND
Enoch Pratt Free Library, Baltimore
MASSACHUSETTS
Boston Public Library
MICHIGAN
Detroit Public Library
MINNESOTA
Minneapolis Public Library
MISSOURI
Kansas City Public Library
St. Louis Public Library
NEW JERSEY
Trenton Public Library
NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library
OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library
TENNESSEE
Memphis Public Library
TEXAS
Dallas Public Library
Fort Worth Public Library
WASHINGTON
Seattle Public Library
WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019.

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy of microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESA - Information Retrieval Service, European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

U.S.MAIL

NASA

POSTMASTER: If Undeliverable (Section 158
Postal Manual) Do Not Return

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP-7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP-7037	AERONAUTICAL ENGINEERING Engineering, design, and operation of aircraft and aircraft components	Monthly
NASA SP-7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP-7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP-7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP-7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C. 20546

7011 (208)

NASA

Aerospace Medicine and Biology
A Continuing
Bibliography
with Indexes

NASA SP-7011 (208)
July 1980

NEWARK PUBLIC LIBRARY

AUG 0 1980

U. S. GOVT. PUBS.
DEPOSITORY 376

National Aeronautics and
Space Administration

NASA SP-7011(208)

Aerospace Medicine and Biology
A Continuing Bibliography with Indexes

Pages 123–141

July 1980

y Aerospace Medicine & Biolog
& Biology Aerospace Medicine
ledicine & Biology Aerospace M
ospace Medicine & Biology Aer
logy Aerospace Medicine & Bio
cine & Biology Aerospace Medi
ce Medicine & Biology Aerospa
y Aerospace Medicine & Biolog
& Biology Aerospace Medicine
ledicine & Biology Aerospace M
ospace Medicine & Biology Aer
logy Aerospace Medicine & Bio

Nas 1.21:

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series)	N80-20023 – N80-22254
IAA (A-10000 Series)	A80-28953 – A80-32626

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by PRC Data Services Company.

NASA SP-7011 (208)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 208)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in June1980 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*

Scientific and Technical Information Branch 1980
National Aeronautics and Space Administration
Washington, DC

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This Supplement is available from the National Technical Information Service (NTIS), Springfield, Virginia 22161, at the price $7.00 domestic; $14.00 foreign.

INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 138 reports, articles and other documents announced during June 1980 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1980 Supplements.

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A80-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies of accessions are available at $7.00 per document up to a maximum of 40 pages. The charge for each additional page is $0.25. Microfiche (1) of documents announced in *IAA* are available at the rate of $3.00 per microfiche on demand, and at the rate of $1.25 per microfiche for standing orders for all *IAA* microfiche. The price for the *IAA* microfiche by category is available at the rate of $1.50 per microfiche plus a $1.00 service charge per category per issue. Microfiche of all the current AIAA Meeting Papers are available on a standing order basis at the rate of $1.50 per microfiche.

Minimum air-mail postage to foreign countries is $1.00 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

STAR ENTRIES (N80-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page vii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the * symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard $3.50 price, for those documents identified by a # symbol.)

---

(1) A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts*. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: Fachinformationszentrum, Karlsruhe. Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM).

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: U.S. Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free.

Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is $65.00 domestic; $130.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics
and Astronautics
Technical Information Service
555 West 57th Street, 12th Floor
New York, New York 10019

British Library Lending Division,
Boston Spa, Wetherby, Yorkshire,
England

Commissioner of Patents and
Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service
ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Scientific and Technical Information
Facility
P.O. Box 8757
B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Branch (NST-41)
Washington, D.C. 20546

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, California 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey
1033 General Services Administration
Building
Washington, D.C. 20242

U.S. Geological Survey
601 E. Cedar Avenue
Flagstaff, Arizona 86002

U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

U.S. Geological Survey
Bldg. 25, Denver Federal Center
Denver, Colorado 80225

Fachinformationszentrum Energie, Physik,
Mathematik GMBH
7514 Eggenstein Leopoldshafen
Federal Republic of Germany

NTIS PRICE SCHEDULES

Schedule A

STANDARD PAPER COPY PRICE SCHEDULE

(Effective January 1, 1980)

Price Code	Page Range	North American Price	Foreign Price
A01	Microfiche	$ 3.50	$ 5.25
A02	001-025	5.00	10.00
A03	026-050	6.00	12.00
A04	051-075	7.00	14.00
A05	076-100	8.00	16.00
A06	101-125	9.00	18.00
A07	126-150	10.00	20.00
A08	151-175	11.00	22.00
A09	176-200	12.00	24.00
A10	201-225	13.00	26.00
A11	226-250	14.00	28.00
A12	251-275	15.00	30.00
A13	276-300	16.00	32.00
A14	301-325	17.00	34.00
A15	326-350	18.00	36.00
A16	351-375	19.00	38.00
A17	376-400	20.00	40.00
A18	401-425	21.00	42.00
A19	426-450	22.00	44.00
A20	451-475	23.00	46.00
A21	476-500	24.00	48.00
A22	501-525	25.00	50.00
A23	526-550	26.00	52.00
A24	551-575	27.00	54.00
A25	576-600	28.00	56.00
A99	601-up	-- 1/	-- 2/

1/ Add $1.00 for each additional 25 page increment or portion thereof for 601 pages up

2/ Add $2.00 for each additional 25 page increment or portion thereof for 601 pages and more

Schedule E

EXCEPTION PRICE SCHEDULE

Paper Copy & Microfiche

Price Code	North American Price	Foreign Price
E01	$ 5.50	$ 11.50
E02	6.50	13.50
E03	8.50	17.50
E04	10.50	21.50
E05	12.50	25.50
E06	14.50	29.50
E07	16.50	33.50
E08	18.50	37.50
E09	20.50	41.50
E10	22.50	45.50
E11	24.50	49.50
E12	27.50	55.50
E13	30.50	61.50
E14	33.50	67.50
E15	36.50	73.50
E16	39.50	79.50
E17	42.50	85.50
E18	45.50	91.50
E19	50.50	100.50
E20	60.50	121.50
E99 - Write for quote		
N01	28.00	40.00

TABLE OF CONTENTS

Page

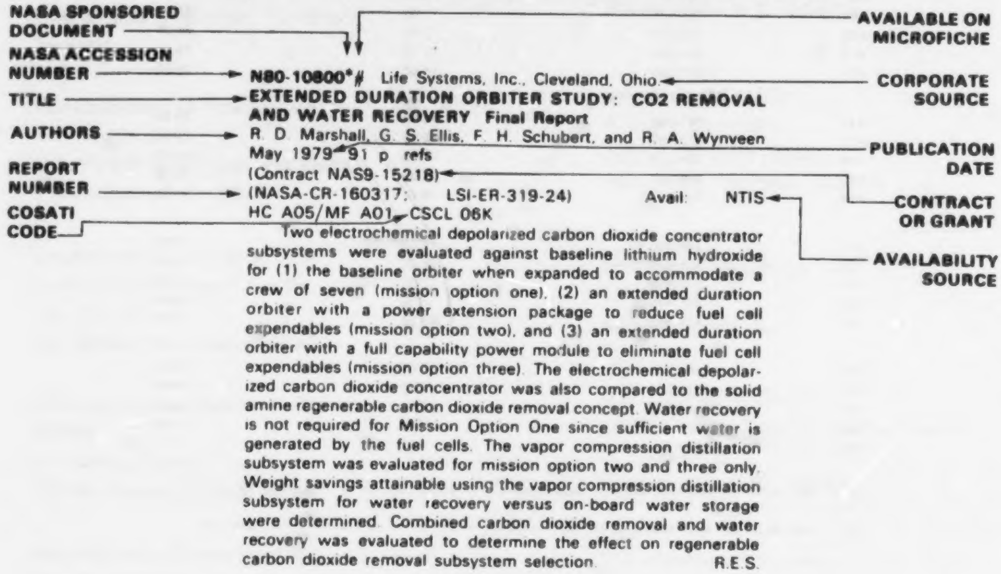
IAA ENTRIES (A80-10000) 123

STAR ENTRIES (N80-10000) 135

Subject Index I-1

Personal Author Index I-17

TYPICAL CITATION AND ABSTRACT FROM *STAR*

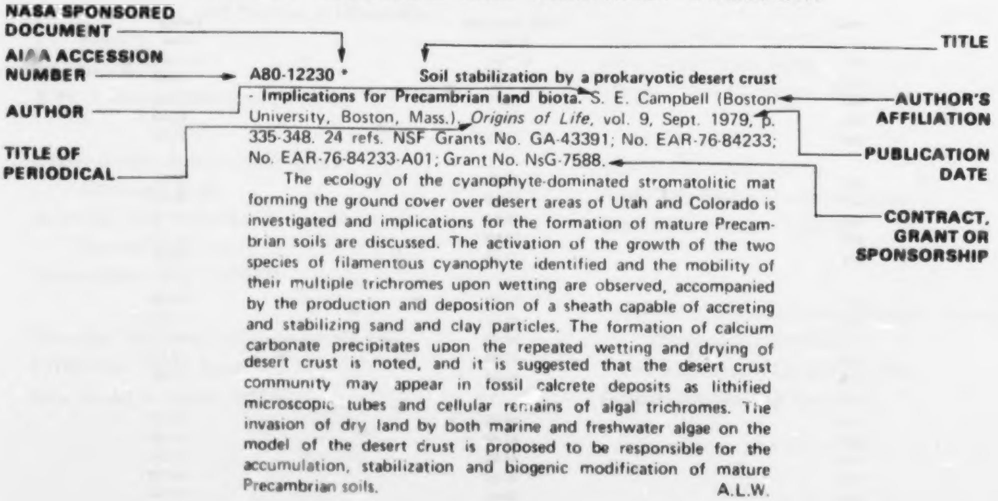


NASA SPONSORED DOCUMENT
NASA ACCESSION NUMBER
TITLE
AUTHORS
REPORT NUMBER
COSATI CODE
AVAILABLE ON MICROFICHE
CORPORATE SOURCE
PUBLICATION DATE
CONTRACT OR GRANT
AVAILABILITY SOURCE

N80-10800*# Life Systems, Inc., Cleveland, Ohio.
EXTENDED DURATION ORBITER STUDY: CO2 REMOVAL AND WATER RECOVERY Final Report
R. D. Marshall, G. S. Ellis, F. H. Schubert, and R. A. Wynveen May 1979 91 p refs
(Contract NAS9-15218)
(NASA-CR-160317; LSI-ER-319-24) Avail: NTIS HC A05/MF A01 CSCL 06K

Two electrochemical depolarized carbon dioxide concentrator subsystems were evaluated against baseline lithium hydroxide for (1) the baseline orbiter when expanded to accommodate a crew of seven (mission option one), (2) an extended duration orbiter with a power extension package to reduce fuel cell expendables (mission option two), and (3) an extended duration orbiter with a full capability power module to eliminate fuel cell expendables (mission option three). The electrochemical depolarized carbon dioxide concentrator was also compared to the solid amine regenerable carbon dioxide removal concept. Water recovery is not required for Mission Option One since sufficient water is generated by the fuel cells. The vapor compression distillation subsystem was evaluated for mission option two and three only. Weight savings attainable using the vapor compression distillation subsystem for water recovery versus on-board water storage were determined. Combined carbon dioxide removal and water recovery was evaluated to determine the effect on regenerable carbon dioxide removal subsystem selection. R.E.S.

TYPICAL CITATION AND ABSTRACT FROM *IAA*



NASA SPONSORED DOCUMENT
AIAA ACCESSION NUMBER
AUTHOR
TITLE OF PERIODICAL
TITLE
AUTHOR'S AFFILIATION
PUBLICATION DATE
CONTRACT, GRANT OR SPONSORSHIP

A80-12230 * **Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota.** S. E. Campbell (Boston University, Boston, Mass.), *Origins of Life*, vol. 9, Sept. 1979, p. 335-348. 24 refs. NSF Grants No. GA-43391; No. EAR-76-84233; No. EAR-76-84233-A01; Grant No. NsG-7588.

The ecology of the cyanophyte-dominated stromatolitic mat forming the ground cover over desert areas of Utah and Colorado is investigated and implications for the formation of mature Precambrian soils are discussed. The activation of the growth of the two species of filamentous cyanophyte identified and the mobility of their multiple trichromes upon wetting are observed, accompanied by the production and deposition of a sheath capable of accreting and stabilizing sand and clay particles. The formation of calcium carbonate precipitates upon the repeated wetting and drying of desert crust is noted, and it is suggested that the desert crust community may appear in fossil calcrete deposits as lithified microscopic tubes and cellular remains of algal trichromes. The invasion of dry land by both marine and freshwater algae on the model of the desert crust is proposed to be responsible for the accumulation, stabilization and biogenic modification of mature Precambrian soils. A.L.W.

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 208)

JULY 1980

IAA ENTRIES

A80-29085 * Favorable effects of the antioxidants sodium and magnesium thiazolidine carboxylate on the vitality and life span of Drosophila and mice. J. Miquel (NASA, Ames Research Center, Moffett Field, Calif.) and A. C. Economos (San Jose State University, San Jose, Calif.). *Experimental Gerontology,* vol. 14, 1979, p. 279-285. 30 refs.

A80-29178 Compensation for distortion in eye-movement monitors. F. Karpala and M. E. Jernigan (Waterloo, University, Waterloo, Ontario, Canada). *IEEE Transactions on Biomedical Engineering,* vol. BME-27, Mar. 1980, p. 113-119. 12 refs. National Research Council of Canada Grants No. 079-6396; No. 079-6125.

A compensation scheme for the correction of both horizontal and vertical eye position measurements is developed. Based on the assumption that the distortion process can be modeled as piecewise linear, a new sample point structure is introduced. This structure permits both fixation-based and tracking-based sampling strategies. It also provides a convenient method for partitioning a display for estimation purposes. A minimum mean squared error estimate for the regional linear functions is derived. The problem of measurement assignment to linear regions is solved using a weighted distance metric. Performance is given both in terms of estimation error and the error remaining after correction for a test pattern. Results are presented for a specific example. (Author)

A80-29179 Significance of blood flow in calculations of temperature in laser irradiated tissue. A. J. Welch, E. H. Wissler (Texas, University, Austin, Tex.), and L. A. Priebe (Texas Instruments, Inc., Dallas, Tex.). *IEEE Transactions on Biomedical Engineering,* vol. BME-27, Mar. 1980, p. 164-166. 6 refs. Research supported by the University of Texas; Contract No. F41609-76-0605.

A dimensionless solution of the heat conduction equation for laser irradiation of tissue has been extended to include transport of heat owing to blood flow. The importance of the heat loss term is discussed in relation to the perfusion rate and exposure duration. (Author)

A80-29359 Use of double pulse holography for vibration analysis on a human ear in vivo (Einsatz der Doppelimpuls-Holografie für die Schwingungsanalyse am Trommelfell des lebenden Menschen). H. Kreitlow, M.-A. Beeck (Hannover, Technische Universität, Hannover, West Germany), and W. Fritze (HNO-Klinik, Vienna, Austria). In: Laser 79 opto-electronics; Proceedings of the Fourth Conference, Munich, West Germany, July 2-6, 1979. Guildford, Surrey, England, IPC Science and Technology Press, Ltd., 1979, p. 221-227. 10 refs. In German.

The paper describes the use of a giant-pulse ruby laser, a holographic interferometer, and an electronic control system to measure the vibrations of the human eardrum. Attention is given to the use of an otoscope with a built in fiber-optic cable which guides the object wave to the hologram plate by means of a built-in lens system. M.E.P.

A80-29421 The representation of colours in the cerebral cortex. S. Zeki (University College, London, England). *Nature,* vol. 284, Apr. 3, 1980, p. 412-418. 26 refs. Research supported by the Science Research Council.

The role of the cerebral cortex in color perception and the ways in which color is represented there are investigated. Wavelength response curves of isolated cells from the fourth visual areas of rhesus monkeys indicate that the cells can be selective for narrow parts of the visible spectrum (bandwidth of 10 to 50 nm) covering almost the entire visible spectrum, with clusterings at 480 nm (blue), 500 nm (green) and 620 nm (orange-red), and in the purple. Oblique penetrations of the visual cortex reveal the orderly grouping together of cells with particular color preferences. A multi-colored Mondrian display was then placed in the visual field so that only one square of the pattern covered the receptive field of a color-coded cell, and the response of the cell was monitored as a function of the wavelength of light illuminating the entire display. Cells are found to respond actively to their specific color only when illuminated by all three (red, blue and green) wavelengths. Cell responses are also shown to be correlated with the color of the display rather than the relative intensities of short-, middle-, and long-wavelength radiation reaching the eye, implying that for the single cell as well as in perception, the composition of light in terms of energy-wavelength relationships may be of little importance. A.L.W.

A80-29676 Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography, and Cardiovascular Dynamics, Univerza v Ljubljani, Ljubljana, Yugoslavia, March 20-22, 1978. Congress sponsored by the Research Community of Slovenia, Health Community of Slovenia, Univerza v Ljubljani, and Committee of Health of Slovenia. Edited by G. Juznic (Ljubljana, Univerza, Ljubljana, Yugoslavia). Basel, S. Karger AG (Bibliotheca Cardiologica, No. 37) 1979. 239 p. $84.50.

Papers are presented on noninvasive means of studying cardiovascular dynamics by the use of ballistocardiography, mechanocardiography sphygmocardiography, rheocardiography, echocardiography, nuclear medicine techniques, radar kymography, systolic time interval techniques and transfer functions. Specific topics include the history and present status of ballistocardiography, the past and present of kinetocardiography, the clinical application of carotid electrosphygmography, heart beat recording by ultralow frequency and direct body methods, echocardiography in the assessment of the severity of mitral stenois, the polycardiographic study of cardiac dynamics during work, the pulse contour method in the determination of cardiac output, the effects of fiber orientation on the modeling of ventricular power generation, and the dynamic characteristics of the thorax. A.L.W.

A80-29677 **Ballistocardiography - Past, present and future.** W. J. A. Goedhard (Amsterdam, Vrije Universiteit, Amsterdam, Netherlands). In: Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography and Cardiovascular Dynamics, Ljubljana, Yugoslavia, March 20-22, 1978. Basel, S. Karger AG, 1979, p. 27-45. 21 refs.

The physiological basis, techniques and possible applications of the noninvasive technique of ballistocardiography in its present state of development are discussed. Preliminary results of experiments investigating the relation of two-dimensional ballistocardiography to aortic flow rate show that the transfer function between them is not a constant under all circumstances, indicating that further research is required to determine the parameters influencing the ballistocardiography signal. Techniques for recording signals in one, two or three dimensions exist and allow investigations of various levels of complexity. The analysis of the signals obtained, however, has not been standardized, although the amplitude of IJ in acceleration ballistocardiography in the head-foot orientation and the comparison of traces obtained with those of a healthy subject by computerized cross-correlation analysis are possible approaches. Despite these problems, it is concluded that research on ballistocardiography should be continued due to its potential in the early diagnosis of coronary heart disease and in clinical medicine. A.L.W.

A80-29678 **Direct body ballistocardiography - A 25 year survey - Landmarks in its representation of cardiac dynamics.** N. J. Winer. In: Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography and Cardiovascular Dynamics, Ljubljana, Yugoslavia, March 20-22, 1978. Basel, S. Karger AG, 1979, p. 46-57; Discussion, p. 57. 13 refs.

The direct body BCG (Ballistocardiogram) has been shown to reflect various expressions of the known physiological principles of cardiac dynamics. Emphasis has been placed on the identification and characteristics of the individual segment rather than on gross pattern variability for proper BCG pattern evaluation. Its sensitivity in the detection of early myocardial infarction with particular attention to its initial HI forces has been described. The significance of the simple Master two-step test (double) in eliciting the amplification or deterioration of these forces as a measure of myocardial integrity has also been emphasized. With this proposed definitive direction, there is call for widely organized attempts to clarify its potential as an important adjuvant in the study of clinical heart disease. (Author)

A80-29679 **Kinetocardiography - Past and present.** W. H. Bancroft, Jr. (U.S. Veterans Administration Hospital, Birmingham, Ala.) In: Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography and Cardiovascular Dynamics, Ljubljana, Yugoslavia, March 20-22, 1978. Basel, S. Karger AG, 1979, p. 58-71; Discussion, p. 72. 10 refs.

Past research in and the present status of the noninvasive technique of kinetocardiography, which involves the recording of the absolute displacement of several points of the precordium, in the diagnosis of heart disease are discussed. Equipment used in the recording of kinetocardiograms is described, and a normal kinetocardiogram is presented. The evaluation of kinetocardiography data by computer processing is discussed, and it is noted that amplitude and time normalization make averaging of the curves obtained more meaningful for the comparison of normal and abnormal kinetocardiograms. It is shown that the technique can discriminate between various severities of coronary artery disease and can also be used to monitor changes in the same subject prior to and following coronary artery surgery. It is concluded that the most promising areas for the use of kinetocardiography appear to be the evaluation of coronary artery bypass surgery and the extent of dyskinesis, however support for research in this area must be continued. A.L.W.

A80-29680 **Clinical application of carotid electrosphygmography.** H. Chlebus (Akademia Medyczna, Warsaw, Poland). In: Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography and Cardiovascular Dynamics, Ljubljana, Yugoslavia, March 20-22, 1978. Basel, S. Karger AG, 1979, p. 73-82; Discussion, p. 82, 83. 10 refs.

Consideration is given to the clinical applications of sphygmography, the graphic measurement of the pulse. The history of the graphic representation of the pulse is briefly discussed, and the contour of the arterial pulse wave and its relation to the characteristics of blood flow and arterial distensibility are examined. Experimental studies of the application of carotid resonance electrosphygmography to the determination of arterial distensibility and the assessment of arterial degeneration are presented, including an evaluation of carotid arteriograms, aortic pulse wave velocity and the left ventricular systolic time intervals. It is reported that a significant correlation between pulse wave velocity as determined by X-ray aortography and quantitative sphygmographic data was found. It is concluded that carotid resonance electrosphygmography represents a useful noninvasive method for the quantitative evaluation of arterial damage, especially in the cases of atherosclerosis and hypertension. A.L.W.

A80-29681 **Genesis of the sphygmogram from the kinetocardiogram.** G. Juznic (Ljubljana, Univerza, Ljubljana, Yugoslavia). In: Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography and Cardiovascular Dynamics, Ljubljana, Yugoslavia, March 20-22, 1978. Basel, S. Karger AG, 1979, p. 84-107; Discussion, P. 107, 108. 39 refs. Research supported by the Boris Kidric Fund.

The relationship between the carotid sphygmogram and the kinetocardiogram is investigated in terms of the functional uniformity of the cardiovascular system. The displacements of the chest wall and carotid artery of 10 healthy young adults were determined using photoelectric and resonance receiver transducers placed on the thorax and the amplitude and time intervals at rest and under the influence of catechclamines were analyzed. Results demonstrate the genesis of the sphygmogram from the kinetogram by the propagation of the deformation initiated at the aorta to the apex, where it is reflected and directed to the carotid artery. It is also concluded that the measurement of reflection wave and pulse wave velocities can be used as a test of the reactivity of an individual's cardiovascular system to stress and thus indicate a predisposition to coronary disease. A.L.W.

A80-29682 **Sphygmographic assessment of arterial distensibility in patients at risk of degenerative arterial disease.** H. Chlebus, J. Waclawek and M. Ciswicka-Sznajderman (Akademia Medyczna, Warsaw, Poland). In: Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography and Cardiovascular Dynamics, Ljubljana, Yugoslavia, March 20-22, 1978. Basel, S. Karger AG, 1979, p. 154-158. 5 refs.

Evidence indicates that the pattern of central pulse waveform is related to the pulse wave velocity (PWV) and expresses the distensibility of the aorta and its large branches. Investigations have shown that carotid resonance electrosphygmograms (CRESGs) reflect true central arterial pressure oscillations; their features have been qualified as quantitative criteria of the functional assessment of the mechanical properties of the arteries. Vascular ageing, atherosclerosis, structural damage to the arterial wall in consequence of hypertension, and the elevated blood pressure itself, represent the most frequent causes of decreased arterial distensibility. The studies presented were carried out to evaluate the development of arterial degeneration and sclerosis in the course of primary hyperlipoproteinaemias and primary arterial hypertension. (Author)

A80-29683 **Comparative examination of the pulse of both right and left carotid arteries.** H. Chlebus and J. Raczynski

(Akademia Medyczna, Warsaw, Poland). In: Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography and Cardiovascular Dynamics, Ljubljana, Yugoslavia, March 20-22, 1978. Basel, S. Karger AG, 1979, p. 159-163.

Recent advances in sphygmography, in the registration, description, measurement and interpretation of the contour of the central arterial pulse wave, provides facilities for a wider clinical application of this noninvasive method to quantitative assessment of arterial dynamics. The abnormal features of carotid resonance electrosphygmograms have been defined as quantitative criteria of reduced arterial distensiblity. Deformation of the tracings may depend on the severity and extensiveness of degenerative lesions and on their distance from the point of examination. Simultaneous records of the pulse of both right and left carotid arteries would help to differentiate the influence of local and distant arterial lesions on the contour of the tracings. Remote influences might give rather similar, symmetric deformation of the contour of both arteriograms. (Author)

A80-29684 **Evaluation of the pulse contour method in beat-to-beat determination of the cardiac output in small laboratory animals.** S. Nikolic, D. Susic, and D. Kentera (Institute for Medical Research, Belgrade, Yugoslavia). In: Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography and Cardiovascular Dynamics, Ljubljana, Yugoslavia, March 20-22, 1978. Basel, S. Karger AG, 1979, p. 169-173. 7 refs.

A80-29685 **Influence of diastolic fibre orientation on the left ventricular power generation.** V. Starc (Ljubljana, Univerza, Ljubljana, Yugoslavia). In: Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography and Cardiovascular Dynamics, Ljubljana, Yugoslavia, March 20-22, 1978. Basel, S. Karger AG, 1979, p. 174-179. 9 refs.

A mathematical model of power generation in the left ventricle which takes into account myocardial muscle fiber orientations is presented. The model approximates the left ventricle as a thin spherical shell obeying the law of Laplace, with a myocardium composed of helically wound muscle fibers consisting of serially connected contractile elements of equal length and the shape of the ventricle remaining constant at various diastolic volumes. It thus implies that an increase in end-diastolic volume is accompanied by an increase in fiber length, as well as an alteration in the helix parameter and the density of contractile elements. Power generated by the heart wall is thus represented as a product of the average contractile element density, a form factor of the ventricle, and the power of a single contractile element. A.L.W.

A80-29686 **Dynamic characteristics of the thorax connected with the heart action.** G. Juznic, I. Emri, D. Peterec, and M. Prepadnik (Ljubljana, Univerza, Ljubljana, Yugoslavia). In: Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography and Cardiovascular Dynamics, Ljubljana, Yugoslavia, March 20-22, 1978.
Basel, S. Karger AG, 1979, p. 180-194; Discussion, p. 194. 23 refs. Research supported by the Boris Kidric Fund.

The dynamic characteristics of thoracic motion are investigated as functions of subject somatotypae and respiratory position in order to provide a basis for the quantitative use of noninvasive methods for studying cardiovascular functions. A reflex hammer was used to apply shocks with a force of 2 N to 88 costal and intercostal points of the thorax, and the resonance frequency, damping coefficient, stiffness constant extinction time and transfer functions of different parts of the thorax were determined on the basis of accelerometer and seismocardiophone observations. It is found that the leptosome has high damping and a short extinction time, while the athletic type has a high resonance frequency and a high stiffness constant and the pyknic type has the lowest damping, resonance frequency and stiffness constant and the highest oscillating time. The lowering of intrathoracic pressure is observed to lead to higher damping in the costal points and a higher resonance frequency and stiffness constant in the intercostal points. Transfer functions are shown to be greatest in the pyknic type and depend on respiratory position. It is concluded that the brief testing of thoracic dynamic characteristics will facilitate the quantitative use of noninvasive methods in the evaluation of cardiovascular function. A.L.W.

A80-29687 **Further observations on modelling of the cardiovascular function in the electrical model.** G. Juznic, D. Peterec, and A. Jagodic (Ljubljana, Univerza, Ljubljana, Yugoslavia). In: Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography and Cardiovascular Dynamics, Ljubljana, Yugoslavia, March 20-22, 1978.
Basel, S. Karger AG, 1979, p. 195-208. 17 refs. Research supported by the Boris Kidric Fund.

A80-29909 # **Investigation of transitional characteristics of the equilibrium preservation system (Issledovanie perekhodnykh kharakteristik sistemy sokhraneniia ravnovesiia).** G. V. Mamasakhlisov (Tbilisskii Gosudarstvennyi Universitet, Tiflis, Georgian SSR). *Akademiia Nauk Gruzinskoi SSR, Soobshcheniia,* vol. 96, Nov. 1979, p. 433-436. 7 refs. In Russian.

An investigation is presented of the transitional characteristics of the human equilibrium preservation system. The electromyographic, kinematic, and dynamic indices of the motor apparatus during the disturbance of the human vertical posture caused by the acceleration of the supporting platform are analyzed. It is shown that muscular responses to a disturbed vertical posture do not constitute a simple sequel to the extension reflex; the possible mechanisms are discussed with reference to a central program of equilibrium preservation. A.T.

A80-30342 **The identification of the 3-micron spectral feature in galactic infrared sources.** F. Hoyle and C. Wickramasinghe (University College, Cardiff, Wales). *Astrophysics and Space Science,* vol. 68, no. 2, Apr. 1980, p. 499-503. 8 refs.

It is shown that a 3-micron extinction feature in galactic infrared sources cannot be due to water-ice grains. Infrared spectra with a resolution of Delta lambda/lambda = 0.015 are in remarkably close agreement with the 2.5-4 micron extinction properties calculated for bacterial grains. (Author)

A80-30434 # **Cardiac output at high altitude (Rabota serdtsa v usloviiakh vysokogor'ia).** S. B. Daniiarov. Leningrad, Izdatel'stvo Medizina, 1979. 152 p. 313 refs. In Russian.

Contemporary literature concerning the functioning of the heart at high altitudes is reviewed. Attention is given to the hemodynamic indicators of heart function under conditions of hypoxic hypoxia, changes in the contractile activity of the heart at high altitude, the dynamics of left ventricular papillary muscle contraction during altitude adaptation, and changes in myocardial structure and metabolism under altitude-induced hypoxic hypoxia. Results of extensive experiments on the characterization of the injection function of the heart during altitude acclimatization are also analyzed. A.L.W.

A80-30455 # **Visual learning and interhemispherical interaction (Zritel'noe obuchenie i mezhpolusharivoe vzaimodeistvie).** M. A. Makashvili (Akademiia Nauk Gruzinskoi SSR, Institut Fiziologii, Tiflis, Georgian SSR). *Akademiia Nauk Gruzinskoi SSR, Soobshcheniia,* vol. 96, Dec. 1979, p. 685-688. 9 refs. In Russian.

An attempt was made to study whether the corpus callosium has an influence on the conditional reflex behavior of cats. The experiments were carried out with control cats and cats with midline dissection of the corpus callosium. Using diffuse-light-intensity and other more complex stimuli, it was found that interhemispherical interaction of the visual analysor is indispensible for perception and processing of visual information. V.P.

A80-30456 # **Changes in the rhythmicity of the cerebral bioelectric potentials of head-shielded rabbits subjected to roentgen irradiation of the body in the minimum lethal dose (Izmeneniia ritmiki biopotentsialov mozga krolikov pri rentgenovskom obluchenii tulovishcha v minimal'no smertel'noi doze v usloviiakh ekranirovaniia golovy).** G. V. Feigin (Akademiia Nauk Gruzinskoi SSR, Institut Fiziologii, Tiflis, Georgian SSR). *Akademiia Nauk Gruzinskoi SSR, Soobshcheniia,* vol. 96, Dec. 1979, p. 701-704. In Russian.

A80-30457 # **Fermentative activity of neutrophil leukocytes in rats under conditions of hypoxic hypoxia (Fermentativnaia aktivnost' neitrofil'nykh leikotsitov krys pri gipoksicheskoi gipoksii).** E. S. Chertkova (Akademiia Nauk Gruzinskoi SSR, Institut Eksperimental'noi Morfologii, Tiflis, Georgian SSR). *Akademiia Nauk Gruzinskoi SSR, Soobshcheniia,* vol. 96, Dec. 1979, p. 721-724. In Russian.

A80-30513 # **Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory (Badania medyczne w kompleksie orbitalnym 'Sojuz 30-Salut 6').** S. Baranski, R. Bloszczynski, M. Hermaszewski, J. Kubiczkowa, A. Piorko, R. Saganiak, Z. Sarol, F. Skibniewski, J. Stendera, and W. Walichnowski (Wojskowy Instytut Medycyny Lotniczej, Warsaw, Poland). *Postepy Astronautyki,* vol. 12, no. 4, 1979, p. 9-20. In Polish.

The paper deals with medical aspects of a spaceflight involving the Soviet cosmonaut Klimuk and his Polish crew member Hermaszewski. Studies of the cardiovascular system are described, placing emphasis on the tests carried out on the third day in space. The physical exercises, protective measures, and the nutrition and hygienic aspects of the space flight are discussed. V.P.

A80-30514 # **Procedures and facilities for studying the capacity for work of cosmonauts (Metoda i aparatura do badania zdolnosci wysilkowej kosmonautow).** S. Baranski, R. Bloszczynski, M. Hermaszewski, J. Kubiczkowa, A. Piorko, R. Saganiak, Z. Sarol, F. Skibniewski, J. Stendera, and W. Walichnowski (Wojskowy Instytut Medycyny Lotniczej, Warsaw, Poland). *Postepy Astronautyki,* vol. 12, no. 4, 1979, p. 21-42. In Polish.

The paper deals with tests carried out to check the performance level of the Polish astronaut Hermaszewski prior to and after a space flight. The tests were carried out by a newly developed procedure consisting of determining the quantity of work performed during periods of a few minutes under conditions of cardiovascular equilibrium, regulated by the feedback principle between the heart rate and the cycloergometer load. The block and circuit diagrams of the respective facilities are given and discussed. V.P.

A80-30515 # **Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6 (Zastosowanie kardiolidera do kontroli czynnosci serca kosmonauty podczas treningu fizycznego oraz w ubiorze podciznieniowym w stacji orbitalnej 'Salut 6').** S. Baranski, R. Bloszczynski, M. Hermaszewski, J. Kubiczkowa, A. Piorko, R. Saganiak, Z. Sarol, F. Skibniewski, J. Stendera, and W. Walichnowski (Wojskowy Instytut Medycyny Lotniczej, Warsaw, Poland). *Postepy Astronautyki,* vol. 12, no. 4, 1979, p. 43-50. In Polish.

The paper deals with tests carried out on the Polish cosmonaut Hermaszewski to study the influence of weightlessness on physical activity. An apparatus with threshold alarm devices ('cardioleader') developed to monitor the heart rate is described. V.P.

A80-30516 # **Electrogustometric studies in orbital flight (Badania elektrogustometryczne w locie orbitalnym).** S. Baranski, R. Bloszczynski, M. Hermaszewski, J. Kubiczkowa, A. Piorko, R. Saganiak, Z. Sarol, F. Skibniewski, J. Stendera, and W. Walichnowski (Wojskowy Instytut Medycyny Lotniczej, Warsaw, Poland). *Postepy Astronautyki,* vol. 12, no. 4, 1979, p. 51-60. 15 refs. In Polish.

The specifications of an electrogustometer adapted to operate in a space environment are given, along with the specifications of the set of electrodes. The block and digital circuit diagrams of the device are discussed. Some results of an investigation of the taste perception thresholds of a Polish cosmonaut, prior to and during space flight are examined. V.P.

A80-30517 # **Observation of the vestibular function during space flight (Obserwacja czynnosci narzadow przedsionkowych podczas lotu kosmicznego).** S. Baranski, R. Bloszczynski, M. Hermaszewski, J. Kubiczkowa, A. Piorko, R. Saganiak, Z. Sarol, F. Skibniewski, J. Stendera, and W. Walichnowski (Wojskowy Instytut Medycyny Lotniczej, Warsaw, Poland). *Postepy Astronautyki,* vol. 12, no. 4, 1979, p. 61-74. 23 refs. In Polish.

Equilibrium disturbances induced by zero gravity manifest themselves as vestibular disorders, motion sickness, and spatial illusions. In the present paper, these disorders are studied in the light of available findings on United States astronauts and some results of studies conducted on a Polish cosmonaut during and after a space flight. Some possible mechanisms of the space-induced disorders are examined. V.P.

A80-30518 # **Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission (Oznaczenie cisnienia czastkowego tlenu w tkance podskornej kosmonautow podczas lotu w stacji kosmicznej 'Salut 6').** S. Baranski, R. Bloszczynski, M. Hermaszewski, J. Kubiczkowa, A. Piorko, R. Saganiak, Z. Sarol, F. Skibniewski, J. Stendera, and W. Walichnowski (Wojskowy Instytut Medycyny Lotniczej, Warsaw, Poland). *Postepy Astronautyki,* vol. 12, no. 4, 1979, p. 75-80. In Polish.

A polarographic technique was used to measure the oxygen tension in subcutaneous tissue of the forearm of cosmonaut Hermaszewski prior to, after, and on the fourth day of a space mission. A drop in the oxygen exchange rate in the peripheral tissues during weightlessness was observed. The mechanisms of this change are studied, taking into consideration the blood distribution in the organism and microcirculation disorders reflected by a decreased blood flow rate in arterial-venous junctions. V.P.

A80-30520 # **The psychological experiments 'Self-interrogation' and 'Relaxation' (Eksperymenty psychologiczne 'Samoocena' i 'Relaks').** S. Baranski, R. Bloszczynski, M. Hermaszewski, J. Kubiczkowa, A. Piorko, R. Saganiak, Z. Sarol, F. Skibniewski, J. Stendera, and W. Walichnowski (Wojskowy Instytut Medycyny Lotniczej, Warsaw, Poland). *Postepy Astronautyki,* vol. 12, no. 4, 1979, p. 85-101. 11 refs. In Polish.

The paper deals with physiological tests performed on cosmonaut Hermaszewski to evaluate his ability to function in space and his adaptation to the space environment. His ability to cope with sensory and social deprivation, psychological stress, and other space factors is attributed to his excellent physical, functional, and emotional state, the comradeship with his Soviet crew member, the motivation of performing difficult but honorable functions, and last but not least to thorough preflight training in which a special recreation program, termed Relaxation, played an important part. V.P.

A80-30673 **MTF of the defocused optical system of the human eye for incoherent monochromatic light.** L. J. Bour (Utrecht, Rijksuniversiteit, Utrecht, Netherlands). *Optical Society of America, Journal,* vol. 70, Mar. 1980, p. 321-328. 19 refs. Research supported by the Nederlandse Organisatie voor Zuiver-Wetenschappelijk Onderzoek.

A psychophysical method has been used to measure the modulation transfer function (MTF) of the defocused optical system of the human eye for incoherent monochromatic light (514 nm) and for various pupil diameters. The results have been compared with theoretical calculations based on aberration coefficients found previously. MTF's have been computed for white light with the help of the measurements obtained for monochromatic light. (Author)

A80-30674 **Flicker-induced asymmetries in border enhancement and the distinction between brightness and darkness systems.** A. Remole (Waterloo, University, Waterloo, Ontario, Canada). *Optical Society of America, Journal,* vol. 70, Mar. 1980, p. 329-334. 21 refs. Natural Sciences and Engineering Research Council of Canada Grant No. A-9951.

Border enhancement is observed in a flickering bright-dark field. It is found that both the dark and the bright portions of the enhanced region increase in extent from the border during certain flicker frequencies, but not symmetrically about the border. This asymmetry is described by plotting the ratio of the dark and bright enhanced regions against stimulus frequency. The ratio fluctuates with frequency, the amplitude of the fluctuations being greatest at low frequencies. The foveal region stimulated by the border has some effect on the ratio functions. They cannot be mimicked by ratios obtained from enhancement responses to low and high luminances on either the dark or bright side of the border. It is suggested that these flicker-induced asymmetries are best understood in the context of separate neural systems for the perception of darkness and brightness. (Author)

A80-30813 **A psychoacoustic study of impulsive helicopter noise (Etude psycho-acoustique des bruits impulsifs d'hélicoptères).** A. Damongeot (Société Nationale Industrielle Aérospatiale, Marignane, Bouches-du-Rhône, France). *(Colloque Acoustique-Aérodynamique, 6th, Paris, France, May 29-31, 1978.) Revue d'Acoustique,* vol. 12, no. 48, 1979, p. 60-69. 7 refs. In French. Research sponsored by the Direction Technique des Constructions Aéronautiques and Ministère de la Culture et de l'Environnement.

The degree of annoyance caused by the intensity and impulsiveness of impulsive helicopter noise is investigated. Pairwise comparisons of the relative annoyance provoked by an identical impulsive helicopter noise and various intensities of a nonimpulsive helicopter noise were made by 20 juries comprising a total of 116 subjects. Results indicate that the units presently in use for quantifying annoyance (dBA, TPNdB, PNdB and EPNdB) do not completely represent the levels brought about by impulsive noise; these values must be corrected upwards by up to 6 units to reach the equivalent effects of continuous noise. An impulsivity indicator derived from the variance of the sound pressure is then introduced as a correcting factor in the establishment of helicopter noise certification standards, and it is shown to account well for the observed results. A.L.W.

A80-30815 **The psychoacoustic effects of aircraft noise on sleep - An in situ study (Les effets psycho-acoustiques des bruits d'avion sur le sommeil - Etude in situ).** M. Vallet, F. Simonnet (Institut de Recherche des Transports, Arcueil, Val-de-Marne, France), and J. M. Gagneux (Association de Recherche, Pollution, Environnement et Nuissance, France). *(Colloque Acoustique-Aérodynamique, 6th, Paris, France, May 29-31, 1978.) Revue d'Acoustique,* vol. 12, no. 48, 1979, p. 79-81. 7 refs. In French.

The quality of sleep of persons living near an airport which is open at night is investigated, and results of the in situ studies are compared with those obtained in the laboratory reviewed by Lukas (1975) and Griefahn (1976). The sleep patterns of 40 men between the ages of 20 and 55 living in zones of various noise exposure surrounding Roissy airport for a year were monitored during four consecutive nights by EEG, EOG, EMG and EKG. The frequencies of awakenings and sleep-stage variations in the presence of aircraft noise observed in situ are found to be lower than in the reported laboratory tests, indicating an adaptation to the noise in habituated sleepers, and to increase very slowly with increasing noise level. Responses to aircraft noise are also observed to depend on the number of flights on a given night, with reaction rate increasing to a level where it stabilizes, however even at the lowest noise levels, no zero-responses were observed. A.L.W.

A80-30854 **An investigation of the effects of impulse noise exposure on man - Impulse noise with a relatively low peak level.** K. Yamamura, S. Hiramatsu, T. Hikichi, S. Hiramatsu (Sapporo Medical College, Sapporo, Japan), and K. Aoshima (Toyama Medical and Pharmaceutical University, Toyama, Japan). *European Journal of Applied Physiology,* vol. 43, Mar. 1980, p. 135-142. 14 refs. Research supported by the Environmental Agency of Japan.

The effects of impulse noise of a relatively low peak level were examined to develop damage risk criteria for impulse noise. Eight to 13 normal male students (aged 20-24 years) were exposed to impulse noise. Peak levels of impulse noise were 100 dB and 105 dB, B-duration of impulse noise being 10 ms, 50 ms, and 100 ms, and the repetition rates of impulse noise were 3 per 1 s and 1 per 3 s. Exposure time was 8 h. Exposure conditions of long B-duration induced greater TTS2 than those of short B-duration (P less than 0.05). Impulse noise exposure at a high peak level induced slightly larger TTS2 than that at a low peak level. TTS2 increased proportionally to the logarithm of the amount of impulse noise. Exposure to impulse noise induced smaller TTS2 than that of steady-state noise of an equal energy level. Exposure to large amounts of impulse noise induced slightly greater urinary 17 OHCS levels than small amounts of impulse noise, and exposure to impulse noise induced smaller urinary 17 OHCS levels than steady-state noise of an equal energy level. The decreasing effect of the acoustic reflex on the acoustic energy of impulse noise was considered to be the reason for the results obtained. (Author)

A80-30873 **Diagnostic accuracy of the conventional 12-lead and the orthogonal Frank-lead electrocardiograms in detection of myocardial infarctions with classifiers using continuous and Bernoulli features.** U. Jain and P. M. Rautaharju (Dalhousie University, Halifax, Canada). *Journal of Electrocardiology,* vol. 13, Apr. 1980, p. 159-166. 22 refs. Research supported by the Medical Research Council of Canada and Nova Scotia Heart Foundation; Department of National Health and Welfare of Canada Grants No. 603-1052-45; No. 6603-20-10-45.

The present investigation evaluates the possibility of using a decision-theoretic classifier and a set of ECG features which are discretized to obtain Bernoulli variables, and compares the diagnostic accuracy of the 12-lead and Frank-lead ECG in detecting myocardial infarctions. The branch-and-bound algorithm, the sequential forward selection and backward rejection procedures are used for selecting the best subsets of Bernoulli and continuous features out of the primary set of features measured from the 12-lead and Frank-lead ECG. The classification accuracy of Bernoulli and continuous features is estimated in a test library composed of ECGs of 237 subjects with old myocardial infarcts and 299 subjects without infarction. It is concluded that while Bernoulli variables perform as well as or better than continuous variables over a wide range of sensitivity and specificity, continuous features appear to yield a higher diagnostic accuracy when a high level of specificity is required. The information content of the 12-lead ECG appears as good as or better than that of the Frank-lead ECG. S.D.

A80-31075 # **Role of thyroxin in the thermoregulation of albino rats following cold acclimation (O roli tiroksina v termoreguliatsii belykh krys posle aklimatsii k kholodu).** V. I. Sobolev (Donetskii Gosudarstvennyi Universitet, Donetsk, Ukrainian SSR). *Fiziologicheskii Zhurnal SSSR,* vol. 66, Feb. 1980, p. 268-273. 14 refs. In Russian.

A80-31446 **Influence of microwave irradiation on the resistance of rats to transversely applied g forces.** V. S. Tikhonchuk. *(Kosmicheskie Issledovaniia,* vol. 17, July-Aug. 1979, p. 636-638.) *Cosmic Research,* vol. 17, no. 4, Jan. 1980, p. 525-527. 6 refs. Translation.

A80-31480 # **Vibration of the basilar membrane in the mammalian cochlea (O kolebanii baziliarnoi membrany vo vnutrennem ukhe mlekopitaiushchikh).** V. M. Babich and S. M. Novoselova.

In: Mathematical problems of the theory of wave propagation. 10. Leningrad, Izdatel'stvo Nauka, 1979, p. 54-62. 32 refs. In Russian.

The cochlea is modeled as a hydromechanical waveguide with smoothly varying properties along whose midsection an elastic anisotropic plate - the basilar membrane - is located. A WKB type method is used to investigate the displacement of the membrane. The results are presented in graphical form and discussed in detail. B.J.

A80-31584 # **Liquid conditioned suit and its use in alleviating heat stress in military flying.** P. K. Bannerjee, M. K. Vyawahare, C. A. Verghese, and J. S. Sant (Indian Air Force, Institute of Aviation Medicine, Bangalore, India). *Aviation Medicine,* vol. 23, Dec. 1979, p. 79-84. 11 refs.

Efforts are now being made to develop suitable cooling packs for aircrews, which will be compatible with the space, weight and power provision of an aircraft. The paper deals with two such systems: (1) Model 1, a laboratory model of freon package; and (2) Model 2, a miniaturized insulated ice package. The objective was to study their suitability in alleviating the heat load that is commonly prevalent in low-level flying in tropical summer. Nine healthy male volunteers participated in the study. The first model of the refrigerant pack for laboratory trials on liquid-conditioned suit derives its cooling from the conventional freon refrigeration; the second model derives its cooling from fusion of ice and gradual temperature rise of water thus formed. The effectiveness of these two systems is evaluated in terms of reduction in physiological strain. S.D.

A80-31585 # **An evaluation protocol for fighter aircrew with non specific ST-T abnormalities.** M. M. Singh, K. Rai, S. K. Adaval (Indian Air Force, Institute of Aviation Medicine, Bangalore, India), M. Akhtar (Army Hospital, Delhi, India), and G. N. Kunzru. *Aviation Medicine,* vol. 23, Dec. 1979, p. 85-91. 26 refs. Research supported by the Indian Air Force. AFMRC Project 763/75.

Twenty aircrew members with asymptomatic nonspecific ECG abnormality were selected for this study. A detailed evaluation of such 'asymptomatic nonspecific ECG abnormality' with various stress tests available at 1 AM was carried out in order to establish and outline a standard program of evaluation for early diagnosis and disposal. ECGs were recorded at rest, in lying and standing positions, after Masters Double Two-step exercise, during and after submaximal and maximal treadmill exercise, during and after hyperventilation and Valsalva's maneuver, under hypoxia at rest and after Masters Double Two-step exercise, during tilt table studies and during/after +Gz stress. All the electrocardiographic studies were repeated after administration of propanolol as a beta blocker. S.D.

A80-31586 # **Aeromedical and physiologic aspects of fighter pilot selection and performance - Theoretical considerations.** J. E. Whinnery (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation Medicine,* vol. 23, Dec. 1979, p. 92-95. 16 refs.

Theoretical considerations are discussed regarding aeromedical and physiological aspects of fighter pilot selection and performance. The discussion focuses on definition of aerial combat stress, requisite for physical conditioning, and future trends. The recently introduced high-performance fighter aircraft produce a complex multistress environment with severe physiologic and psychologic demands placed on aircraft pilots. The etiology of loss of consciousness and loss of vision is due to lack of cerebral and retinal perfusion, respectively, resulting from the head-to-foot force of +Gz with a corresponding increased blood pooling in the lower extremities. Any condition which might predispose a pilot to an increased susceptibility to unconsciousness should be avoided. A final aspect of aircrewmen moving into a new higher stress environment is the possibility of exposure to a potentially hazardous environment. S.D.

A80-31588 # **Effects of alcohol on aircrew performance - A field study.** K. S. Soodan (Indian Air Force, Institute of Aviation Medicine, Bangalore, India). *Aviation Medicine,* vol. 23, Dec. 1979, p. 103-106.

Alcohol is known to affect the performance of individuals. The performance of 16 pilots has been studied 5 hr and 7 hr after the consumption of 3 oz of alcoholic drink on simulated flying task. The study revealed a decrease in the performance of the aircrew at the 5-hr stage. A decrement in performance of a lesser degree was present even at the 7-hr stage. (Author)

A80-31589 # **Dynamic vision under vibration and changes with curvature of transparencies.** M. K. Vyawahare, J. S. Sant, D. T. Shakunthala, and C. A. Verghese (Indian Air Force, Institute of Aviation Medicine, Bangalore, India). *Aviation Medicine,* vol. 23, Dec. 1979, p. 107-110. 14 refs.

Deterioration in dynamic visual acuity under low frequency vibration has been studied. Objects, moving with varying linear speeds in the range of 60-120 cm/sec. and having fixed contrast with the background, were presented to subjects. Threshold size of detection of moving objects show a significant change under vibration. Distortion and curvature in the viewing shield enhances the threshold size of objects. It is observed that low frequency vibration produces visual acuity decrement for static as well as dynamic objects. (Author)

A80-31590 # **Aeromedical evaluation of aircraft accidents - Human engineering aspects.** P. C. Sharda (Indian Air Force, Medical Services, New Delhi, India). *Aviation Medicine,* vol. 23, Dec. 1979, p. 113, 114.

Statistics continue to show an increased incidence of serious aircraft accidents where the cause has been attributed to human factors. In this paper, a few cases are selected to highlight various human engineering aspects probably operative in aircraft accident and injury causation. The discussion covers design deficiencies, modification and nonstandard aircraft, maintenance lapse, operational error, inadequacy in personal safety equipment, and aircrew-aircraft incompatibility in terms of anthropometric limitations. It is clear that certain factors do exist, but their respective role in accident or injury causation can only be conjectured. S.D.

A80-31591 # **Psycho-social aspects of aircraft accidents.** V. Kumar (AFCME, New Delhi, India). *Aviation Medicine,* vol. 23, Dec. 1979, p. 115-118. 9 refs.

The cause of human error in an aircraft accident can be determined by investigating the psychosocial aspects of the individual responsible for the accident. The paper discusses psychosocial factors relative to attention, emotional stability, motivation, experience, skill, self-esteem, fatigue, psychological stress and aircraft pilot, accident proneness, attitudes and flying, habit interference, crew behavior, man in a group, alcohol aftereffects and flying, as well as maintenance crew and air traffic control staff. Recommendations are made for reliably determining the cause of human error in an aircraft accident and for making psychosocial studies very meaningful. S.D.

A80-31592 # **Injury dynamics in aircraft accident.** R. Singh (Indian Air Force, Institute of Aviation Medicine, Bangalore, India). *Aviation Medicine,* vol. 23, Dec. 1979, p. 119-124. 8 refs.

The impact forces encountered in aircraft accidents are generally abrupt accelerations of short duration, usually less than 1 sec., thereby causing mechanical damage that results in injuries to aircraft occupants. The discussion covers human tolerance to abrupt accelerations, along with aircraft crash injuries and dynamics. The basic causes and mechanism of the injuries are discussed. For quick retrieval of information to correlate injuries with aircraft environment during crash, a supplementary form is suggested to be incorporated into the current Form MS 1956. S.D.

A80-31633 # **Determination and elimination of low-frequency zero-level oscillations of an EKG during automated processing (Otsenka i ustvanenie nizkochastotnykh kolebanii nulevogo urovnia EKG v protsesse avtomaticheskoi obrabotki).** Iu. V. Paramonov and N. E. Afanasenko (Akademiia Nauk SSSR, Institut Kibernetiki, Kiev, Ukrainian SSR). *Kibernetika i Vychislitel'naia Tekhnika,* no. 45, 1979, p. 32-39. 5 refs. In Russian.

An algorithm for eliminating zero-level noise oscillations in the processing of EKG data is presented. The procedure involves the use of the least squares method within the limit of a given P-T cycle. The effectiveness of the method is evaluated, and preliminary results of processing are discussed. B.J.

A80-31634 # **Complex statistical analysis of the detection of the QRS complex (Kompleksnaia statisticheskaia otsenka obnaruzheniia kompleksa QRS).** S. M. Makeev (Akademiia Nauk Ukrainskoi SSR, Institut Kibernetiki, Kiev, Ukrainian SSR) and A. G. Taranenko (Kievskii Institut Inzhenerov Grazhdanskoi Aviatsii, Kiev, Ukrainian SSR). *Kibernetika i Vychislitel'naia Tekhnika,* no. 45, 1979, p. 54-57. 7 refs. In Russian.

An algorithm for the recognition of the QRS complex and the R branch in the processing of EKG data is developed. Results of experimental verification of the algorithm are presented, and the computer implementation of the algorithm is discussed with reference to the automated processing of clinical EKG data. B.J.

A80-31635 # **Measurement of local indices of operator performance in the tracking mode (Izmerenie lokal'nykh pokazatelei kachestva deiatel'nosti operatora v rezhime slezheniia).** V. A. Chernomorets (Akademiia Nauk Ukrainskoi SSR, Institut Kibernetiki, Kiev, Ukrainian SSR). *Kibernetika i Vychislitel'naia Tekhnika,* no. 45, 1979, p. 65-70. In Russian.

The paper examines methods for describing operator behavior on the basis of empirical data concerning operator performance, with particular reference given to compensatory tracking operations. A method to increase the resolution of performance measurement methods is described, and attention is given to problems associated with the digitization of analog data. B.J.

A80-31636 # **Recognition of EKG structural elements in an automated complex (Raspoznovanie strukturnykh elementov elektrokardiogrammy v avtomatizirovannom komplekse).** E. M. Maslova and T. A. Volkhonskaia (Akademiia Nauk Ukrainskoi SSR, Institut Kibernetiki, Kiev, Ukrainian SSR). *Kibernetika i Vychislitel'naia Tekhnika,* no. 45, 1979, p. 76-80. 9 refs. In Russian.

A80-31637 # **Analog-digital converter for the ELKAR electrocardiograph (Analogo-tsifrovoi preobrazovatel' k elekrokardiografu ELKAR).** A. G. Pekhterev, F. K. Dzhugan, I. M. Vaisman, and G. N. Rabosh (Ministerstvo Zdravookhraneniia Ukrainskoi SSR, Vinnitskii Meditsinskii Institut, Vinnitsa, Ukrainian SSR). *Kibernetika i Vychislitel'naia Tekhnika,* no. 45, 1979, p. 88-90. In Russian.

A80-31638 # **Design principles for a system of automated processing of cardiological data on the M-6000 computer (Nekotorye printsipy postroeniia kompleksa avtomatizirovannoi obrabotki kardiologicheskoi informatsii spomoshch'iu EVM M-6000).** T. A. Volkhonskaia, E. M. Maslova, A. K. Galitskii, and M. A. Chekailo (Akademiia Nauk Ukrainskoi SSR, Institut Kibernetiki, Kiev, Ukrainian SSR). *Kibernetika i Vychislitel'naia Tekhnika,* no. 45, 1979, p. 91-94. In Russian.

A80-31639 # **Design characteristics of an imitation system for the study of physiological processes on a digital computer (Osobennosti postroeniia imitatsionnoi sistemy dlia issledovaniia na ETsVM fiziologicheskikh protsessov).** Iu. N. Onopchuk (Akademiia Nauk Ukrainskoi SSR, Institut Kibernetiki, Kiev, Ukrainian SSR). *Kibernetika i Vychislitel'naia Tekhnika,* no. 45, 1979, p. 103-106. 7 refs. In Russian.

The use of pseudo-observations to develop imitation software for the digital-computer investigation of physiological processes is examined; this limitation procedure can be used to study the dynamics of gas transfer in the human body and in sea-animal organisms. The development of imitation software is considered with reference to the determination of input data and the selection of numerical procedures and integration step. B.J.

A80-31800 * **Influence of auditory fatigue on masked speech intelligibility.** D. E. Parker, W. L. Martens, and P. A. Johnston (Miami University, Oxford, Ohio). *Acoustical Society of America, Journal,* vol. 67, Apr. 1980, p. 1392, 1393. Research supported by Miami University; Contracts No. F33615-75-C-5029; No. NAS9-14258.

Intelligibility of PB word lists embedded in simultaneous masking noise was evaluated before and after fatiguing-noise exposure, which was determined by observing the number of words correctly repeated during a shadowing task. Both the speech signal and the masking noise were filtered to a 2825-3185-Hz band. Masking-noise leves were varied from 0- to 90-dB SL. Fatigue was produced by a 1500-3000-Hz octave band of noise at 115 dB (re 20 micron-Pa) presented continuously for 5 min. The results of three experiments indicated that speed intelligibility was reduced when the speech was presented against a background of silence but that the fatiguing-noise exposure had no effect on intelligibility when the speech was made more intense and embedded in masking noise of 40-90-dB SL. These observations are interpreted by considering the recruitment produced by fatigue and masking noise. (Author)

A80-32216 # **Express-diagnostic criteria of the cardiohemodynamic efficiency of juvenile athletes (Ekspress-diagnosticheskie kriterii kardio-gemodinamicheskoi proizvoditel'nosti u iunykh sportsmenov).** V. S. Shaginian and V. P. Kovtun (Detskii Vrachebno-Fizkul'turnyi Dispanser, USSR). *Akademiia Nauk Gruzinskoi SSR, Soobshcheniia,* vol. 96, Oct. 1979, p. 185-188. In Russian.

A80-32230 # **Influence of longitudinal accelerations on fluid-electrolyte metabolism and renal function under conditions of immersion (Vliianie prodol'nykh peregruzok na vodno-solevoi obmen i funktsiiu pochek v usloviiakh immersii).** E. B. Shul'zhenko, A. I. Grigor'ev, V. B. Noskov, B. R. Dorokhova, and E. A. Aleksandrova. *Fiziologiia Cheloveka,* vol. 6, Mar.-Apr. 1980, p. 280-285. 16 refs. In Russian.

Three-day immersion experiments are carried out on ten healthy male individuals (25-30 yr) subjected to low-magnitude +Gz accelerations. It is found that a stay in immersion produces in a normal man an increase in diuresis and excretion of osmotically active substances including sodium. This process is most pronounced in the first day of immersion. Administration of isotonic NaCl solution causes accelerated elimination of fluid, sodium, osmotically active substances, and potassium; this should be considered a homeostatic reaction intended to recover the adequately decreased volume of intravascular fluid. Head-foot accelerations of low magnitude prevent the increase of diuresis and the excretion of electrolytes on the second and third days of the immersion period. S.D.

A80-32231 # **The circadian rhythm of aerobic efficiency (Sutochnyi ritm aerobnoi proizvoditel'mosti).** S. G. Krivoshchekov, V. F. Osipov, and Iu. A. Vlasov (Akademiia Meditsinskikh Nauk SSSR, Novosibirsk, USSR). *Fiziologiia Cheloveka,* vol. 6, Mar.-Apr. 1980, p. 310-316. 14 refs. In Russian.

Experiments were conducted on young healthy male subjects who performed various types of physical exercise. The objective was to evaluate the circadian rhythms of aerobic efficiency in man, along with the characteristics of physiological support of working capacity at different times of the day. Maximum oxygen uptake and 'pulse oxygen threshold' (POT) are considered. Possible causes for the circadian fluctuations of the POT are examined. It appears that during the circadian organization of the whole organism, the circadian rhythm of the cardiorespiratory-system functions assures during daytime an optimal readiness to active work; during nighttime the functional systems procure the conditions for the best course of reconstructive anabolic processes. S.D.

A80-32232 # **Effect of gas-mixture density on the performance of the respiratory system (Vliianie plotnostei gazovykh smesei na rabotu dykhatel'nogo apparata).** I. S. Breslav and E. L. Kalacheva

(Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). *Fiziologiia Cheloveka,* vol. 6, Mar.-Apr. 1980, p. 317-322. 20 refs. In Russian.

Experiments on healthy individuals reveal that during free breathing of gas mixtures of varying density (He-O2, SF6-02), man chooses such a regime of pulmonary ventilation which ensures the optimization of the relation between elastic and inelastic resistance to respiration without a significant change in the total performance of the respiratory system. During forced breathing, the gas-mixture density affects the energy cost of ventilation. When breathing a gas mixture of higher density than that of air, the functional reserves of the resiratory system are limited. S.D.

A80-32233 # **Functional state of the cardiovascular system following a three-day immersion and prophylactic rotations in a small-radius centrifuge (Funktsional'noe sostoianie serdechno-sosudistoi sistemy posle 3-sutochnoi immersii i profilakticheskikh vrashchenii na tsentrifuge korotkogo radiusa).** I. F. Vil'-Vil'iams and E. B. Shul'zhenko. *Fiziologiia Cheloveka,* vol. 6, Mar.-Apr. 1980, p. 323-327. 9 refs. In Russian.

An experimental study was carried out on volunteer healthy male individuals to evaluate the reaction of the circulatory system after mimicking the effect of detraining by water immersion and combining immersion with prophylactic gravitational accelerations in a small-radius centrifuge. The results obtained demonstrated the possibility of using periodic gravitational accelerations in a small-radius centrifuge over the range 0.8-1.6 Gz (at the 'foot' level) for reducing the effects of determining of the cardiovascular system, which were developed during immersion, and for maintaining the reserve capabilities of the circulatory system. S.D.

A80-32234 # **Sleep pattern variation during adaptation to high-altitude hypoxia (Izmenenie sna v protsesse adaptatsii k vysotnoi gipoksii).** V. B. Malkin, V. P. Danilin, and N. F. Landukhova. *Fiziologiia Cheloveka,* vol. 6, Mar.-Apr. 1980, p. 341-347. 18 refs. In Russian.

During three successive nights nine male subjects were placed in an altitude test chamber (4200 m) right before the initial stage of sleep. Regular changes in the nighttime sleep phase structure were observed. These changes were reduced total sleep duration and reduced number of completed sleep cycles. The observations indicated extended Stage I duration, slow-sleep shortening, and distinct deprivation of fast sleep. Sleep normalization was observed during the second and particularly the third night. S.D.

A80-32235 # **Investigation of the predictive value of electronystagmograms /ENGs/ in professional-selection vestibulometry (Issledovanie prognosticheskoi tsennosti elektronistagmogramm /ENG/ pri vestibuliarnom profotbore).** B. I. Poliakov, M. I. Serebrennikov, Iu. V. Lysenko, Iu. P. Ozerov, and B. V. Permiakov. *Fiziologiia Cheloveka,* vol. 6, Mar.-Apr. 1980, p. 366-368. 9 refs. In Russian.

A rotating-chair test procedure is proposed whereby healthy male individuals experienced nystagmus under specified rotary accelerations in a rotary chair. It is found that the intensity of nystagmus is higher for persons with low vestibular-autonomic stability level (VSL) than for persons with high VSL. The dynamics of horizontal-nystagmus disappearance is a distinct indicator for detecting persons with low and high VSL. Conditions for recognizing persons prone to VSL are determined. S.D.

A80-32305 **A theoretical basis for microwave and RF field effects on excitable cellular membranes.** C. A. Cain (Illinois, University, Urbana, Ill.). *IEEE Transactions on Microwave Theory and Techniques,* vol. MTT-28, Feb. 1980, p. 142-147. 25 refs.

A model of a mechanism for nonthermal interaction of RF or microwave fields with excitable cellular membranes is presented. It may be possible for an oscillating component of membrane potential to change the conductance of the membrane to all ion species which transverse voltage-dependent membrane channels. Some specific effects on squid giant axon predicted by the model are discussed. (Author)

A80-32413 **Suprathreshold processing of complex visual stimuli - Evidence for linearity in contrast perception.** A. P. Ginsburg, M. W. Cannon (USAF, Aviation Vision Laboratory, Wright-Patterson AFB, Ohio), and M. A. Nelson (Systems Research Laboratories, Inc., Dayton, Ohio). *Science,* vol. 208, May 9, 1980, p. 619-621. 18 refs.

Magnitude estimation experiments show that perceived contrast for both sine and square waves is a linear function of stimulus contrast. The suprathreshold sine:square ratio required for equal perceived contrast derived from these data was verified by contrast matching experiments. These findings imply a high degree of linearity in suprathreshold visual processing of contrast. (Author)

A80-32414 **Saccadic eye movements and body sway.** K. D. White (Florida, University, Gainesville, Fla.), R. B. Post, and H. W. Leibowitz (Pennsylvania State University, University Park, Pa.). *Science,* vol. 208, May 9, 1980, p. 621-623. 18 refs. Research supported by the Alexander von Humboldt-Stiftung; Deutsche Forschungsgemeinschaft Contract No. SFB-70; Grant No. PHS-MH-08061.

Different conditions of moving retinal images show differential influences on postural stability. A surrounding pattern moved during steady fixation increases body sway, but similar image motions generated by voluntary saccades do not. Mechanisms for postural control do not respond to visual feedback during saccades. Analogous principles in saccadic suppression and space constancy are discussed. (Author)

A80-32576 **Air safety in 1978 from the medical point of view (Point de vue médical sur la sécurité aérienne en 1978).** J. Timbal (Laboratoire Central de Biologie Aéronautique, Paris, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 1st Quarter, 1979, p. 12-14. In French.

Medical aspects of the prevention of aircraft accidents are discussed. A brief review of aircraft accident rates in the past 20 years is presented which points out that this rate has been decreasing exponentially towards an asymptotic level, with the proportion of human responsibility remaining fairly constant. The selection, medical and psychological surveillance and training of flight personnel, aircraft accident investigation, emergency equipment improvements and the design of future aircraft are discussed as means of improving air safety. It is concluded that the most important of these means will be the medical training of flight personnel and the intensification of accident investigations, while close attention must also be given to the design of future aircraft equipment. A.L.W.

A80-32577 **The investigator confronted with medical problems in technical investigations of aircraft accidents (L'enquêteur confronté aux problèmes médicaux lors des investigations techniques sur les accidents d'avions).** M. Vigier. *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 1st Quarter, 1979, p. 15-19. In French.

The close cooperation necessary between technical and medical investigators of aircraft accidents is discussed from the point of view of the technical investigator. The general framework within which aircraft accident investigations are conducted is reviewed, with attention given to the requirements of the International Civil Aviation Organization and the provisions of the French government. The responsibilities of the investigator with respect to the determination of events and conditions before, during and after the accident are outlined, and the role of medical personnel in the analysis of crew medical histories and the sequence of events leading to and during the accident and the examination of survivors and victims is emphasized. Finally, recommendations concerning the modification of international and national regulations and present autopsy procedures, medical instruction, equipment cases and accident report formats to reflect the necessary medical-technical cooperation are presented. A.L.W.

A80-32578 The importance of toxicological studies in aircraft accidents (Intérêt des études toxicologiques dans les accidents aériens). P. E. Picart and J. P. Delcroix (Centre de Recherches de Médecine Aéronautique, Paris, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 1st Quarter, 1979, p. 20-23. 11 refs. In French.

The application of toxicological techniques to the theoretical reconstruction of aircraft accidents is discussed. The possible roles of voluntary substances, including alcohol, medications and CO and nicotine from cigarette smoke, and environmental intoxicants including fuel, cooling fluids, lubricants, hydraulic fluids and battery fluids, in causing and allowing the identification of causes of aircraft accident fatalities are examined, and means for determining their levels in the body are indicated. The importance of toxicological investigations to aircraft accident investigation is concluded, and it is noted that such studies can only be considered as part of a cooperative effort between the toxicologist and the investigating body for the rapid acquisition of useful information. A.L.W.

A80-32579 The contribution of histopathology to investigations following aircraft accidents (Contribution de l'histopathologie aux enquêtes après accidents aériens). C. Nogues. *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 1st Quarter, 1979, p. 24-30. 8 refs. In French.

The histopathological examination of tissue samples obtained in the investigation of aircraft accidents is discussed. Information obtainable from studies of hepatic, pulmonary, renal and visceral lesions and tissue debris is illustrated, and the classification of lesions into those caused by the accident, those of apparently questionable significance (possible relating to pre-existing conditions), those contributing to the reconstruction of the events of the accident and those not relating to the cause of the accident is considered. It is concluded that, although histopathological analysis rarely leads to the proof of the cause of an aircraft accident, it can provide information as to the sequence of events occurring during the accident and pre-existing conditions leading to the aggravation of dangerous circumstances. A.L.W.

A80-32580 A physical study of vibratory stress - Physiological interpretation - Importance in aircraft accidents (Etude physique de l'agression vibratoire - Interprétation physiologique - Intérêt dans les accidents d'aéronefs). P. Quandieu, P. Borredon, and L. Pellieu (Centre d'Etudes et de Recherches de Médecine Aérospatiale, Paris, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 1st Quarter, 1979, p. 31-35. In French.

The physical responses of an animal to mechanical vibration are investigated, taking into account the effects of muscle tension and the implications of the study for aircraft accident investigations. The relative acceleration of a laboratory rabbit with its feet secured to a test platform with respect to the platform, which was undergoing 10-Hz sinusoidal vibrations at peak magnitudes of 1 g, was measured by a force sensor placed under the animal and attached to the platform. It is found that muscular activity can serve to damp the vibrations. Results are interpreted in terms of a model of a mechanical system consisting of a series of passive and active rejection mechanical filters connected in parallel, with stiffness dependent on muscle tension. A.L.W.

A80-32581 The organization of medical aid in air disasters - Berlin-Tegel international airport (Organisation de secours médicaux en cas de catastrophe aérienne - A propos de l'aéroport international de Berlin-Tegel). G. Poyot (Armée de l'Air, Base Aérienne, Ochey, Meurthe-et-Moselle, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 1st Quarter, 1979, p. 36-39. In French.

Consideration is given to the provisions for medical aid in the event of a major passenger aircraft crash at the Berlin-Tegel international airport. The emergency medical plan consists of the localization of the accident and the broadcasting of the medical and fire alert, the fighting of any fire and the freeing of victims, medical first aid (triage and the preparation of wounded for evacuation) and the evacuation of wounded to the receiving hospitals. Medical personnel are drawn from the permanent medical staff of the air base having jurisdiction over the airport and from local hospitals, and are equipped with a mobile triage and first aid station capable of handling 75 casualties. Medical strategies include a pretriage to identify and treat the most seriously wounded at the site of the accident, the optimal placement of the triage center, and the utilization of specialized equipment packages designed for the treatment of the most common aircraft accident injuries. The plan requires the supervision of the chief airport physician from the time of the first alert to the evacuation of the wounded, and close cooperation between the health services of the base. A.L.W.

A80-32582 Medical considerations in light aircraft accidents (Considérations médicales sur les accidents de l'aviation légère). G. Plantureux, R. Auffret, and J. Lavernhe (Aéroclub de France, Paris, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 1st Quarter, 1979, p. 40-44. 16 refs. In French.

The causes and medical consequences of accidents involving private airplanes and gliders are analyzed. Light aircraft accident and injury rates are reviewed, and it is noted that both rates have decreased in the past ten years, with involuntary landings and mid-air collisions the greatest sources of fatal accidents. A detailed examination of the causes of light aircraft accidents demonstrates the predominant contributions of human errors, the most prevalent of which are found to be errors in judgement and insufficient pilot ability. A statistical analysis of the bodily distribution and severity of the injuries of 334 persons injured in light aircraft accidents in France between 1974 and 1977, indicates that very serious injuries are rare and are usually associated with rapid death. Most injuries occur to the head, neck and upper limbs rather than the better protected thorax and abdomen. Means suggested to reduce light aircraft accidents and their severity include modifications to cabin equipment, and improved pilot training and regulation. A.L.W.

A80-32583 The place of the psychological factor among the causes of aircraft accidents in general aviation (La place du facteur psychique dans les causes des accidents aériens en aviation générale). R. J. Digo (Centre Principal d'Expertise Médicale du Personnel Navigant, Paris, France) and J. Lavernhe (Compagnie Nationale Air France, Centre d'Examen Médical du Personnel Navigant, Paris, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 1st Quarter, 1979, p. 45-51. In French.

The significance of psychological factors as causes of general aviation aircraft accidents is discussed. The qualitative deficiencies of the medical examination of general aviation pilots and the unique psychological character of general aviation are pointed out, and the causes of aircraft accidents are classified as extrinsic (meteorological, technical, or infrastructural) or intrinsic human factors, which are further subdivided into human technical failures, somatic failures, psychosomatic failures, psychological failures, moral failures, and human relations failures. The various psychopathological traits encountered in general aviation are then examined, including age-related disorders, neuroses, psychosomatic disorders, psychotic states, psychopathic personalities and bio-neuro-organic states including intoxication. Finally, a set of measures intended to reduce the incidence of psychologically caused aircraft accidents is proposed. A.L.W.

A80-32584 The influence of intermittent aircraft noise on sleep. II (Influence des bruits intermittents d'avions sur le sommeil. II). M. V. Strumza. *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 1st Quarter, 1979, p. 52-59. In French.

Results of investigations of the immediate reactions of sleeping persons to intermittent sound stimuli are presented as part of a review of studies of the influence of intermittent aircraft noise on the sleep of persons living near an airport. Responses to the noise are shown to depend on the type of noise, its intensity and duration, the number of stimuli during the night, the information content of the noise and the ambient environment, and expressions relating peak sound intensity, sound duration, and stimulus number to waking frequencies, sleep stage disturbances as indicated by electroencephalography and neuro-autonomic reactions are presented. The rates of physiological responses to noise are also shown to depend on the age, sleep stage, condition with respect to sleep deprivation, circadian rhythm and individual characteristics of the sleepers, although not on their sex. A.L.W.

A80-32585 **Considerations with regard to a test of the Essilor visiotest (Réflexions à propos d'un essai du visiotest Essilor).** J. P. Chevaleraud (Service de Santé des Armées, Paris, France), M. Maille (Hôpitaux des Armées, Paris, France), and G. Santucci. *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare*, vol. 18, 1st Quarter, 1979, p. 60-62. In French.

Results of an evaluation of the visiotest device in the detection of vision anomalies are reported. Data obtained from the visiotest concerning the monocular visual acuities, myopic or hypermetropic tendencies, horizontal and vertical oculomotor equilibria, stereoscopic vision and color vision of 75 male subjects were compared with that obtained using conventional techniques. Discrepancies between the results of measurements of all factors with the exception of vertical oculomotor equilibrium are noted and modifications which would allow an improvement in visiotest performance are proposed. It is concluded that the visiotest may be used pending modifications for the monitoring of visual aptitudes and in the physical examination of private pilot's license candidates. A.L.W.

A80-32586 **The application of echocardiography to the cardiological evaluation of flight personnel (Apport de l'échocardiographie à l'expertise cardiologique du personnel navigant).** J. Droniou, J. C. Duret, J. C. Richart, and J. Pernod. *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare*, vol. 18, 1st Quarter, 1979, p. 63-68. 11 refs. In French.

Following a brief review of the principles and techniques of the established method of one-dimensional motion time echocardiography, and the promising technique of two-dimensional echocardiography, the importance of echocardiography to the cardiological evaluation of flight personnel is discussed. The use of echocardiography in the diagnosis of two conditions incompatible with aeronautical activity, mitral prolapsus and obstructive cardiomyopathy is illustrated, and consideration is given to its use in the evaluation of myocardial function. It is concluded that the noninvasive character and information quality of echocardiography are well adapted to the cardiological evaluation of flight personnel, and make the technique well suited to the selection and monitoring of astronauts and pilots of high-performance aircraft. A.L.W.

A80-32587 **Abdominal echotomography - Its place in the evaluation of flight personnel (Echotomographie abdominale - Sa place dans l'expertise du personnel navigant.)** E. Robin, J. Taboury, J. Flageat, C. Kleitz, P. J. Metges, and R. P. Delahayé (Hôpital d'Instruction des Armées Begin, Saint Mandé, Val-de-Marne; Service de Santé pour l'Armée de l'Air, Ecole d'Application, Paris, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare*, vol. 18, 1st Quarter, 1979, p. 69-74. In French.

The application of echotomography to the physical evaluation of flight personnel is discussed. The physical bases of the propagation of ultrasonic waves through a medium and at an interface between two media and the generation and detection of ultrasonic waves are reviewed, and the operational principles of amplitude-mode, time-motion-mode, brightness-mode and dynamic-mode echotomography are outlined. Information obtainable from an echotomographic examination of the liver, the spleen, the gall bladder, the pancreas, the kidneys, the abdominal aorta and the bladder is discussed, and the principle cases in which echotomography is employed to detect and characterize specific abdominal conditions are surveyed. It is concluded that echography represents a rapid, inexpensive, noninvasive means of obtaining photographic records without possible side effects, and has a great potential for use in aeronautical medicine. A.L.W.

A80-32588 **Central field of vision and electroculography in moderate hypoxia (Champ visuel central et électroculographie en hypoxie modérée).** G. F. Santucci, B. Darnaud, and J. Chevaleraud. *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare*, vol. 18, 3rd Quarter, 1979, p. 192-195. 8 refs. In French.

Experiments were conducted at an altitude of 3600 m on 10 healthy subjects (9M plus 1F) 20 to 30 years of age. Each subject was required to recognize the different light flashes presented to him and to define their location in a 30-deg visual field. The results indicate that a 3600-m (moderate) hypoxia is incapable of perturbing both the central field of vision and the electroculogram. In particular, when a visual field is affected at such an altitude, this disorder is essentially related more to the central components than to the retinal components. S.D.

A80-32589 **On the feasibility of contact lenses for flight personnel (A propos de la tolérance des protheses de contact chez le personnel navigant).** J. P. Boissin (Compagnie Nationale Air France, Service Médical, Paris, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare*, vol. 18, 3rd Quarter, 1979, p. 198-200. In French.

Regular annual supervision and answers given by contact-lens wearers to an anonymous questionnaire have demonstrated that contact lenses do not present a severe hazard to aircrew members. However, the conditions under which the contact lenses are employed often lead to the impracticality of contact lenses and thus to a relatively important rate at which crew members gave up wearing contact lenses. S.D.

A80-32590 **Study of pilot's sight direction on Mercure flight simulator (Etude de la direction du regard des pilotes sur simulateur de vol Mercure).** J. P. Papin, D. Viard (Centre de Recherches de Médecine Aéronautique, Paris, France), and M. Neboit (Organisme National de Sécurité Routière, Montlhéry, Essonne, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare*, vol. 18, 3rd Quarter, 1979, p. 201-204. In French.

The direction of sight of a pilot is analyzed in the Mercure flight simulator in the contex of research work on the nature of visual information to be presented to pilots on future electronic visual-display systems. The observations are recorded during the takeoff and landing phases using the NAC Eye Recorder on 16-mm film. Results are given for landing with a headup display. Finally, a preliminary interpretation is presented on the basis of a few analyzable results. S.D.

A80-32591 **Considerations regarding sudden deafness - Aeronautical incidents (Réflexions sur la surdité brusque - Incidences aéronautiques).** H. Lienhart, P. Salgas (Hôpitaux des Armées, Paris, France), and P. Blanc (Centre Principal d'Expertise Médicale du Personnel Navigant, Paris, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare*, vol. 18, 3rd Quarter, 1979, p. 205-210. 9 refs. In French.

In the light of pertinent observations, the paper reviews the principal data on the diagnostic and urgent treatment of sudden deafness in aeronautical incidents. Attention is given to the possibility of recovery, even complete, in cases detected after long delays. The consequences of sudden deafness at the level of medical examination of air flight personnel are identified. S.D.

A80-32592 **Impedance measurement - Importance in otologic assessment of air flight personnel (L'impédancemétrie - Intéret dans l'expertise otologique du personnel navigant de l'aéronautique).** H. Lienhart (Hôpitaux des Armées, Paris, France) and P. Blanc (Centre Principal d'Expertise Médicale du Personnel Navigant, Paris, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare*, vol. 18, 3rd Quarter, 1979, p. 211-216. In French.

Following a brief outline of the principle and method of measuring the impedance of the middle ear, the paper reviews the results that can be attained particularly in the diagnosis of closed-tympan transmission deafness and in the study of auditory-tube permeability. Clinical observations are presented which demonstrate the important role of the impedance-measuring method in the medical assessment of air flight personnel. S.D.

A80-32593 Investigation of the cardiac inotropic effect occurring at the onset of hypoxic hypoxia (Etude de l'effet inotrope cardiaque rencontré au début de l'hypoxie hypoxique). P. J.-P. Borredon, M. Fischler, C. Grousset, J.-D. Massard, P. Quandieu, M. Marin, and F. Lienhard (Service de Santé pour l'Armée de l'Air, Ecole d'Application; Centre de Recherches de Médecine Aeronautique, Paris, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 3rd Quarter, 1979, p. 217-224. 11 refs. In French.

The increase in the left ventricular pressure (LVP) during the initial phase of hypoxic hypoxia produced by artificial ventilation with pure nitrogen is investigated in the rabbit. ATP and creatine phosphate (CP) contents in the myocardium are determined. During the initial phase of hypoxic hypoxia, the LVP increases with decreasing CP content, while the ATP level remains unchanged. A linear relation between LVP increase and CP evolution is observed with epinephrine injection. The CP tissue level measurement appears to be an excellent criterion for determining the dynamic effort performed or to be performed by the heart cell effector. S.D.

A80-32594 Effect of normobaric hyperoxia on renal ammoniogenesis (L'effet de l'hyperoxie normobare sur l'ammoniogenese rénale). I. Nastoiu, I. Pintilie, and T. Bades (Centre Médicine Aéronautique, Bucarest, Rumania). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 3rd Quarter, 1979, p. 225-227. 10 refs. In French.

The present study on pilot trainees deals with an analysis of the influence of short-duration normobaric hyperoxia on renal ammonium generation as a mechanism of acid-base homeostasis. The analysis is intended to elucidate the extent to which normobaric (100 percent) oxygen respiration participates in disturbing the acid-base balance of the organism. It is shown that a decrease in the hydrogen ions at the renal tubular cell level, as a result of respiratory alkalosis induced by normobaric hyperoxia, does not bring about renal ammoniogenesis. S.D.

A80-32595 Preliminary results of microwave effects on the central nervous system of a primate /Macaca mulatta/ (Résultats préliminaires de l'étude des effets des micro ondes sur le systeme nerveux central d'un primate /Macaca-mulatta/). M. J. Klein and C. L. Milhaud (Centre de Recherche de Médecine Aérospatiale, Paris, France). *(Société Française de Radioprotection, Congrès International, 9th, Nainville-les-Roches, France, May 22-26, 1978.) Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 3rd Quarter, 1979, p. 232-237. 47 refs. In French. Direction des Recherches, Etudes et Techniques Contracts No. 74-1147; No. 77-1001.

Thirteen adult, male Macaque rhesus monkeys (4-8 kg) were exposed to ionizing radiation under different experimental conditions: 9 monkeys for electrophysiological cerebral studies, and 4 monkeys for the study of behavioral effects. Attention is given to cerebral electrogenesis in the monkey. Preliminary results indicate that the thermal-origin effects on cerebral electrogenesis and behavior appear to be well established above a certain average power density. Adaptation of the animal model to the wavelength under study will make it possible to reduce the discrepancies of present biological results. S.D.

A80-32596 Vibration transmission through different helicopter seat cushions (Transmissibilité des vibrations à travers différents coussins de siège d'hélicoptère). J. L. Poirier (Centre d'Essais en Vol, Laboratoire de Médecine Aérospatiale, Brétigny-sur-Orge, Essonne, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 4th Quarter, 1979, p. 262-268. In French.

Vibration tests were conducted in order to determine optimal cushion-backrest combinations for helicopter seats. Subjects were subjected to four types of acceleration at sinusoidal vibration frequencies of 2 and 30 Hz. A summary of results is provided, and the optimal (in terms of comfort) cushion is identified. B.J.

A80-32599 Gastric ulcers affecting pilots of the Peruvian air force (L'ulcère gastrique chez le personnel de pilotes de la force de l'air du Pérou). A. Cueto Duthurburu. *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 4th Quarter, 1979, p. 284-287. 12 refs. In French.

A80-32600 Acute microwave irradiation with regard to a case recently monitored at Begin Hospital (Irradiation aiguë aux micro-ondes à propos d'un cas récemment suivi à l'Hôpital Begin). R. P. Delahaye, P. Doury, J. Conrad, P. J. Metges, and S. Pattin (Hôpital d'Instruction des Armées Begin, Saint Mandé, Val-de-Marne; Service de Santé pour l'Armée de l'Air, Ecole d'Application; Service de Santé pour l'Armée de Terre, Ecole d'Application, Paris, France). *Médecine Aéronautique et Spatiale, Médecine Subaquatique et Hyperbare,* vol. 18, 4th Quarter, 1979, p. 293-296. In French.

The case history of a radar technician exposed to 20 min of global microwave irradiation is reported. The subject experienced a sensation of heat in his hands and lower back pain during the accidental exposure during routine antenna maintenance, which intensified following the exposure, resulting in inability to move and nausea for a period of four days. A comprehensive examination on the fourth day, however, revealed no clinical, hemotological, biochemical or opthalmological irregularities. Recommendations concerning the prevention of further accidental exposure to microwaves by workers are presented. A.L.W.

blank page

STAR ENTRIES

N80-21014*# National Aeronautics and Space Administration, Washington, D. C.

ON THE CELLULAR AUTOIMMUNE MECHANISM FOR ELIMINATING ERYTHROCYTES NORMALLY AND UNDER EXTREME INFLUENCES

Ya. I Pukhova, I. A. Terskov, A. Ya. Anikina, and A. V. Shashkin Mar. 1980 15 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), no. 2, Mar. - Apr. 1979 p 16-22 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75735) Avail: NTIS HC A02/MF A01 CSCL 06C

The presence of an autoimmune cellular mechanism for destroying erythrocytes on the basis of results of experiments in vivo is demonstrated in the blood and the organs. This mechanism is made up of a population of immunocompetent killer-lymphocytes which originates in the bone marrow and the thymus, and which is manifested in the local hemolysis effect. J.M.S.

N80-21015*# National Aeronautics and Space Administration, Washington, D. C.

ADRENOCORTICAL RESPONSE IN RATS SUBJECTED TO A STRESS OF RESTRAINT BY IMMOBILIZATION WHETHER ACCOMPANIED BY HYPOTHERMIA OR NOT

Laia Buchel, Monique Prioux-Guyonneau, and Lola Libian Apr. 1980 10 p refs Transl. into ENGLISH from Compt. Rend. Soc. Biol. (France), v. 168, no. 10-12, 1974 p 1202-1207 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76119) Avail: NTIS HC A02/MF A01 CSCL 06C

The restraint associated with hypothermia which increases the adrenal activity in rats was investigated. In rats with nomothermia or light hypothermia, the plasma and adrenal corticosterone levels increase at least threefold whatever the duration of restraint. Their return to normal values depends on the duration of the restraint. Exposure to cold produces in free rats a light hypothermia with an increase of the plasma and adrenal corticosterone levels, and in restraint animals an important hypothermia which does not potentiate the stimulation of adrenocortical activity induced by the restraint alone. R.C.T.

N80-21016*# National Aeronautics and Space Administration, Washington, D. C.

REDUCTION OF THE DURATION OF RESTRAINT FOR THE PRODUCTION OF EXPERIMENTAL ULCERS IN RATS: APPLICATION TO THE STUDY OF PROTECTIVE SUBSTANCES

L. Buchel and D. Gallaire Apr. 1980 7 p refs Transl. into ENGLISH from Compt. Rend. Soc. Biol. (France), v. 157, no. 6, 1963, p 1225-1228 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76136) Avail: NTIS HC A02/MF A01 CSCL 06C

An experiment is described which was designed to cause ulcers in rats, but requiring less restraint time than previously used procedures. The method and results are presented. F.O.S.

N80-21017*# National Aeronautics and Space Administration, Washington, D. C.

FIFTH WORKING CONFERENCE (SPACE BIOLOGY) AT THE 21ST PLENARY SESSION OF CCSPAR

S. S. Yurov Mar. 1980 4 p Transl. into ENGLISH from Radiobiologiya (USSR), v. 18, no. 4, May 1979 p 786 Conf. held at Innsbruck, 28 May - 10 Jun. 1978 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76107) Avail: NTIS HC A02/MF A01 CSCL 06C

Space radiobiology is discussed with emphasis on the biological effects of heavy charged particles. Findings of spaceborne experiments on fungi, eggs, and seeds are presented. K.L.

N80-21018 Pennsylvania State Univ., University Park.

PLASMA CORTISOL LEVELS AND AUDITORY FUNCTIONING IN HUMANS EXPOSED TO SHORT AND PROLONGED DURATIONS OF NOISE Ph.D. Thesis

Thomas Edward Bennett 1979 154 p
Avail: Univ. Microfilms Order No. 8005976

Audiometric and hormonal effects of noise exposure were studied in male and female subjects exposed to moderately intense noise (85 dBA, broadband, pink noise) for short and prolonged durations. The major focus was on: (1) characterizing changes in circulating cortisol levels (using radioimmunoassay) before, during, and after noise exposure; (2) measuring the effects of noise on three facets of auditory perception (pure tone threshold sensitivity, level of initial masing perception, and loudness discrimination ability); and (3) examining possible relationships among duration of noise exposure, curculating hormone levels, and hearing ability in male and female human subjects. It was established that noise exposure results in a decreased ability to detect pure tones (threshold shifts), an increased ability to detect changes in loudness (a recruitment phenomenon), and a decreased ability to detect, tones in the presence of background noise (discrimination impairments). Dissert. Abstr.

N80-21019*# National Aeronautics and Space Administration, Washington, D. C.

INITIAL DYNAMICS OF THE EKG DURING AN ELECTRICAL DEFIBRILLATION OF THE HEART

I. I. Bikov, Ya. P. Chebotarov, and V. G. Nikolaev Apr. 1980 12 p refs Transl. into ENGLISH from Fiziol. Zh. Akad. Nauk Ukr RSR (USSR), v. 15, no. 3, 1969 p 322-327 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(NASA-TM-76002) Avail: NTIS HC A02/MF A01 CSCL 06P

In tests on 11 mature dogs, immobilized by means of an automatic blocking and synchronization system, artefact free EKG were obtained, beginning 0.04-0.06 sec after passage of a defibrillating current. Different versions of the start of fibrillation were noted, in application of the defibrillating stimulus in the early phase of the cardiac cycle. A swinging phenomenon, increasing amplitude, of fibrillation was noted for 0.4-1.5 sec after delivery of a subthreshold stimulus. Conditions for a positive outcome of repeated defibrillation were found, and a relationship was noted between the configuration of the exciting process with respect to the lines of force of the defibrillating current and the defibrillation threshold. It was shown that the initial EKG dynamics after defibrillation is based on a gradual shift of the pacemaker from the myocardium of the ventricles to the sinus node, through phases of atrioventricular and atrial automatism. Author

N80-21020*# National Aeronautics and Space Administration, Washington, D. C.

ATHEROSCLEROTIC CHANGES OF VESSELS CAUSED BY RESTRICTION OF MOVEMENT

G. S. Gvishiani, N. G. Kobakhidze, M. G. Mchedlishvili, and T. I. Dekanosidze Mar. 1980 7 p refs Transl. into ENGLISH from Soobshch. Akad. Nauk Gruz. SSR (USSR), v. 59, no. 3, 1970 p 701-704 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(NASA-TM-76022) Avail: NTIS HC A02/MF A01 CSCL 06S

The effect of restriction of movement on the development of atherosclerosis was studied in rabbits. Drastic restriction of movement for 20 and 30 days causes atherosclerotic alterations of the aorta and shifts in ECG which are characteristic of coronary atherosclerosis. At the same time, shortening of the duration of blood coagulation and an increase in the content of catecholamines and beta-lipoproteids occur. R.C.T.

N80-21021*# National Aeronautics and Space Administration, Washington, D. C.

COLD SHIVERING ACTIVITY AFTER UNILATERAL DESTRUCTION OF THE VESTIBULAR APPARATUS

G. I. Kuzmina Mar. 1980 11 p refs Transl. into ENGLISH from Fiziol. Zh. SSSR (USSR), v. 65, no. 11, 1979 p 1655-1660 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(NASA-TM-76099) Avail: NTIS HC A02/MF A01 CSCL 06P

The bioelectric activity of muscles (flexors and extensors of the forelimbs and hindlimbs) during cold shivering after unilateral destruction of the vestibular apparatus. It was found, that unilateral delabyrinthing produces bilateral facilitation of cold shivering in the flexor extremities more pronounced on the ipsilateral side. In the extensor muscles there was an absence of bioelectric activity both before and after delabyrinthing. Enhancement of cold shivering in the flexor extremities following intervention was evidently conditioned by removal of the inhibiting effect of the vestibulary apparatus on the function of special centers. R.C.T.

N80-21022*# National Aeronautics and Space Administration, Washington, D. C.

GLYCEROL TEST IN DIAGNOSING INCREASED INTRALABYRINTH PRESSURE

B. Ya. Limar, N. S. Mischanchuk, M. V. Kulikova, and V. I. Yermilova Mar. 1980 10 p refs Transl. into ENGLISH from Zh. Ushnykh Nosovykh Gorlovykh Bolez. (USSR), no. 6, Nov. - Dec. 1979 p 55-59 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76110) Avail: NTIS HC A02/MF A01 CSCL 06E

The problem of increased intralabyrinth pressure as one of the causes of cochlear-vestibular disorders is discussed. A technique for conducting the glycerol test is presented. R.C.T.

N80-21023*# National Aeronautics and Space Administration, Washington, D. C.

COAGULATING ACTIVITY OF THE BLOOD, VASCULAR WALL, AND MYOCARDIUM UNDER HYPODYNAMIA CONDITIONS

B. V. Petrovskiy, ed., E. I. Chazov, ed., and S. V. Andreyev, ed. Mar. 1980 10 p Transl. into ENGLISH from the book "Aktualnyye Problemy Gemostaziologii. Molekulyarno-Biologicheskye i Fiziologicheskiye Aspekty" Moscow, Nauka Press, 1979 p 45-52 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76056) Avail: NTIS HC A02/MF A01 CSCL 06S

In order to study the effects of hypodynamia on the coagulating properties of the blood, vascular wall, and myocardium, chinchilla rabbits were kept for varying periods in special cages which restricted their movements. At the end of the experiment, blood samples were taken and the animals were sacrificed. Preparations were made from the myocardium venae cavae, and layers of the aorta. Two resultant interrelated and mutually conditioned syndromes were discovered: thrombohemorrhagic in the blood and hemorrago-thrombotic in the tissues. R.C.T.

N80-21024*# National Aeronautics and Space Administration, Washington, D. C.

PROPHYLAXIS AND TREATMENT OF SEASICKNESS

M. Yefremenko Mar. 1980 7 p ref Transl. into ENGLISH of Morsk. Sb. (USSR), no. 6, Jun. 1979 p 40-42 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76108) Avail: NTIS HC A02/MF A01 CSCL 06E

Depending upon the dominant type of symptoms, seasickness is divided into three forms: nervous, gastro-intestinal, and cardiovascular. Various medications are recommended appropriate to these forms. The first goal is normalization of impaired system functions as well as metabolism and the electrolyte and acid-base condition of the organism. Dietary recommendations are made and specific suggestions on the use of physical exercise, including prophylatic vestibular training exercises. Author

N80-21025*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF SPACE FLIGHT ON SODIUM, COPPER, MANGANESE AND MAGNESIUM CONTENT IN THE SKELETAL BONES

A. A. Prokhonchukov, V. P. Taitsev, B. A. Shakhunov, V. A. Zhizhina, A. G. Kolesnik, and N. A. Komissarova Oct. 1979 11 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), no. 6, Nov. - Dec. 1978 p 65-70 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75506) Avail: NTIS HC A02/MF A01 CSCL 06P

Sodium content decreased in the human skeletal bones and rose in the rat bones following space flight. In man copper content rose in the femoral bone and decreased in the vertebral body and the sternum, but was unchanged in the rest of the bones. Magnesium content was decreased in the femoral bone and the sternum, and in the vertebrae, but remained unchanged in the rest of the bones. Possible mechanisms of the changes detected are discussed. Author

N80-21026*# National Aeronautics and Space Administration, Washington, D. C.

EFFECTS OF HYPOKINESIA AND HYPODYNAMIA ON THE INTRAORGANIC ARTERIES OF THE HEART

L. A. Aleksina Mar. 1980 7 p refs Transl. into ENGLISH from Arkh. Anat., gistol. embriol. (USSR), v. 61, no. 11, 1971 p 92-95 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76069) Avail: NTIS HC A02/MF A01 CSCL 06S

The experiments were performed on rabbits kept in small cages for 2-12 weeks. Their motor activity was greatly restricted. The arteries of the heart were injected with an India ink gelatine mass, injection was directly into the coronary arteries. After fixation in 10% formaline solution 120 micron sections were cut. These were cleared by the Malygin method and examined with a light microscope. After exposure to hypokinetic conditions the picture of the cardiac arterial bed changed. During the first weeks the capillaries of the myocardium were significantly constricted, their course becoming sinuous. With prolonged exposure to hypokinetic conditions the vessels were found to dilate gradually and myocardial architectonics changed. Author

N80-21027# Illinois Univ. at the Medical Center, Chicago. Dept. of Occupational and Environmental Medicine

MODEL FOR MEASURING THE HEALTH IMPACT FROM CHANGING LEVELS OF AMBIENT AIR POLLUTION: MORBIDITY STUDY

Tsukasa Namekata, Bertram W. Carnow, Zanet Flournoy-Gill, Eileen B. OFarrell and Domenic Reda Aug. 1979 74 p refs
(Contract EPA-68-02-2492)
(PB80-107030; EPA-600/1-79-024) Avail: NTIS HC A04/MF A01 CSCL 06T

The relationship between human health and ambient air concentrations of the major pollutants in the city of Chicago is examined using linear regression models to quantitatively estimate the degree of the air pollution contribution to emergency room visits for cardiac and respiratory diseases. According to the results, sulfur dioxide based on patient exposure levels accounts for about 13% of the variation of emergency room visits for acute bronchial and lower respiratory infections and about 22% for total cardiac diagnoses. Nitric oxide based on measurements from the closest site to the hospitals can account for about 7% of the variation of visits for total respiratory diagnoses, 6% for allergic conditions and upper respiratory infections. 4% for total cardiac diagnoses and 4% for hypertension and vascular heart diseases GRA

N80-21028# Oregon State Univ., Corvallis Dept of Electrical and Computer Engineering
ABSORPTION CHARACTERISTICS OF PROLATE SPHEROIDAL MODEL OF MAN AND ANIMALS AT AND NEAR RESONANCE FREQUENCY Final Report, 15 Sep. 1976 - 15 Mar. 1978
Vijai K. Tripatai and Hyuckjae Lee Aug. 1979 74 p refs
(Grant EPA-R-804697)
(PB80-108293; EPA-600/1-79-025) Avail: NTIS HC A04/MF A01 CSCL 06R

The absorption characteristics of prolate spheroidal models consisting of homogeneous biological tissues radiated with plane waves at an arbitrary angle of incidence at and near the resonance frequency were evaluated. A general formulation of Stevenson's method in the third approximation is presented which can be applied to an arbitrary angle of incidence and leads to an improvement in frequency range of validity and accuracy as compared with first order solutions. The extended boundary condition emthod is also presented since it was found to be inplementable for realistic models at frequencies approaching resonance. GRA

N80-21029# Research Triangle Inst., Research Triangle Park, N. C.
FORMULATION OF A PRELIMINARY ASSESSMENT OF HALOGENATED ORGANIC COMPOUNDS IN MAN AND ENVIRONMENTAL MEDIA Annual Report, Nov. 1976 - Dec. 1978
Edo D. Pellizzari, Mitchell D. Erickson, and R. A. Zweidinger Jul. 1979 469 p refs
(Contract EPA-68-01-4731)
(PB80-112170; EPA-560/13-79-006) Avail: NTIS HC A20/MF A01 CSCL 06S

A model is developed for making a comparative assessment of halogenated organics in man and environmental media. The most prominent and biologically important substances are selected for an epidemiological study K.L.

N80-21030# Massachusetts Inst. of Tech., Cambridge Artificial Intelligence Lab.
K-LINES: A THEORY OF MEMORY
Marvin Minsky Jun. 1979 25 p refs
(Contract N00014-79-C-0260)
(AD-A078116; AI-M-516) Avail: NTIS HC A02/MF A01 CSCL 05/10

Most theories of memory suggest that when we learn or memorize something, some representation of that something is constructed, stored, and later retrieved. This raises questions like: How is information represented? How is it stored? How is it retrieved? Then, how is it used? This paper tries to deal with all of these at once. When you get an idea and want to remember it, you create a K-line for it. When later activated, the K-line induces a mental state resembling the one that created it. A partial mental state is a subset of those mental agencies operating at one moment. This view leads to many ideas about the development, structure and physiology of Memory, and about how to implement frame-like representations in a distributed processor. GRA

N80-21031# National Technical Information Service, Springfield, Va.
SIGNS AND DISPLAY SYSTEMS: GRAPHIC DESIGN AND HUMAN ENGINEERING. A BIBLIOGRAPHY WITH ABSTRACTS Progress Report, 1964 - Nov. 1979
Edith Kenton Dec. 1979 196 p Supersedes NTIS/PS 78/1195; NTIS/PS-77/1081; NTIS/PS-76/0967; NTIS/PS-75/073
(PB80-803158; NTIS/PS-78/1195; NTIS/PS-77/1081; NTIS/PS-76/0967; NTIS/PS-75/073) Avail: NTIS HC $30.00/MF $30.00 CSCL 05E

The bibliography contains annotated references to research reports covering varied aspects of design of signs and displays, particularly in the transportation field. Specific topics include highway sign design, highway sign legibility, traffic control devices, transportation graphics, visual perception of aircraft instrument display systems; human engineering of symbols; and legibility of maps. This updated bibliography contains 189 abstracts, 19 of which are new entries to the previous edition. GRA

N80-21032# Federal Aviation Administration, Washington, D. C.
SUMMARY OF DEPARTMENT OF TRANSPORTATION/FEDERAL AVIATION ADMINISTRATION TASK FORCE ON CREW WORKLOAD REPORT Final Report, May 1977 - Aug. 1978
George C. Hay, Charles D. House, and Richard L. Sulzer Dec. 1978 216 p refs
(AD-A068189; FAA-EM-78-15) Avail: NTIS HC A10/MF A01 CSCL 01/2

An analysis of the total accident experience of U.S. certificated air-route carriers reveals that there is no evidence that a flight deck crew of two in an appropriately designed aircraft is less safe than a crew of three pilots. A review of the procedures followed in the airworthiness certification of recent U.S. air-carrier aircraft indicates that manufacturers have demonstrated pilot workload in a fully modern and competent fashion, under the cognizance of FAA, and that actual crew complement approval is based on both the results of the workload demonstrations and the experience gained in a significant flight test program. A.R.H.

N80-21033*# Virginia Univ., Charlottesville Dept. of Civil Engineering.
HUMAN COMFORT RESPONSE TO DOMINANT RANDOM MOTIONS IN LONGITUDINAL MODES OF AIRCRAFT MOTION
Ralph W. Stone, Jr. Jan. 1980 130 p refs
(Contract NAS1-14908)
(NASA-CR-159186; UVA/528156/MAE-CE79/130) Avail: NTIS HC A07/MF A01 CSCL 05H

The effects of random vertical and longitudinal accelerations and pitching velocity passenger ride comfort responses were examined on the NASA Langley Visual Motion Simulator. Effects of power spectral density shape were studied for motions where the peak was between 0 and 2 Hz. The subjective rating data and the physical motion data obtained are presented without interpretation or detailed analysis. There existed motions in all other degrees of freedom as well as the particular pair of longitudinal airplane motions studied. These unwanted motions, caused by the characteristics of the simulator may have introduced some interactive effects on passenger responses J.M.S.

N80-21034*# Virginia Univ., Charlottesville Dept. of Civil Engineering.
HUMAN COMFORT RESPONSE TO RANDOM MOTIONS WITH A DOMINANT PITCHING MOTION
Ralph W. Stone, Jr. Feb. 1980 94 p refs
(Contract NAS1-14908)
(NASA-CR-159140; UVA/528156/MAE-CE79/117) Avail: NTIS HC A05/MF A01 CSCL 05H

The effects of random pitching velocities on passenger ride comfort response were examined on the NASA Langley Visual Motion Simulator. The effects of power spectral density shape and frequency ranges from 0 to 2 Hz were studied. The subjective rating data and the physical motion data obtained are presented. No attempt at interpretation or detailed analysis of the data is made. Motions in all degrees of freedom existed as well as the intended pitching motion, because of the characteristics of the simulator. These unwanted motions may have introduced some interactive effects on passenger responses which should be considered in any analysis of the data. J.M.S.

N80-21035# Virginia Polytechnic Inst. and State Univ., Blacksburg Human Factors Lab.
RESEARCH ON NEW ELECTRONIC DISPLAY TECHNOLOGIES Annual Summary Report, 1 Mar. 1978 - 31 Oct. 1979
H. L. Snyder, James C. Gutmann, and Willard W. Farley Dec. 1979 45 p refs
(Contract N00014 78 C 0238)
(AD A079323; VPI HFL 79 12/ONR 79 1) Avail: NTIS HC A03/MF A01 CSCL 05/8

This report summarized the work performed during the first year, dealing with two tasks. The first task, entitled 'Human Engineering Survey and Analysis', reviews the current flap panel display technologies, a summary of the human operator-critical characteristics of each technology, a technical summary of relevant human operator visual characteristics, and an evaluation of each technology by current visual display theoretical evaluation approaches. The second task, entitled 'Hue/Luminance Contrast Tradeoffs,' involved laboratory research designed to develop a metric by which luminance contrast and chrominance contrast can be traded off in display design to provide a metric of total effective display contrast. Work to date on both these tasks is summarized in this report. GRA

N80-21036# Calspan Advanced Technology Center, Buffalo, N.Y.
ESTABLISHMENT OF THE REPEATABILITY OF PERFORMANCE OF THE SA103C THREE YEAR OLD CHILD TEST DUMMIES Final Report, Sep. 1978 - Jun. 1979
Kenneth N. Naab and Stephen A. Baum Jun. 1979 137 p refs
(Contract DOT-HS-8-02022)
(PB80-112204, CALSPAN-6385-V-1, DOT-HS-805-071) Avail: NTIS HC A07/MF A01 CSCL 13I

The performance repeatability of four SA103C three year old child test dummies was investigated. The primary measures of dummy sled test performance analyzed with the statistical methods were: (1) peak head resultant acceleration; (2) peak chest resultant acceleration; (3) maximum head horizontal displacement; and (4) maximum knee horizontal displacement. An analysis of the absolute deviations of each data point from the overall means demonstrated that the dummy variations were within an acceptable level for all performance measures. In addition, performance comparison overlay time history graphs are presented for direct comparisons. GRA

N80-21959*# National Aeronautics and Space Administration, Washington, D. C.
EFFECT OF IMMOBILIZATION STRESS ON THE LEVEL OF MACROERGIC PHOSPHATES IN THE BLOOD OF RATS
V. I. Pudov and V. A. Sosenkov Mar. 1980 7 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), no. 5, 1977 p 73-75 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76021) Avail: NTIS HC A02/MF A01 CSCL 06C

The effect of immobilization for 1, 2, and 24 hours, and of daily (for 2 hours for 7 days) immobilization on the blood nucleotide (ATP, ADP, AMP) level was studied on 79 male rats. A progressive reduction of the ATP content was most pronounced in immobilization for 24 hours. This was accompanied by an increase of lymphopenia and eosinopenia. A fall of the relative weight of the thymus and a weight gain of the adrenal glands was observed along with a reduction of ascorbic acid concentration in both of them. In case of daily immobilization for 2 hours, the ATP and ADP content on the 1st and 2nd day was below the normal level, and then showed a gradual increase, with complete normalization in 6-7 days, except for inorganic phosphorus the level of which remained lower than normal. R.E.S.

N80-21960*# National Aeronautics and Space Administration, Washington, D. C.
EFFECT OF TRANQUILIZERS ON ANIMAL RESISTANCE TO THE ADEQUATE STIMULI OF THE VESTIBULAR APPARATUS
Ya. B. Maksimovich and N. V. Khinchikashvili Mar. 1980 9 p refs Transl. into ENGLISH from Farmakol. Toksikol. (USSR), v. 42, no. 6, Jun. 1979 p 606-610 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76109) Avail: NTIS HC A02/MF A01 CSCL 06C

The effect of tranquilizers on vestibulospinal reflexes and motor activity was studied in 900 centrifuged albino mice. Actometric studies have shown that the tranquilizers have a group capacity for increasing animal resistance to the action of adequate stimuli to the vestibular apparatus. Author

N80-21961*# National Aeronautics and Space Administration, Washington, D. C.
EFFECTS OF IMMOBILIZATION ON ARTICULAR CARTILAGE: AUTOHISTORADIOGRAPHIC FINDINGS WITH S35
C. DiGiovanni and E. deSantis Mar. 1980 33 p refs Transl. into ENGLISH from Arch. Putti Chir. Organi Movimento (Italy), v. 28, 1977 p 23-47 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original document prepared by Catholic Univ., Rome
(Contract NASw-3199)
(NASA-TM-76070) Avail: NTIS HC A03/MF A01 CSCL 06C

The effect of immobilization on the articular cartilage of rabbits was studied by light microscope. The knee joint of each rabbit was immobilized in a plaster in a position midway between flexion and extension for a 10 to 120 days period. Degenerative changes in the articular cartilage of increasing severity were observed. The fixation of the labeled SO4 by cartilage cells was decreased in advanced immobilization. R.E.S.

N80-21962*# National Aeronautics and Space Administration, Washington, D. C.
INVESTIGATION OF THE EFFECT OF SPACE FLIGHT FACTORS ON CHROMOSOMES IN SEEDS
L. G. Dubinina Mar. 1980 4 p Transl. into ENGLISH from the book "Issledovaniya Deystviya Faktorov Kosmicheskogo Poleta na Khromosomy i Semenakh" Moscow, Nauka Press, 1978 p 106-107 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76113) Avail: NTIS HC A02/MF A01 CSCL 06C

Frequency of mutations in postflight air-dry Crepis capillaris seeds kept for five days aboard an artificial satellite was 36.0 + or - 1.9%, vs. 19.01 + or - 1.2% for seeds in a similar ground experiment. Both groups of seeds were prepared in identical concentrations and were treated by the same mutagen. The spectrum of mutations in postflight Crepis capillaris seeds contained a large number of chromosome-type mutations and some cells showed multiple alterations. Postflight seeds not treated with mutagens had a slightly higher level of mutability. R.E.S.

N80-21963*# National Aeronautics and Space Administration, Washington, D. C.
EFFECTS OF MOTOR PATTERNS ON WATER-SOLUBLE AND MEMBRANE PROTEINS AND CHOLINESTERASE ACTIVITY IN SUBCELLULAR FRACTIONS OF RAT BRAIN TISSUE
L. Z. Pevzner, L. Venkov, and L. Cheresharov Apr. 1980 9 p refs Transl. into ENGLISH from Ukr. Biokhim. Zh. (USSR), v. 50, no. 1, 1978 p 20-24 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by Acad. of Sci., Leningrad and Bulgarian Acad. of Sci., Sofia
(Contract NASw-3198)
(NASA-TM-76115) Avail: NTIS HC A02/MF A01 CSCL 06C

Albino rats were kept for a year under conditions of daily motor load or constant hypokinesia. An increase in motor activity results in a rise in the acetylcholinesterase activity determined in the synaptosomal and purified mitochondrial fractions while hypokinesia induces a pronounced decrease in this enzyme activity. The butyrylcholinesterase activity somewhat decreases in the synaptosomal fraction after hypokinesia but does not change under the motor load pattern. Motor load causes an increase in the amount of synaptosomal water-soluble proteins possessing an intermediate electrophoretic mobility and seem to correspond to the brain-specific protein 14-3-2. In the synaptosomal fraction the amount of membrane proteins with a low electrophoretic mobility and with the cholinesterase activity rises. Hypokinesia, on the contrary, decreases the amount of these membrane proteins. Author

N80-21964*# National Aeronautics and Space Administration, Washington, D. C.

THE EFFECTS OF RESTRAINT ON UPTAKE OF RADIOACTIVE SULFATE IN THE SALIVARY AND GASTRIC SECRETIONS OF RATS WITH PYLORIC LIGATION

J. A. Chayvialle, R. Lambert, and D. Ruet Mar. 1980 9 p refs Transl. into ENGLISH from Comt. Rend. Soc. Biol. (France), v. 166, no. 1, 1978 p 114-118 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76073) Avail: NTIS HC A02/MF A01 CSCL 06C

The effects of restraint on the amount of nondialysable radioactive sulfate in the gastric wall and the gastric juice and saliva were investigated. It was found that restraint provokes a significant decrease in salivary radioactive sulfate. This, in turn, is responsible for the decrease of sulfate in the gastric contents observed under these conditions in rats with pyloric ligation. Esophageal ligation associated with this prevents passage of saliva and lowers the amount of radioactive sulfate in the gastric juice. Restraint causes then an increase in the amount of sulfate in the gastric juice, the value observed being very much lower than that of rats with a free esophagus. At the level of the gastric wall, the change observed during restraint does not reach a significant threshold. R.E.S.

N80-21965*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF SCENEDESMUS ACUMINATUS GREEN ALGAE EXTRACTS ON THE DEVELOPMENT OF CANDIDA LIPOLYTIC YEAST IN GAS CONDENSATE-CONTAINING MEDIA

B. I. Bilmes, G. A. Kasymova, V. I. Runov, and N. N. Karavayeva Mar. 1980 7 p refs Transl. into ENGLISH from Uzb. Biol. Zh. (USSR), no. 4, Apr. 1979 p 12-14 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76081) Avail: NTIS HC A02/MF A01 CSCL 06C

Data are given of a comparative study of the growth and development as well as the characteristics of the biomass of the C. Lipolytica yeast according to the content of raw protein, protein, lipids, vitamins in the B group, and residual hydrocarbons during growth in media with de-aromatized gas-condensate FNZ as the carbon source with aqueous and alcohol extracts of S. acuminatus as the biostimulants. It is shown that the decoction and aqueous extract of green algae has the most intensive stimulating effect on the yeast growth. When a decoction of algae is added to the medium, the content of residual hydrocarbons in the biomass of C. lipolytica yeast is reduced by 4%; the quantity of protein, lipids, thamine and inositol with replacement of the yeast autolysate by the decoction of algae is altered little. Author

N80-21966*# National Aeronautics and Space Administration, Washington, D. C.

CHANGES OF GAS METABOLISM, GAS HOMEOSTASIS AND TISSUE RESPIRATION IN RATS DURING PROLONGED HYPOKINESIA

V. L. Popkov, E. S. Mailyan, Yu. S. Galusko, Ye. A. Kovalenko, Ye. I. Zaytseva, I. A. Nitochkina, L. V. Stulova, and A. F. Ryazhskiy Dec. 1979 10 p refs Transl. into ENGLISH from Fiziol. Zh. SSSR (USSR), v. 66, no. 12, 1970, p 1808-1812
(Contract NASw-3198)
(NASA-TM-75982) Avail: NTIS HC A02/MF A01 CSCL 06C

The oxygen uptake and tissue gas homeostasis of restrained albinic rats remained relatively constant during a 60 day experiment. The gas metabolism in some tissues changed, and O2 consumption increased in the liver and decreased in the myocardium. Capacity for physical work was reduced by five times. Hypokinesia for 60 days resulted in a delay in the animals growth. Author

N80-21967*# National Aeronautics and Space Administration, Washington, D. C.

CONTENT OF LIPIDS IN BLOOD AND TISSUES OF ANIMALS DURING HYPODYNAMIA

I. V. Federov, Yu. P. Rylnikov, and T. M. Lobova Jan. 1980 11 p refs Transl. into ENGLISH from Kardiologiya (USSR), v. 13, no. 7, 1973 p 50-54 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76023) Avail: NTIS HC A02/MF A01 CSCL 06C

Experiments on 97 rats and 50 rabbits were undertaken to study the influence of hypodynamia on the lipid content in the blood, liver, heart, and in the aorta. Reduction of muscular activity contributed to the increase of cholesterol and beta lipoprotein levels in the blood and to accumulation of cholesterol in the liver and the heart. The total lipid content in these tissues decreased. In the aorta the total lipid content increased, while lecithin and cephalin figures went down. The character of biochemical changes in hypodynamia resembles in many ways the lipid metabolism changes in atherosclerosis. Author

N80-21968*# National Aeronautics and Space Administration, Washington, D. C.

METABOLISM AND ACTIVITY OF ZOXAZOLAMINE IN WHITE RATS DURING FORCED IMMOBILIZATION WITH AND WITHOUT HYPERTHERMIA

L. Buchel and M. Murawsky Mar. 1980 24 p refs Transl. into ENGLISH from Arch. Sci. Physiol. (France), v. 27, 1973 p 37-53 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76074) Avail: NTIS HC A02/MF A01 CSCL 06C

The influence of restraint of rats held either at normal body temperature or at lowered body temperature as related to the effects of the muscle relaxant zoxazolamine was studied. The techniques used and experimental results obtained are presented. R.C.T.

N80-21969# Drexel Univ., Philadelphia, Pa. Dept. of Chemistry.

PHYSICAL AND CHEMICAL STUDIES OF CHLOROPHYLL IN MICROEMULSIONS Progress Report

Raymond A. Mackay 1979 22 p refs
(Contract EG-77-S-02-4452)
(COO-4452-001) Avail: NTIS HC A02/MF A01

Initial studies were designed to provide fundamental information on both the nature of photoreactions in microemulsions and the utility of these media as solvents for absorbers of solar energy. As a test system, the photoreduction of absorbed dye (methyl red and crystal violet) sensitized by chlorophyll a in an anionic mineral oil in water microemulsion was studied. Using ascorbate as the water soluble reducing agent and pigment concentrations of less than one per drop, the reaction exhibits a pseudo first order dependence on crystal violet, but a pseudo zero order dependence on methyl red. The effect of sensitizer, ascorbate concentration, and light intensity on the quantum yield was also examined. These studies were then extended to include concentrated chlorophyll solutions, microemulsions of varying charge type, product catalysis and synthetic porphyrins. DOE

N80-21971*# National Aeronautics and Space Administration, Washington, D. C.

AGE RELATED CHANGES IN THE BONE TISSUE UNDER CONDITIONS OF HYPOKINESIA

E. P. Podrushnyak and E. I. Suslov Apr. 1980 7 p refs Transl. into ENGLISH from Fiziol. Zh. (USSR), v. 9, no. 6, Nov. Dec. 1973 p 841-843 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by USSR Academy of Medical Sciences, Kiev
(Contract NASw-3199)
(NASA-TM-76019) Avail: NTIS HC A02/MF A01 CSCL 06S

Microroentgenography of nine young people, aged 24-29, before and after hypokinesia (16-37 days strict bed rest), showed that the heel bone density of those with initially high bone density generally decreased and that of those with initially low bone density generally increased. X-ray structural analysis of the femurs of 25 corpses of accidentally killed healthy people, aged 18-70, data are presented and discussed, with the conclusion that the bone hydroxyapatite crystal structure stabilizes by ages 20 to 25, is stable from ages 25 to 60 and decreases in density after age 60. It is concluded that bone tissue structure changes, both with age, and in a comparatively short time in hypokinesia. Author

N80-21972*# Virginia Polytechnic Inst. and State Univ., Blacksburg.
DEVELOPMENT OF A STEREOFLUOROSCOPY SYSTEM Final Report
D. B. Rivers Oct. 1979 30 p refs
(Contract NAS9-15287)
(NASA-CR-160568) Avail: NTIS HC A03/MF A01 CSCL 06B

A technique of 3-D video imaging was developed for use on manned missions for observation and control of remote manipulators. An improved medical diagnostic fluoroscope with a stereo, real-time output was also developed. An explanation of how this system works, and recommendations for future work in this area are presented. R.C.T.

N80-21973*# National Aeronautics and Space Administration, Washington, D. C.
EFFECT OF SYREPAR AND OXAPHENAMIDE ON LIVER FUNCTION IN EXPERIMENTAL HYPOKINESIA
L. N. Skakun Jan. 1980 9 p refs Transl. into ENGLISH from Farmakol. Toksikol. (USSR), v. 41, no. 4, Jun. - Aug. 1978 p 465-469 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by Ternopol Medical Inst., USSR
(Contract NASw-3198)
(NASA-TM-76011) Avail: NTIS HC A02/MF A01 CSCL 06S

Experiments on albino rats showed that 30 day hypokinesia changes the reaction of the liver to cholagogues. The choleretic action of oxaphenamide as well as its inhibitory effect on synthesis of bile acids diminishes, while the influence of bilirubin secretion increases. Author

N80-21974*# National Aeronautics and Space Administration, Washington, D. C.
EFFECT OF HYPERBARIC OXYGENATION ON CARBOHYDRATE METABOLISM PROTEIN SYNTHESIS IN THE MYOCARDIUM DURING SUSTAINED HYPODYNAMIA
G. A. Makarov Jan. 1980 9 p refs Transl. into ENGLISH from Kardiologiya (USSR), v. 14, no. 2, 1974 p 73-77 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(NASA-TM-76012) Avail: NTIS HC A02/MF A01 CSCL 06S

Glycolysis and the intensity of protein synthesis were studied in 140 white male rats in subcellular fractions of the myocardium during 45 day hypodynamia and hyperbaric oxygenation. Hypodynamia increased: (1) the amount of lactic acids; (2) the amount of pyruvic acid; (3) the lactate/pyruvate coefficient; and (4) the activities of aldolase and lactate dehydrogenase. Hyperbaric oxygenation was found to have a favorable metabolic effect on the animals with hypodynamia. R.E.S.

N80-21975*# National Aeronautics and Space Administration, Washington, D. C.
RELIABILITY AND INFORMATION CONTENT OF TESTS WITH CARDIOLEADER IN CYCLIC TYPES OF SPORTS
V. L. Utkin Mar. 1980 11 p refs Transl. into ENGLISH from Teor. Prakt. Fiz. Kultury (USSR), no. 5, May 1979 p 10-14 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76090) Avail: NTIS HC A02/MF A01 CSCL 06S

Tests with cardioleader to control the physical, technical and tactical preparedness of athletes in cyclic types of sports are discussed. Ways of increasing the reliability and information content of the tests were studied. R.E.S.

N80-21976*# National Aeronautics and Space Administration, Washington, D. C.
PRESERVATION OF EQUILIBRIUM IN ORTHOGRADE AND INVERTED BODY POSITIONS
L. P. Semenov and N. A. Rebyakova Mar. 1980 6 p Transl. into ENGLISH from Teor. Prakt. Fiz. Kulture (USSR), no. 5 May 1979 p 29-30 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76112) Avail: NTIS HC A02/MF A01 CSCL 06S

The mechanism for regulation of the vertical pose with retention of equilibrium in the inverted body position was investigated. R.E.S.

N80-21977*# National Aeronautics and Space Administration, Washington, D. C.
HAZARDS OF HIGH ALTITUDE DECOMPRESSION SICKNESS DURING FALLS IN BAROMETRIC PRESSURE FROM 1 ATM TO A FRACTION THEREOF
A. M. Genin Jan. 1980 10 p Transl. into ENGLISH of Conf. Paper from Inst. of Med. and Biol. Problems, Min. of Health, Moscow, 1979 p 1-12 Presented at 10th Conf. of Joint Soviet-Am. Working Group on Space Biol. and Med., Houston, Tex., Oct. 1979 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76015) Avail: NTIS HC A02/MF A01 CSCL 06S

Various tests related to studies concerning the effects of decompression sicknesses at varying pressure levels and physical activity are described. The tests indicate that there are no guarantees of freedom from decompression sicknesses when man transitions from a normally oxygenated normobaric nitrogen-oxygen atmosphere into an environment having a 0.4 atm or lower pressure and he is performing physical work. R.E.S.

N80-21978*# National Aeronautics and Space Administration, Washington, D. C.
MAIN TRENDS IN EXPERIMENTAL MORPHOLOGICAL RESEARCH IN ANGIOLOGY AND OUTLOOK FOR ITS DEVELOPMENT
N. A. Dzhavakhishvili and Ye. P. Melman Jan. 1980 10 p Transl. into ENGLISH from Arkh. Anat., Gistol. Embriol. (USSR), v. 66, no. 2, 1970 p 21-25 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75980) Avail: NTIS HC A02/MF A01 CSCL 06E

The main prospective trends in the problem of collateral circulation and new trends in experimental angiology with respect to the effect of gravitational forces, hypodynamia and hypokinesia on the vascular bed are discussed. Author

N80-21979# Coast Guard Research and Development Center, Groton, Conn.
MARINE TRAFFIC DATA OF CHICAGO, ILLINOIS AND SOUTH SHORE OF LAKE MICHIGAN Final Report
J. J. Cherny, III, R. A. Silva, M. R. Young, and R. H. Charters Sep. 1979 118 p
(AD-A080060; CGR/DC-18/79) Avail: NTIS HC A06/MF A01 CSCL 15/5

Data was collected on the marine traffic and VHF-FM marine communications channel usage at Calumet Harbor, Chicago Harbor, and Lemont, Illinois, at the junction of the Chicago Sanitary and Ship Canal and Calumet-Sag Channel. The daily average of marine traffic, including large, medium, small and anchored vessels, and tugs-in-tow, transiting the Calumet Harbor/Indiana Harbor area is 48 and transiting Chicago Harbor is 312. The daily average of tug/barge and small vessel transits on the Chicago Sanitary and Ship Canal is 30; the Calumet-Sag Channel is 11. Approximately 300 hours of communications of VHF-FM Channel 16 and 150 hours of VHF-FM Channel 13 were recorded and monitored to determine channel efficiency (i.e., percentage of valid messages) and utilization. Channel 16 efficiency at Calumet Harbor is 47.76%; at Chicago Harbor, 66.50%; and at Lemont, 64.72%. R.E.S.

N80-21980*# Mitre Corp., Houston, Tex.
THE CREW ACTIVITY PLANNING SYSTEM BUS INTERFACE UNIT
M. A. Allen Dec. 1979 269 p refs
(Contract F19628-80-C-0001)
(NASA-CR-160566; MTR-473; JSC-16321) Avail: NTIS HC A12/MF A01 CSCL 05/4

The hardware and software designs used to implement a high speed parallel communications interface to the MITRE 307.2 kilobit/second serial bus communications system are described. The primary topic is the development of the bus interface unit. R.C.T.

N80-21981*# Life Systems, Inc., Cleveland, Ohio.
TESTING EVALUATION OF THE ELECTROCHEMICAL ORGANIC CONTENT ANALYZER Final Report
R. J. Davenport Nov. 1979 69 p refs
(Contract NAS9-15402)
(NASA-CR-160569; LSI-TR-334-4) Avail: NTIS HC A04/MF A01 CSCL 06K

The breadboard electrochemical organic content analyzer was evalauted for aerospace applications. An awareness of the disadvantages of expendables in some systems resulted in an effort to investigate ways of reducing the consumption of the analyzer's electrolyte from the rate of 5.17 kg/30 days. It was found that the electrochemical organic content analyzer can result in an organic monitor in the water quality monitor having a range of 0.1 to 100 mg/1 total organic carbon for a large number of common organic solutes. In a flight version it is anticipated the analyzer would occupy .0002 cu m, weigh 1.4 kg, and require 10 W or less of power. With the optimum method of injecting electrolyte into the sample (saturation of the sample with a salt) it would expend only 0.04 kg of electrolyte during 30 days of continuous operation. R.E.S.

N80-21982*# Texas A&M Univ., College Station. Adriance Lab.
THE EFFECT OF VARIETY AND MATURITY ON THE QUALITY OF FREEZE-DRIED CARROTS. THE EFFECT OF MICROWAVE BLANCHING ON THE NUTRITIONAL AND TEXTURAL QUALITY OF FREEZE-DRIED SPINACH Final Report
1979 131 p refs
(Contract NAS9-12434)
(NASA-CR-160567) Avail: NTIS HC A07/MF A01 CSCL 06H

Using carrots, the quality of freeze-dried products was studied to determine the optimum varieties and maturation stages for quality attributes such as appearance, flavor, texture, and nutritive value. The quality of freeze-dried carrots is discussed in terms of Gardner color, alcohol insoluble solids, viscosity, and core/cortex ratio. Also, microwave blanching of freeze-dried spinach was studied to determine vitamin interrelationships, anatomical changes, and oxidative deteriorations in terms of preprocessing microwave treatments. Statistical methods were employed in the gathering of data and interpretation of results in both studies. R.E.S.

N80-21983*# National Aeronautics and Space Administration, Washington, D. C.
PRINCIPLES FOR CLASSIFICATION OF WORK LOAD FOR WOMEN
A. O. Navakatikyan, A. P. Okhrimenko, A. N. Karakashyan, and V. A. Buzunov Mar. 1980 9 p refs Transl. into ENGLISH from Gig. Tr. Prof. Zabol. (USSR), no. 2, Jul. 1979 p 10-14 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76084) Avail: NTIS HC A02/MF A01 CSCL 05H

In an attempt to develop guidelines for classification by degree of intensity of various kinds of physical work performed by women, the effects of different work loads on women as compared to men were studied under industrial and experimental conditions, including response of the cardiovascular and respiratory systems to specified physical exercises of increasing intensity. Physiological criteria for assessing female labor in terms of intensity are proposed. Author

N80-21984# Andrulis Research Corp., Bethesda, Md.
A STUDY OF AGENT-REACTIVE FABRICS FOR USE IN PROTECTIVE CLOTHING Final Report, May 1978 - Jul. 1979
Gerald Zon Dec. 1979 114 p refs
(Contract DAAK11-78-C-0060)
(AD-A079940; AD-E410219; ARC/LS/TR-0060-2; ARCSL-CR-80002) Avail: NTIS HC A06/MF A01 CSCL 15/2

A broad investigation has been carried out in order to obtain modified fabrics which exhibit catalytic activity toward hydrolytic decomposition of chemical warfare agents. The major areas of study included the development of chemically modified Nomex and cotton-blend fabrics, mechanistic inquiries with regard to factors which control simulant/agent hydrolysis, and the design and construction of a suitable fabric testing apparatus for comparative evaluation of candidate fabrics. GRA

N80-21985# European Space Research and Technology Center, Noordwijk (Netherlands). Product Assurance Div.
GUIDELINES FOR SPACECRAFT CLEANLINESS CONTROL
Paris ESA May 1979 33 p
(ESA-PSS-51/QRA-23-ESTEC-ISS-1) Avail: NTIS HC A03/MF A01

Possible spacecraft failures or malfunctions due to contamination are described. Ways are indicated in which contamination levels are predicted, spacecraft contamination is reduced, and contamination levels on and around the spacecraft are monitored. The cleaning procedures, the requirements regarding cleaning agents and cleanliness monitoring are discussed. Author (ESA)

N80-21986# Purdue Univ., Lafayette, Ind. School of Electrical Engineering.
ADVANCED INDUSTRIAL ROBOT CONTROL SYSTEMS
R. Paul, J. Luh, T. Anderson, J. Bender, E. Berg, B. Brown, C. S. Lin, M. Reminton, M. Walker, and C.-H. Wu Jul. 1979 92 p refs
(Grant NSF APR-77-14533)
(PB80-106396; TR-EE79-35; NSF/RA-790231, Rept-2) Avail: NTIS HC A05/MF A01 CSCL 13I

Work performed to improve the performance of current industrial robots by developing a consistent theory and task description language is described. The work includes: (1) the development of a simple joint motion control scheme to provide for the execution of structured robot task programs and to provide the capability of performing tasks on a moving conveyor; (2) the integration of teaching into the task program; (3) a direct on-line approach to motion time optimization; and (4) an approach to Cartesian motion control of a manipulator employing a fast exact method. GRA

[illegible]

[illegible]

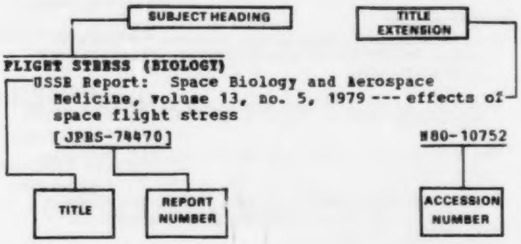
[illegible]

[illegible]

SUBJECT INDEX

AEROSPACE MEDICINE AND BIOLOGY */A Continuing Bibliography (Suppl. 208)* JULY 1980

Typical Subject Index Listing



SUBJECT HEADING
TITLE EXTENSION
FLIGHT STRESS (BIOLOGY)
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979 --- effects of space flight stress
[JPRS-74470]
N80-10752
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABDOMEN
Abdominal echotomography - Its place in the evaluation of flight personnel A80-32587

ABERRATION
MTF of the defocused optical system of the human eye for incoherent monochromatic light A80-30673

ABNORMALITIES
An evaluation protocol for fighter aircrew with non specific ST-T abnormalities A80-31585

ABSORPTIVITY
Absorption characteristics of prolate spheroidal model of man and animals at and near resonance frequency [PB80-108293] N80-21028

ACCELERATION STRESSES (PHYSIOLOGY)
Investigation of transitional characteristics of the equilibrium preservation system --- human vertical posture response during acceleration A80-29909
Influence of longitudinal accelerations on fluid-electrolyte metabolism and renal function under conditions of immersion A80-32230
Functional state of the cardiovascular system following a three-day immersion and prophylactic rotations in a small-radius centrifuge A80-32233
Vibration transmission through different helicopter seat cushions A80-32596
Effect of tranquilizers on animal resistance to the adequate stimuli of the vestubular apparatus [NASA-TM-76109] N80-21960

ACCELERATION TOLERANCE
Influence of microwave irradiation on the resistance of rats to transversely applied g forces A80-31446
Investigation of the predictive value of electronystagmograms /ENGs/ in professional-selection vestibulometry A80-32235

ACOUSTIC IMPEDANCE
Impedance measurement - Importance in otologic assessment of air flight personnel A80-32592

ADAPTATION
Cardiac output at high altitude --- Russian book A80-30434
Preservation of equilibrium in orthograde and inverted body positions [NASA-TM-76112] N80-21976

ADRENAL GLAND
Adrenocortical response in rats subjected to a stress of restraint by immobilization whether accompanied by hypothermia or not [NASA-TM-76119] N80-21015

AEROSPACE ENGINEERING
Testing evaluation of the electrochemical organic content analyzer [NASA-CR-160569] N80-21981

AEROSPACE ENVIRONMENTS
Fifth Working Conference (Space Biology) at the 21st Plenary Session of COSPAR [NASA-TM-76107] N80-21017
Investigation of the effect of space flight factors on chromosomes in seeds [NASA-TM-76113] N80-21962

AEROSPACE MEDICINE
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory A80-30513
An evaluation protocol for fighter aircrew with non specific ST-T abnormalities A80-31585
Aeromedical and physiologic aspects of fighter pilot selection and performance - Theoretical considerations A80-31586
Aeromedical evaluation of aircraft accidents - Human engineering aspects A80-31590
Influence of longitudinal accelerations on fluid-electrolyte metabolism and renal function under conditions of immersion A80-32230
The circadian rhythm of aerobic efficiency A80-32231
Effect of gas-mixture density on the performance of the respiratory system A80-32232
Functional state of the cardiovascular system following a three-day immersion and prophylactic rotations in a small-radius centrifuge A80-32233
Sleep pattern variation during adaptation to high-altitude hypoxia A80-32234
Air safety in 1978 from the medical point of view A80-32576
The investigator confronted with medical problems in technical investigations of aircraft accidents A80-32577
The importance of toxicological studies in aircraft accidents A80-32578
The contribution of histopathology to investigations following aircraft accidents A80-32579
A physical study of vibratory stress - Physiological interpretation - Importance in aircraft accidents A80-32580
The organization of medical aid in air disasters - Berlin-Tegel international airport A80-32581
Medical considerations in light aircraft accidents A80-32582
Considerations with regard to a test of the Essilor visiotest A80-32585

The application of echocardiography to the cardiological evaluation of flight personnel A80-32586
Abdominal echotomography - Its place in the evaluation of flight personnel A80-32587
Central field of vision and electroculography in moderate hypoxia A80-32588
On the feasibility of contact lenses for flight personnel A80-32589
Considerations regarding sudden deafness - Aeronautical incidents A80-32591
Impedance measurement - Importance in otologic assessment of air flight personnel A80-32592
Investigation of the cardiac inotropic effect occurring at the onset of hypoxic hypoxia A80-32593
Effect of normobaric hyperoxia on renal ammoniogenesis A80-32594
Gastric ulcers affecting pilots of the Peruvian air force A80-32599
Hazards of high altitude decompression sickness during falls in barometric pressure from 1 atm to a fraction thereof [NASA-TM-76015] N80-21977

AGE FACTOR
Age related changes in the bone tissue under conditions of hypokinesia [NASA-TM-76019] N80-21971

AGING (BIOLOGY)
Favorable effects of the antioxidants sodium and magnesium thiazolidine carboxylate on the vitality and life span of Drosophila and mice A80-29085

AGRICULTURE
The effect of variety and maturity on the quality of freeze-dried carrots. The effect of microwave blanching on the nutritional and textural quality of freeze-dried spinach [NASA-CR-160567] N80-21982

AIR POLLUTION
Model for measuring the health impact from changing levels of ambient air pollution: Morbidity study [PB80-107030] N80-21027

AIR QUALITY
Model for measuring the health impact from changing levels of ambient air pollution: Morbidity study [PB80-107030] N80-21027

AIRCRAFT ACCIDENT INVESTIGATION
Aeromedical evaluation of aircraft accidents - Human engineering aspects A80-31590
Injury dynamics in aircraft accident A80-31592
Air safety in 1978 from the medical point of view A80-32576
The investigator confronted with medical problems in technical investigations of aircraft accidents A80-32577
The importance of toxicological studies in aircraft accidents A80-32578
The contribution of histopathology to investigations following aircraft accidents A80-32579
Medical considerations in light aircraft accidents A80-32582
The place of the psychological factor among the causes of aircraft accidents in general aviation A80-32583

AIRCRAFT ACCIDENTS
Psycho-social aspects of aircraft accidents A80-31591
A physical study of vibratory stress - Physiological interpretation - Importance in aircraft accidents A80-32580
The organization of medical aid in air disasters - Berlin-Tegel international airport A80-32581

AIRCRAFT NOISE
A psychoacoustic study of impulsive helicopter noise A80-30813
The psychoacoustic effects of aircraft noise on sleep - An in situ study A80-30815
The influence of intermittent aircraft noise on sleep. II A80-32584

AIRCRAFT PILOTS
Aeromedical and physiologic aspects of fighter pilot selection and performance - Theoretical considerations A80-31586
Study of pilot's sight direction on Mercure flight simulator A80-32590
Gastric ulcers affecting pilots of the Peruvian air force A80-32599
Summary of Department of Transportation/Federal Aviation Administration task force on crew workload report [AD-A068189] N80-21032

AIRCRAFT SAFETY
Air safety in 1978 from the medical point of view A80-32576
Summary of Department of Transportation/Federal Aviation Administration task force on crew workload report [AD-A068189] N80-21032

AIRPORTS
The psychoacoustic effects of aircraft noise on sleep - An in situ study A80-30815
The influence of intermittent aircraft noise on sleep. II A80-32584

ALTITUDE ACCLIMATIZATION
Sleep pattern variation during adaptation to high-altitude hypoxia A80-32234

ANALOG TO DIGITAL CONVERTERS
Analog-digital converter for the ELKAR electrocardiograph A80-31637

ANALYZERS
Testing evaluation of the electrochemical organic content analyzer [NASA-CR-160569] N80-21981

ANTHROPOMETRY
Establishment of the repeatability of performance of the SA103C three year old child test dummies [PB80-112204] N80-21036

ANTIBODIES
On the cellular autoimmune mechanism for eliminating erythrocytes normally and under extreme influences [NASA-TM-75735] N80-21014

ANTIOXIDANTS
Favorable effects of the antioxidants sodium and magnesium thiazolidine carboxylate on the vitality and life span of Drosophila and mice A80-29085

APPROXIMATION
Absorption characteristics of prolate spheroidal model of man and animals at and near resonance frequency [PB80-108293] N80-21028

ARTERIES
Comparative examination of the pulse of both right and left carotid arteries A80-29683
Effects of hypokinesia and hypodynamia on the intraorganic arteries of the heart [NASA-TM-76069] N80-21026

ARTERIOSCLEROSIS
Sphygmographic assessment of arterial distensibility in patients at risk of degenerative arterial disease A80-29682
Comparative examination of the pulse of both right and left carotid arteries A80-29683

Atherosclerotic changes of vessels caused by restriction of movement [NASA-TM-76022] N80-21020

ARTIFICIAL INTELLIGENCE
K-lines: A theory of memory [AD-A078116] N80-21030

ASTRONAUT PERFORMANCE
Procedures and facilities for studying the capacity for work of cosmonauts A80-30514
The psychological experiments 'Self-interrogation' and 'Relaxation' A80-30520

AUDITORY DEFECTS
Considerations regarding sudden deafness - Aeronautical incidents A80-32591

AUDITORY FATIGUE
Influence of auditory fatigue on masked speech intelligibility A80-31800

AUDITORY PERCEPTION
An investigation of the effects of impulse noise exposure on man - Impulse noise with a relatively low peak level A80-30854
Plasma cortisol levels and auditory functioning in humans exposed to short and prolonged durations of noise N80-21018

AUTOMATIC CONTROL
Complex statistical analysis of the detection of the QRS complex --- in electrocardiography A80-31634
Recognition of EKG structural elements in an automated complex A80-31636

B

BACKGROUND NOISE
Influence of auditory fatigue on masked speech intelligibility A80-31800

BACTERIA
The identification of the 3-micron spectral feature in galactic infrared sources --- possible bacteria existence in circumstellar and interstellar dust A80-30342

BALANCE
Preservation of equilibrium in orthograde and inverted body positions [NASA-TM-76112] N80-21976

BALLISTOCARDIOGRAPHY
Ballistocardiography - Past, present and future A80-29677
Direct body ballistocardiography - A 25 year survey - Landmarks in its representation of cardiac dynamics A80-29678

BIBLIOGRAPHIES
Signs and display systems: Graphic design and human engineering. A bibliography with abstracts [PB80-803158] N80-21031

BIOASTRONAUTICS
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory A80-30513

BIOCHEMISTRY
Favorable effects of the antioxidants sodium and magnesium thiazolidine carboxylate on the vitality and life span of Drosophila and mice A80-29085
Content of lipids in blood and tissues of animals during hypodynamia [NASA-TM-76023] N80-21967

BIODYNAMICS
Dynamic characteristics of the thorax connected with the heart action A80-29686

BIOELECTRIC POTENTIAL
Changes in the rhythmicity of the cerebral bioelectric potentials of head-shielded rabbits subjected to roentgen irradiation of the body in the minimum lethal dose A80-30456

BIOELECTRICITY
Initial dynamics of the EKG during an electrical defibrillation of the heart [NASA-TM-76002] N80-21019
Cold shivering activity after unilateral destruction of the vestibular apparatus [NASA-TM-76099] N80-21021

BIOENGINEERING
Further observations on modelling of the cardiovascular function in the electrical model A80-29687
Design characteristics of an imitation system for the study of physiological processes on a digital computer A80-31639
Reliability and information content of tests with cardioleader in cyclic types of sports [NASA-TM-76090] N80-21975

BIOINSTRUMENTATION
Compensation for distortion in eye-movement monitors A80-29178
Use of double pulse holography for vibration analysis on a human ear in vivo A80-29359
Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6 A80-30515
Electrogustometric studies in orbital flight A80-30516

BIOLOGICAL EFFECTS
A theoretical basis for microwave and RF field effects on excitable cellular membranes A80-32305
Investigation of the effect of space flight factors on chromosomes in seeds [NASA-TM-76113] N80-21962
Effect of scenedesmus acuminatus green algae extracts on the development of Candida lipolytic yeast in gas condensate-containing media [NASA-TM-76081] N80-21965

BIOMEDICAL DATA
Reliability and information content of tests with cardioleader in cyclic types of sports [NASA-TM-76090] N80-21975

BIOMETRICS
Reliability and information content of tests with cardioleader in cyclic types of sports [NASA-TM-76090] N80-21975

BIONICS
K-lines: A theory of memory [AD-A078116] N80-21030
Establishment of the repeatability of performance of the SA103C three year old child test dummies [PB80-112204] N80-21036

BIOPHYSICS
Vibration of the basilar membrane in the mammalian cochlea A80-31480

BLOOD
Coagulating activity of the blood, vascular wall, and myocardium under hypodynamia conditions [NASA-TM-76056] N80-21023
Effect of immobilization stress on the level of macroergic phosphates in the blood of rats [NASA-TM-76021] N80-21959

BLOOD COAGULATION
Coagulating activity of the blood, vascular wall, and myocardium under hypodynamia conditions [NASA-TM-76056] N80-21023

BLOOD FLOW
Significance of blood flow in calculations of temperature in laser irradiated tissue A80-29179
Evaluation of the pulse contour method in beat-to-beat determination of the cardiac output in small laboratory animals A80-29684

BLOOD PRESSURE
Atherosclerotic changes of vessels caused by restriction of movement
[NASA-TM-76022] N80-21020

BLOOD VESSELS
Atherosclerotic changes of vessels caused by restriction of movement
[NASA-TM-76022] N80-21020
Main trends in experimental morphological research in angiology and outlook for its development
[NASA-TM-75980] N80-21978

BODY SWAY TEST
Saccadic eye movements and body sway A80-32414

BODY TEMPERATURE
Significance of blood flow in calculations of temperature in laser irradiated tissue A80-29179

BONES
Age related changes in the bone tissue under conditions of hypokinesia
[NASA-TM-76019] N80-21971

BOUNDARY VALUE PROBLEMS
Vibration of the basilar membrane in the mammalian cochlea A80-31480

BRIGHTNESS
Flicker-induced asymmetries in border enhancement and the distinction between brightness and darkness systems A80-30674

C

CARBOXYLATES
Favorable effects of the antioxidants sodium and magnesium thiazolidine carboxylate on the vitality and life span of Drosophila and mice A80-29085

CARCINOGENS
Formulation of a preliminary assessment of halogenated organic compounds in man and environmental media
[PB80-112170] N80-21029

CARDIAC VENTRICLES
Influence of diastolic fibre orientation on the left ventricular power generation A80-29685

CARDIOGRAMS
Express-diagnostic criteria of the cardiohemodynamic efficiency of juvenile athletes A80-32216

CARDIOGRAPHY
Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography, and Cardiovascular Dynamics, Univerza v Ljubljani, Ljubljana, Yugoslavia, March 20-22, 1978 A80-29676
Kinetocardiography - Past and present A80-29679

CARDIOLOGY
Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography, and Cardiovascular Dynamics, Univerza v Ljubljani, Ljubljana, Yugoslavia, March 20-22, 1978 A80-29676
Ballistocardiography - Past, present and future A80-29677
Kinetocardiography - Past and present A80-29679
Clinical application of carotid electrosphygmography A80-29680
Evaluation of the pulse contour method in beat-to-beat determination of the cardiac output in small laboratory animals A80-29684
Dynamic characteristics of the thorax connected with the heart action A80-29686
Design principles for a system of automated processing of cardiological data on the M-6000 computer A80-31638

CARDIOVASCULAR SYSTEM
Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography, and Cardiovascular Dynamics, Univerza v Ljubljani, Ljubljana, Yugoslavia, March 20-22, 1978 A80-29676
Genesis of the sphygmogram from the kinetocardiogram A80-29681
Evaluation of the pulse contour method in beat-to-beat determination of the cardiac output in small laboratory animals A80-29684
Further observations on modelling of the cardiovascular function in the electrical model A80-29687
Functional state of the cardiovascular system following a three-day immersion and prophylactic rotations in a small-radius centrifuge A80-32233

CARTILAGE
Effects of immobilization articular cartilage: Autohistoradiographic findings with S35
[NASA-TM-76070] N80-21961

CASE HISTORIES
Acute microwave irradiation with regard to a case recently monitored at Begin Hospital A80-32600

CELLS (BIOLOGY)
A theoretical basis for microwave and RF field effects on excitable cellular membranes A80-32305

CENTRAL NERVOUS SYSTEM
Preliminary results of microwave effects on the central nervous system of a primate /Macaca mulatta/ A80-32595

CENTRIFUGING STRESS
Influence of microwave irradiation on the resistance of rats to transversely applied g forces A80-31446
Functional state of the cardiovascular system following a three-day immersion and prophylactic rotations in a small-radius centrifuge A80-32233

CEREBRAL CORTEX
The representation of colours in the cerebral cortex A80-29421

CEREBRUM
Visual learning and interhemispherical interaction A80-30455
Changes in the rhythmicity of the cerebral bioelectric potentials of head-shielded rabbits subjected to roentgen irradiation of the body in the minimum lethal dose A80-30456

CHEMICAL WARFARE
A study of agent-reactive fabrics for use in protective clothing
[AD-A079940] N80-21984

CHEST
Kinetocardiography - Past and present A80-29679

CHLOROPHYLLS
Physical and chemical studies of chlorophyll in microemulsions
[CCO-4452-001] N80-21969

CHROMOSOMES
Investigation of the effect of space flight factors on chromosomes in seeds
[NASA-TM-76113] N80-21962

CIRCADIAN RHYTHMS
The circadian rhythm of aerobic efficiency A80-32231
Sleep pattern variation during adaptation to high-altitude hypoxia A80-32234

CLEANLINESS
Guidelines for spacecraft cleanliness control
[ESA-PSS-51/QRA-23-ESTEC-ISS-1] N80-21985

CLINICAL MEDICINE
Direct body ballistocardiography - A 25 year survey - Landmarks in its representation of cardiac dynamics A80-29678

Clinical application of carotid electrosphygmography A80-29680

Sphygmographic assessment of arterial distensibility in patients at risk of degenerative arterial disease A80-29682

Comparative examination of the pulse of both right and left carotid arteries A80-29683

Diagnostic accuracy of the conventional 12-lead and the orthogonal Frank-lead electrocardiograms in detection of myocardial infarctions with classifiers using continuous and Bernoulli features A80-30873

COCHLEA

Vibration of the basilar membrane in the mammalian cochlea A80-31480

COLD ACCLIMATIZATION

Role of thyroxin in the thermoregulation of albino rats following cold acclimation A80-31075

COLD TOLERANCE

Role of thyroxin in the thermoregulation of albino rats following cold acclimation A80-31075

COLOR CENTERS

The representation of colours in the cerebral cortex A80-29421

COLOR VISION

The representation of colours in the cerebral cortex A80-29421

COMPENSATORY TRACKING

Measurement of local indices of operator performance in the tracking mode A80-31635

COMPUTER GRAPHICS

The crew activity planning system bus interface unit [NASA-CR-160566] N80-21980

COMPUTER SYSTEMS DESIGN

Design principles for a system of automated processing of cardiological data on the M-6000 computer A80-31638

The crew activity planning system bus interface unit [NASA-CR-160566] N80-21980

COMPUTERIZED SIMULATION

Further observations on modelling of the cardiovascular function in the electrical model A80-29687

Design characteristics of an imitation system for the study of physiological processes on a digital computer A80-31639

CONCENTRATION (COMPOSITION)

Effect of space flight on sodium, copper, manganese and magnesium content in the skeletal bones [NASA-TM-75506] N80-21025

CONFERENCES

Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography, and Cardiovascular Dynamics, Univerza v Ljubljani, Ljubljana, Yugoslavia, March 20-22, 1978 A80-29676

Fifth Working Conference (Space Biology) at the 21st Plenary Session of COSPAR [NASA-TM-76107] N80-21017

CONTACT LENSES

On the feasibility of contact lenses for flight personnel A80-32589

COOLING SYSTEMS

Liquid conditioned suit and its use in alleviating heat stress in military flying A80-31584

COPPER

Effect of space flight on sodium, copper, manganese and magnesium content in the skeletal bones [NASA-TM-75506] N80-21025

CORONARY ARTERY DISEASE

Sphygmographic assessment of arterial distensibility in patients at risk of degenerative arterial disease A80-29682

COSMONAUTS

Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory A80-30513

Procedures and facilities for studying the capacity for work of cosmonauts A80-30514

Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6 A80-30515

Electrogustometric studies in orbital flight A80-30516

Observation of the vestibular function during space flight A80-30517

Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission A80-30518

The psychological experiments 'Self-interrogation' and 'Relaxation' A80-30520

CRASH INJURIES

Injury dynamics in aircraft accident A80-31592

CRASHES

The organization of medical aid in air disasters - Berlin-Tegel international airport A80-32581

Medical considerations in light aircraft accidents A80-32582

CREW PROCEDURES (INFLIGHT)

The crew activity planning system bus interface unit [NASA-CR-160566] N80-21980

CUSHIONS

Vibration transmission through different helicopter seat cushions A80-32596

D

DARKNESS

Flicker-induced asymmetries in border enhancement and the distinction between brightness and darkness systems A80-30674

DATA PROCESSING

Determination and elimination of low-frequency zero-level oscillations of an EKG during automated processing A80-31633

Design principles for a system of automated processing of cardiological data on the M-6000 computer A80-31638

DECOMPRESSION SICKNESS

Hazards of high altitude decompression sickness during falls in barometric pressure from 1 atm to a fraction thereof [NASA-TM-76015] N80-21977

DECONTAMINATION

Guidelines for spacecraft cleanliness control [ESA-PSS-51/QRA-23-ESTEC-ISS-1] N80-21985

DEFOCUSING

MTF of the defocused optical system of the human eye for incoherent monochromatic light A80-30673

DIAGNOSIS

Diagnostic accuracy of the conventional 12-lead and the orthogonal Frank-lead electrocardiograms in detection of myocardial infarctions with classifiers using continuous and Bernoulli features A80-30873

Express-diagnostic criteria of the cardiohemodynamic efficiency of juvenile athletes A80-32216

Glycerol test in diagnosing increased intralabyrinth pressure [NASA-TM-76110] N80-21022

DIASTOLE

Influence of diastolic fibre orientation on the left ventricular power generation A80-29685

DIGITAL COMPUTERS

Design characteristics of an imitation system for the study of physiological processes on a digital computer A80-31639

DISPLAY DEVICES

Signs and display systems: Graphic design and human engineering. A bibliography with abstracts [PB80-803158] N80-21031

Research on new electronic display technologies [AD-A079323] N80-21035

DISTORTION

Compensation for distortion in eye-movement monitors A80-29178

DRUGS

Effect of syrepar and oxaphenamide on liver function in experimental hypokinesia [NASA-TM-76011] N80-21973

DUMMIES

Establishment of the repeatability of performance of the SA103C three year old child test dummies [PB80-112204] N80-21036

DYNAMIC CHARACTERISTICS

Dynamic characteristics of the thorax connected with the heart action A80-29686

E

EARDRUMS

Use of double pulse holography for vibration analysis on a human ear in vivo A80-29359

ECHOCARDIOGRAPHY

The application of echocardiography to the cardiological evaluation of flight personnel A80-32586

EFFERENT NERVOUS SYSTEMS

Effect of tranquilizers on animal resistance to the adequate stimuli of the vestubular apparatus [NASA-TM-76109] N80-21960

ELECTROCARDIOGRAPHY

Clinical application of carotid electrosphygmography A80-29680

Genesis of the sphygmogram from the kinetocardiogram A80-29681

Comparative examination of the pulse of both right and left carotid arteries A80-29683

Diagnostic accuracy of the conventional 12-lead and the orthogonal Frank-lead electrocardiograms in detection of myocardial infarctions with classifiers using continuous and Bernoulli features A80-30873

An evaluation protocol for fighter aircrew with non specific ST-T abnormalities A80-31585

Determination and elimination of low-frequency zero-level oscillations of an EKG during automated processing A80-31633

Complex statistical analysis of the detection of the QRS complex --- in electrocardiography A80-31634

Recognition of EKG structural elements in an automated complex A80-31636

Analog-digital converter for the ELKAR electrocardiograph A80-31637

Initial dynamics of the EKG during an electrical defibrillation of the heart [NASA-TM-76002] N80-21015

ELECTROCHEMISTRY

Testing evaluation of the electrochemical organic content analyzer [NASA-CR-160569] N80-21981

ELECTROLYTE METABOLISM

Influence of longitudinal accelerations on fluid-electrolyte metabolism and renal function under conditions of immersion A80-32230

ELECTROMAGNETIC RADIATION

Absorption characteristics of prolate spheroidal model of man and animals at and near resonance frequency [PB80-108293] N80-21028

ELECTRONYSTAGMOGRAPHY

Investigation of the predictive value of electronystagmograms /ENGs/ in professional-selection vestibulometry A80-32235

ENVIRONMENTAL MONITORING

Formulation of a preliminary assessment of halogenated organic compounds in man and environmental media [PB80-112170] N80-21029

ENZYME ACTIVITY

Effects of motor patterns on water-soluble and membrane proteins and cholinesterase activity in subcellular fractions of rat brain tissue [NASA-TM-76115] N80-21963

ERYTHROCYTES

On the cellular autoimmune mechanism for eliminating erythrocytes normally and under extreme influences [NASA-TM-75735] N80-21014

ETHYL ALCOHOL

Effects of alcohol on aircrew performance - A field study A80-31588

EXOBIOLOGY

The identification of the 3-micron spectral feature in galactic infrared sources --- possible bacteria existence in circumstellar and interstellar dust A80-30342

Fifth Working Conference (Space Biology) at the 21st Plenary Session of CCSPAR [NASA-TM-76107] N80-21017

Aerospace Medicine and Biology: Cumulative index, 1979 [NASA-SP-7011(202)] N80-21970

EYE (ANATOMY)

MTF of the defocused optical system of the human eye for incoherent monochromatic light A80-30673

EYE EXAMINATIONS

Compensation for distortion in eye-movement monitors A80-29178

Considerations with regard to a test of the Essilor visiotest A80-32585

EYE MOVEMENTS

Compensation for distortion in eye-movement monitors A80-29178

F

FABRICS

A study of agent-reactive fabrics for use in protective clothing [AD-A079940] N80-21984

FEMALES

Principles for classification of work load for women [NASA-TM-76084] N80-21983

FERMENTATION

Fermentative activity of neutrophil leukocytes in rats under conditions of hypoxic hypoxia A80-30457

FIBER ORIENTATION

Influence of diastolic fibre orientation on the left ventricular power generation A80-29685

FIBRILLATION

Initial dynamics of the EKG during an electrical defibrillation of the heart [NASA-TM-76002] N80-21015

FIGHTER AIRCRAFT

An evaluation protocol for fighter aircrew with non specific ST-T abnormalities A80-31585

Aeromedical and physiologic aspects of fighter pilot selection and performance - Theoretical considerations A80-31586

FIRST AID

The organization of medical aid in air disasters - Berlin-Tegel international airport A80-32581

FLICKER
Flicker-induced asymmetries in border enhancement and the distinction between brightness and darkness systems
A80-30674

FLIGHT CHARACTERISTICS
Human comfort response to dominant random motions in longitudinal modes of aircraft motion
[NASA-CR-159186] N80-21033
Human comfort response to random motions with a dominant pitching motion
[NASA-CR-159140] N80-21034

FLIGHT CREWS
An evaluation protocol for fighter aircrew with non specific ST-T abnormalities
A80-31585
Effects of alcohol on aircrew performance - A field study
A80-31588
Summary of Department of Transportation/Federal Aviation Administration task force on crew workload report
[AD-A068189] N80-21032
The crew activity planning system bus interface unit
[NASA-CR-160566] N80-21980

FLIGHT FITNESS
Procedures and facilities for studying the capacity for work of cosmonauts
A80-30514

FLIGHT SIMULATION
Study of pilot's sight direction on Mercure flight simulator
A80-32590

FLIGHT STRESS (BIOLOGY)
Liquid conditioned suit and its use in alleviating heat stress in military flying
A80-31584

FLIGHT TESTS
Electrogustometric studies in orbital flight
A80-30516

FLUOROSCOPY
Development of a stereofluoroscopy system
[NASA-CR-160568] N80-21972

FLYING PERSONNEL
The application of echocardiography to the cardiological evaluation of flight personnel
A80-32586
Abdominal echotomography - Its place in the evaluation of flight personnel
A80-32587
On the feasibility of contact lenses for flight personnel
A80-32589
Considerations regarding sudden deafness - Aeronautical incidents
A80-32591
Impedance measurement - Importance in otologic assessment of air flight personnel
A80-32592

FREEZE DRYING
The effect of variety and maturity on the quality of freeze-dried carrots. The effect of microwave blanching on the nutritional and textural quality of freeze-dried spinach
[NASA-CR-160567] N80-21982

G

GAS DENSITY
Effect of gas-mixture density on the performance of the respiratory system
A80-32232

GAS MIXTURES
Effect of gas-mixture density on the performance of the respiratory system
A80-32232

GASTROINTESTINAL SYSTEM
Reduction of the duration of restraint for the production of experimental ulcers in rats: Application to the study of protective substances
[NASA-TM-76136] N80-21016

GENERAL AVIATION AIRCRAFT
The place of the psychological factor among the causes of aircraft accidents in general aviation
A80-32583

GENETICS
Investigation of the effect of space flight factors on chromosomes in seeds
[NASA-TM-76113] N80-21962

GLANDS (ANATOMY)
The effects of restraint on uptake of radioactive sulfate in the salivary and gastric secretions of rats with pyloric ligation
[NASA-TM-76073] N80-21964

GLYCEROLS
Glycerol test in diagnosing increased intralabyrinth pressure
[NASA-TM-76110] N80-21022

GRAPHIC ARTS
Signs and display systems: Graphic design and human engineering. A bibliography with abstracts
[PB80-803158] N80-21031

H

HALOCARBONS
Formulation of a preliminary assessment of halogenated organic compounds in man and environmental media
[PB80-112170] N80-21029

HEALTH PHYSICS
Acute microwave irradiation with regard to a case recently monitored at Begin Hospital
A80-32600

HEART
Effects of hypokinesia and hypodynamia on the intraorganic arteries of the heart
[NASA-TM-76069] N80-21026

HEART DISEASES
Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography, and Cardiovascular Dynamics, Univerza v Ljubljani, Ljubljana, Yugoslavia, March 20-22, 1978
A80-29676
Direct body ballistocardiography - A 25 year survey - Landmarks in its representation of cardiac dynamics
A80-29678

HEART FUNCTION
Influence of diastolic fibre orientation on the left ventricular power generation
A80-29685
Dynamic characteristics of the thorax connected with the heart action
A80-29686
Further observations on modelling of the cardiovascular function in the electrical model
A80-29687
Cardiac output at high altitude --- Russian book
A80-30434
Investigation of the cardiac inotropic effect occurring at the onset of hypoxic hypoxia
A80-32593
Initial dynamics of the EKG during an electrical defibrillation of the heart
[NASA-TM-76002] N80-21019

HEART RATE
Comparative examination of the pulse of both right and left carotid arteries
A80-29683
Evaluation of the pulse contour method in beat-to-beat determination of the cardiac output in small laboratory animals
A80-29684
Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6
A80-30515

HELICOPTER DESIGN
Vibration transmission through different helicopter seat cushions
A80-32596

HELICOPTERS
A psychoacoustic study of impulsive helicopter noise
A80-30813

HEMODYNAMIC RESPONSES
Express-diagnostic criteria of the cardiohemodynamic efficiency of juvenile athletes
A80-32216

HEMODYNAMICS
Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography, and Cardiovascular Dynamics, Univerza v Ljubljani, Ljubljana, Yugoslavia, March 20-22, 1978
A80-29676
Evaluation of the pulse contour method in beat-to-beat determination of the cardiac output in small laboratory animals
A80-29684

HIGH ALTITUDE ENVIRONMENTS
Cardiac output at high altitude --- Russian book
A80-30434
Sleep pattern variation during adaptation to high-altitude hypoxia
A80-32234

HISTOLOGY
The contribution of histopathology to investigations following aircraft accidents
A80-32579

HOLOGRAPHIC INTERFEROMETRY
Use of double pulse holography for vibration analysis on a human ear in vivo
A80-29359

HORMONES
Plasma cortisol levels and auditory functioning in humans exposed to short and prolonged durations of noise
N80-21018

HUMAN BODY
Preservation of equilibrium in orthograde and inverted body positions
[NASA-TM-76112] N80-21976

HUMAN FACTORS ENGINEERING
Aeromedical evaluation of aircraft accidents - Human engineering aspects
A80-31590
Psycho-social aspects of aircraft accidents
A80-31591
Signs and display systems: Graphic design and human engineering. A bibliography with abstracts
[PB80-803158] N80-21031
Human comfort response to dominant random motions in longitudinal modes of aircraft motion
[NASA-CR-159186] N80-21033
Research on new electronic display technologies
[AD-A079323] N80-21035
Establishment of the repeatability of performance of the SA103C three year old child test dummies
[PB80-112204] N80-21036

HUMAN PATHOLOGY
The contribution of histopathology to investigations following aircraft accidents
A80-32579

HUMAN PERFORMANCE
Express-diagnostic criteria of the cardiohemodynamic efficiency of juvenile athletes
A80-32216
The circadian rhythm of aerobic efficiency
A80-32231
Effect of gas-mixture density on the performance of the respiratory system
A80-32232
Functional state of the cardiovascular system following a three-day immersion and prophylactic rotations in a small-radius centrifuge
A80-32233
Reliability and information content of tests with cardioleader in cyclic types of sports
[NASA-TM-76090] N80-21975

HUMAN TOLERANCES
Investigation of transitional characteristics of the equilibrium preservation system --- human vertical posture response during acceleration
A80-29909
The psychoacoustic effects of aircraft noise on sleep - An in situ study
A80-30815
An investigation of the effects of impulse noise exposure on man - Impulse noise with a relatively low peak level
A80-30854

HYDROMECHANICS
Vibration of the basilar membrane in the mammalian cochlea
A80-31480

HYPEROXIA
Effect of normobaric hyperoxia on renal ammoniogenesis
A80-32594

HYPERTHERMIA
Cold shivering activity after unilateral destruction of the vestibular apparatus
[NASA-TM-76099] N80-21021
Metabolism and activity of zoxazolamine in white rats during forced immobilization with and without hyperthermia
[NASA-TM-76074] N80-21968

HYPODYNAMIA
Coagulating activity of the blood, vascular wall, and myocardium under hypodynamia conditions
[NASA-TM-76056] N80-21023
Effects of hypokinesia and hypodynamia on the intraorganic arteries of the heart
[NASA-TM-76069] N80-21026
The effects of restraint on uptake of radioactive sulfate in the salivary and gastric secretions of rats with pyloric ligation
[NASA-TM-76073] N80-21964
Content of lipids in blood and tissues of animals during hypodynamia
[NASA-TM-76023] N80-21967
Effect of hyperbaric oxygenation on carbohydrate metabolism protein synthesis in the myocardium during sustained hypodynamia
[NASA-TM-76012] N80-21974

HYPOKINESIA
Adrenocortical response in rats subjected to a stress of restraint by immobilization whether accompanied by hypothermia or not
[NASA-TM-76119] N80-21015
Atherosclerotic changes of vessels caused by restriction of movement
[NASA-TM-76022] N80-21020
Effects of hypokinesia and hypodynamia on the intraorganic arteries of the heart
[NASA-TM-76069] N80-21026
Effects of motor patterns on water-soluble and membrane proteins and cholinesterase activity in subcellular fractions of rat brain tissue
[NASA-TM-76115] N80-21963
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966
Metabolism and activity of zoxazolamine in white rats during forced immobilization with and without hyperthermia
[NASA-TM-76074] N80-21968
Age related changes in the bone tissue under conditions of hypokinesia
[NASA-TM-76019] N80-21971
Effect of syrepar and oxaphenamide on liver function in experimental hypokinesia
[NASA-TM-76011] N80-21973

HYPOTHERMIA
Adrenocortical response in rats subjected to a stress of restraint by immobilization whether accompanied by hypothermia or not
[NASA-TM-76119] N80-21015

HYPOXIA
Fermentative activity of neutrophil leukocytes in rats under conditions of hypoxic hypoxia
A80-30457
Sleep pattern variation during adaptation to high-altitude hypoxia
A80-32234
Central field of vision and electroculography in moderate hypoxia
A80-32588
Investigation of the cardiac inotropic effect occurring at the onset of hypoxic hypoxia
A80-32593

I

ILLINOIS
Marine traffic data of Chicago, Illinois and South Shore of Lake Michigan
[AD-A080060] N80-21979

IMAGE CONTRAST
Suprathreshold processing of complex visual stimuli - Evidence for linearity in contrast perception
A80-32413

IMAGING TECHNIQUES
Development of a stereofluoroscopy system
[NASA-CR-160568] N80-21972
IMMOBILIZATION
Effect of immobilization stress on the level of macroergic phosphates in the blood of rats
[NASA-TM-76021] N80-21959
Effects of immobilization articular cartilage: Autohistoradiographic findings with S35
[NASA-TM-76070] N80-21961
Metabolism and activity of zoxazolamine in white rats during forced immobilization with and without hyperthermia
[NASA-TM-76074] N80-21968
IMMUNOLOGY
On the cellular autoimmune mechanism for eliminating erythrocytes normally and under extreme influences
[NASA-TM-75735] N80-21014
IMPEDANCE MEASUREMENTS
Impedance measurement - Importance in otologic assessment of air flight personnel
A80-32592
INDUSTRIES
Advanced industrial robot control systems
[PB80-106396] N80-21986
INFRARED ASTRONOMY
The identification of the 3-micron spectral feature in galactic infrared sources --- possible bacteria existence in circumstellar and interstellar dust
A80-30342
INSTRUMENT COMPENSATION
Compensation for distortion in eye-movement monitors
A80-29178
INTERSTELLAR EXTINCTION
The identification of the 3-micron spectral feature in galactic infrared sources --- possible bacteria existence in circumstellar and interstellar dust
A80-30342
INTERSTELLAR MATTER
The identification of the 3-micron spectral feature in galactic infrared sources --- possible bacteria existence in circumstellar and interstellar dust
A80-30342

J

JOINTS (ANATOMY)
Effects of immobilization articular cartilage: Autohistoradiographic findings with S35
[NASA-TM-76070] N80-21961

K

KINESTHESIA
Preservation of equilibrium in orthograde and inverted body positions
[NASA-TM-76112] N80-21976

L

LABORATORIES
Reduction of the duration of restraint for the production of experimental ulcers in rats: Application to the study of protective substances
[NASA-TM-76136] N80-21016
LABYRINTH
Glycerol test in diagnosing increased intralabyrinth pressure
[NASA-TM-76110] N80-21022
LAKE MICHIGAN
Marine traffic data of Chicago, Illinois and South Shore of Lake Michigan
[AD-A080060] N80-21979
LASER DAMAGE
Significance of blood flow in calculations of temperature in laser irradiated tissue
A80-29179
LEARNING
Visual learning and interhemispherical interaction
A80-30455
LESIONS
The contribution of histopathology to investigations following aircraft accidents
A80-32579
LEUKOCYTES
Fermentative activity of neutrophil leukocytes in rats under conditions of hypoxic hypoxia
A80-30457
LIFE SUPPORT SYSTEMS
Testing evaluation of the electrochemical organic content analyzer
[NASA-CR-160569] N80-21981
LIGHT AIRCRAFT
Medical considerations in light aircraft accidents
A80-32582
LIPID METABOLISM
Content of lipids in blood and tissues of animals during hypodynamia
[NASA-TM-76023] N80-21967
LIVER
Effect of syrepar and oxaphenamide on liver function in experimental hypokinesia
[NASA-TM-76011] N80-21973
LYMPH
Main trends in experimental morphological research in angiology and outlook for its development
[NASA-TM-75980] N80-21978

M

MAGNESIUM
Effect of space flight on sodium, copper, manganese and magnesium content in the skeletal bones
[NASA-TM-75506] N80-21025
MAN MACHINE SYSTEMS
Determination and elimination of low-frequency zero-level oscillations of an EKG during automated processing
A80-31633
Complex statistical analysis of the detection of the QRS complex --- in electrocardiography
A80-31634
Measurement of local indices of operator performance in the tracking mode
A80-31635
Recognition of EKG structural elements in an automated complex
A30-31636
Analog-digital converter for the ELKAR electrocardiograph
A80-31637
Design principles for a system of automated processing of cardiological data on the M-6000 computer
A80-31638
Research on new electronic display technologies
[AD-A079323] N80-21035
Advanced industrial robot control systems
[PB80-106396] N80-21986
MANGANESE
Effect of space flight on sodium, copper, manganese and magnesium content in the skeletal bones
[NASA-TM-75506] N80-21025
MARINE TRANSPORTATION
Marine traffic data of Chicago, Illinois and South Shore of Lake Michigan
[AD-A080060] N80-21979
MASKING
Influence of auditory fatigue on masked speech intelligibility
A80-31800
MATHEMATICAL MODELS
Influence of diastolic fibre orientation on the left ventricular power generation
A80-29685
Further observations on modelling of the cardiovascular function in the electrical model
A80-29687
MEDICAL EQUIPMENT
Development of a stereofluoroscopy system
[NASA-CR-160568] N80-21972
MEMBRANE STRUCTURES
Vibration of the basilar membrane in the mammalian cochlea
A80-31480
A theoretical basis for microwave and RF field effects on excitable cellular membranes
A80-32305
MEMORY
K-lines: A theory of memory
[AD-A078116] N80-21030

MENTAL PERFORMANCE
K-lines: A theory of memory
[AD-A078116] N80-21030
METABOLISM
Effect of hyperbaric oxygenation on carbohydrate metabolism protein synthesis in the myocardium during sustained hypodynamia
[NASA-TM-76012] N80-21974
MICROBIOLOGY
Effect of scenedesmus acuminatus green algae extracts on the development of Candida lipolytic yeast in gas condensate-containing media
[NASA-TM-76081] N80-21965
MICROWAVES
Influence of microwave irradiation on the resistance of rats to transversely applied g forces
A80-31446
Preliminary results of microwave effects on the central nervous system of a primate /Macaca mulatta/
A80-32595
Acute microwave irradiation with regard to a case recently monitored at Begin Hospital
A80-32600
The effect of variety and maturity on the quality of freeze-dried carrots. The effect of microwave blanching on the nutritional and textural quality of freeze-dried spinach
[NASA-CR-160567] N80-21982
MILITARY AVIATION
Liquid conditioned suit and its use in alleviating heat stress in military flying
A80-31584
MODULATION TRANSFER FUNCTION
MTF of the defocused optical system of the human eye for incoherent monochromatic light
A80-30673
MONOCHROMATIC RADIATION
MTF of the defocused optical system of the human eye for incoherent monochromatic light
A80-30673
MORPHOLOGY
Main trends in experimental morphological research in angiology and outlook for its development
[NASA-TM-75980] N80-21978
MORTALITY
Model for measuring the health impact from changing levels of ambient air pollution: Morbidity study
[PB80-107030] N80-21027
MOTION PERCEPTION
Dynamic vision under vibration and changes with curvature of transparencies
A80-31589
MOTION SICKNESS
Investigation of the predictive value of electronystagmograms /ENGs/ in professional-selection vestibulometry
A80-32235
MOTION SICKNESS DRUGS
Prophylaxis and treatment of seasickness
[NASA-TM-76108] N80-21024
MOUNTAIN INHABITANTS
Cardiac output at high altitude --- Russian book
A80-30434
MUSCLE RELAXANTS
Metabolism and activity of zoxazolamine in white rats during forced immobilization with and without hyperthermia
[NASA-TM-76074] N80-21968
MUSCULOSKELETAL SYSTEM
Effect of space flight on sodium, copper, manganese and magnesium content in the skeletal bones
[NASA-TM-75506] N80-21025
MYOCARDIAL INFARCTION
Diagnostic accuracy of the conventional 12-lead and the orthogonal Frank-lead electrocardiograms in detection of myocardial infarctions with classifiers using continuous and Bernoulli features
A80-30873
MYOCARDIUM
Influence of diastolic fibre orientation on the left ventricular power generation
A80-29685
Coagulating activity of the blood, vascular wall, and myocardium under hypodynamia conditions
[NASA-TM-76056] N80-21023
Effect of hyperbaric oxygenation on carbohydrate metabolism protein synthesis in the myocardium during sustained hypodynamia
[NASA-TM-76012] N80-21974

N

NEUROPHYSIOLOGY
The representation of colours in the cerebral cortex
A80-29421
Effects of motor patterns on water-soluble and membrane proteins and cholinesterase activity in subcellular fractions of rat brain tissue
[NASA-TM-76115] N80-21963
NOISE (SOUND)
Plasma cortisol levels and auditory functioning in humans exposed to short and prolonged durations of noise
N80-21018
NOISE INJURIES
An investigation of the effects of impulse noise exposure on man - Impulse noise with a relatively low peak level
A80-30854
NOISE POLLUTION
The influence of intermittent aircraft noise on sleep. II
A80-32584
NOISE REDUCTION
A psychoacoustic study of impulsive helicopter noise
A80-30813
Determination and elimination of low-frequency zero-level oscillations of an EKG during automated processing
A80-31633
NOISE TOLERANCE
An investigation of the effects of impulse noise exposure on man - Impulse noise with a relatively low peak level
A80-30854
NUCLEOTIDES
Effect of immobilization stress on the level of macroergic phosphates in the blood of rats
[NASA-TM-76021] N80-21959

O

OPERATOR PERFORMANCE
Measurement of local indices of operator performance in the tracking mode
A80-31635
OPERATORS (PERSONNEL)
Measurement of local indices of operator performance in the tracking mode
A80-31635
OPTICAL MEASUREMENT
MTF of the defocused optical system of the human eye for incoherent monochromatic light
A80-30673
ORTHOSTATIC TOLERANCE
Investigation of transitional characteristics of the equilibrium preservation system --- human vertical posture response during acceleration
A80-29909
OTOLOGY
Impedance measurement - Importance in otologic assessment of air flight personnel
A80-32592
OXYGEN CONSUMPTION
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966
Effect of hyperbaric oxygenation on carbohydrate metabolism protein synthesis in the myocardium during sustained hypodynamia
[NASA-TM-76012] N80-21974
OXYGEN METABOLISM
The circadian rhythm of aerobic efficiency
A80-32231
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966

OXYGEN TENSION
Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission
A80-30518

P

PATHOLOGICAL EFFECTS
Model for measuring the health impact from changing levels of ambient air pollution: Morbidity study
[PB80-107030] N80-21027

PATTERN RECOGNITION
Recognition of EKG structural elements in an automated complex
A80-31636

PHOTOCHEMICAL REACTIONS
Physical and chemical studies of chlorophyll in microemulsions
[COO-4452-001] N80-21969

PHYSICAL EXAMINATIONS
The application of echocardiography to the cardiological evaluation of flight personnel
A80-32586
Abdominal echotomography - Its place in the evaluation of flight personnel
A80-32587

PHYSICAL EXERCISE
Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6
A80-30515
The circadian rhythm of aerobic efficiency
A80-32231
Effects of motor patterns on water-soluble and membrane proteins and cholinesterase activity in subcellular fractions of rat brain tissue
[NASA-TM-76115] N80-21963
Hazards of high altitude decompression sickness during falls in barometric pressure from 1 atm to a fraction thereof
[NASA-TM-76015] N80-21977
Principles for classification of work load for women
[NASA-TM-76084] N80-21983

PHYSICAL FITNESS
Reliability and information content of tests with cardioleader in cyclic types of sports
[NASA-TM-76090] N80-21975

PHYSIOLOGICAL EFFECTS
An investigation of the effects of impulse noise exposure on man - Impulse noise with a relatively low peak level
A80-30854
Acute microwave irradiation with regard to a case recently monitored at Begin Hospital
A80-32600
Plasma cortisol levels and auditory functioning in humans exposed to short and prolonged durations of noise
N80-21018
Effect of immobilization stress on the level of macroergic phosphates in the blood of rats
[NASA-TM-76021] N80-21959
Effects of immobilization articular cartilage: Autohistoradiographic findings with S35
[NASA-TM-76070] N80-21961
Effects of motor patterns on water-soluble and membrane proteins and cholinesterase activity in subcellular fractions of rat brain tissue
[NASA-TM-76115] N80-21963
The effects of restraint on uptake of radioactive sulfate in the salivary and gastric secretions of rats with pyloric ligation
[NASA-TM-76073] N80-21964
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966
Content of lipids in blood and tissues of animals during hypodynamia
[NASA-TM-76023] N80-21967
Age related changes in the bone tissue under conditions of hypokinesia
[NASA-TM-76019] N80-21971
Effect of syrepar and oxaphenamide on liver function in experimental hypokinesia
[NASA-TM-76011] N80-21973
Effect of hyperbaric oxygenation on carbohydrate metabolism protein synthesis in the myocardium during sustained hypodynamia
[NASA-TM-76012] N80-21974
Hazards of high altitude decompression sickness during falls in barometric pressure from 1 atm to a fraction thereof
[NASA-TM-76015] N80-21977
Main trends in experimental morphological research in angiology and outlook for its development
[NASA-TM-75980] N80-21978
Principles for classification of work load for women
[NASA-TM-76084] N80-21983

PHYSIOLOGICAL FACTORS
Aeromedical and physiologic aspects of fighter pilot selection and performance - Theoretical considerations
A80-31586

PHYSIOLOGICAL RESPONSES
Cardiac output at high altitude --- Russian book
A80-30434
A physical study of vibratory stress - Physiological interpretation - Importance in aircraft accidents
A80-32580
The influence of intermittent aircraft noise on sleep. II
A80-32584
Preliminary results of microwave effects on the central nervous system of a primate /Macaca mulatta/
A80-32595

PHYSIOLOGICAL TESTS
Procedures and facilities for studying the capacity for work of cosmonauts
A80-30514

PHYSIOLOGY
Design characteristics of an imitation system for the study of physiological processes on a digital computer
A80-31635

PILOT PERFORMANCE
Aeromedical and physiologic aspects of fighter pilot selection and performance - Theoretical considerations
A80-31586
Effects of alcohol on aircrew performance - A field study
A80-31588
The place of the psychological factor among the causes of aircraft accidents in general aviation
A80-32583
Summary of Department of Transportation/Federal Aviation Administration task force on crew workload report
[AD-A068189] N80-21032

PILOT SELECTION
Aeromedical and physiologic aspects of fighter pilot selection and performance - Theoretical considerations
A80-31586

PITCHING MOMENTS
Human comfort response to random motions with a dominant pitching motion
[NASA-CR-159140] N80-21034

PRESERVING
The effect of variety and maturity on the quality of freeze-dried carrots. The effect of microwave blanching on the nutritional and textural quality of freeze-dried spinach
[NASA-CR-160567] N80-21982

PRODUCTION ENGINEERING
Advanced industrial robot control systems
[PB80-106396] N80-21986

PROPHYLAXIS
Prophylaxis and treatment of seasickness
[NASA-TM-76108] N80-21024

PROPRIOCEPTION
Preservation of equilibrium in orthograde and inverted body positions
[NASA-TM-76112] N80-21976

PROTECTIVE CLOTHING
A study of agent-reactive fabrics for use in protective clothing
[AD-A079940] N80-21984

PSYCHOACOUSTICS
A psychoacoustic study of impulsive helicopter noise
A80-30813

The psychoacoustic effects of aircraft noise on sleep - An in situ study
A80-30815

PSYCHOLOGICAL FACTORS
Psycho-social aspects of aircraft accidents
A80-31591
The place of the psychological factor among the causes of aircraft accidents in general aviation
A80-32583

PSYCHOLOGICAL TESTS
The psychological experiments 'Self-interrogation' and 'Relaxation'
A80-30520

PSYCHOPHYSICS
MTF of the defocused optical system of the human eye for incoherent monochromatic light
A80-30673

PUBLIC HEALTH
Model for measuring the health impact from changing levels of ambient air pollution: Morbidity study
[PB80-107030] N80-21027

PULMONARY FUNCTIONS
Effect of gas-mixture density on the performance of the respiratory system
A80-32232

R

RADIATION DOSAGE
Changes in the rhythmicity of the cerebral bioelectric potentials of head-shielded rabbits subjected to roentgen irradiation of the body in the minimum lethal dose
A80-30456
Acute microwave irradiation with regard to a case recently monitored at Begin Hospital
A80-32600

RADIATION EFFECTS
Significance of blood flow in calculations of temperature in laser irradiated tissue
A80-29179
A theoretical basis for microwave and RF field effects on excitable cellular membranes
A80-32305
Preliminary results of microwave effects on the central nervous system of a primate /Macaca mulatta/
A80-32595
Absorption characteristics of prolate spheroidal model of man and animals at and near resonance frequency
[PB80-108293] N80-21028

RADIATION TOLERANCE
Influence of microwave irradiation on the resistance of rats to transversely applied g forces
A80-31446

RADIO COMMUNICATION
Marine traffic data of Chicago, Illinois and South Shore of Lake Michigan
[AD-A080060] N80-21979

RADIOBIOLOGY
Influence of microwave irradiation on the resistance of rats to transversely applied g forces
A80-31446
A theoretical basis for microwave and RF field effects on excitable cellular membranes
A80-32305
Fifth Working Conference (Space Biology) at the 21st Plenary Session of COSPAR
[NASA-TM-76107] N80-21017

REFLEXES
Visual learning and interhemispherical interaction
A80-30455

RELAXATION (PHYSIOLOGY)
The psychological experiments 'Self-interrogation' and 'Relaxation'
A80-30520

RENAL FUNCTION
Influence of longitudinal accelerations on fluid-electrolyte metabolism and renal function under conditions of immersion
A80-32230
Effect of normobaric hyperoxia on renal ammoniogenesis
A80-32594

RESEARCH AND DEVELOPMENT
Ballistocardiography - Past, present and future
A80-29677
Genesis of the sphygmogram from the kinetocardiogram
A80-29681

RESPIRATORY SYSTEM
Effect of gas-mixture density on the performance of the respiratory system
A80-32232

RETINAL IMAGES
Saccadic eye movements and body sway
A80-32414

RHYTHM (BIOLOGY)
Changes in the rhythmicity of the cerebral bioelectric potentials of head-shielded rabbits subjected to roentgen irradiation of the body in the minimum lethal dose
A80-30456.

RIDING QUALITY
Human comfort response to dominant random motions in longitudinal modes of aircraft motion
[NASA-CR-159186] N80-21033
Human comfort response to random motions with a dominant pitching motion
[NASA-CR-159140] N80-21034

ROBOTS
Advanced industrial robot control systems
[PB80-106396] N80-21986

ROTATING ENVIRONMENTS
Investigation of the predictive value of electronystagmograms /ENGs/ in professional-selection vestibulometry
A80-32235

S

SACCADIC EYE MOVEMENTS
Saccadic eye movements and body sway
A80-32414

SALYUT SPACE STATION
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory
A80-30513
Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission
A80-30518

SCENEDESMUS
Effect of scenedesmus acuminatus green algae extracts on the development of Candida lipolytic yeast in gas condensate-containing media
[NASA-TM-76081] N80-21965

SEA ROUGHNESS
Prophylaxis and treatment of seasickness
[NASA-TM-76108] N80-21024

SEATS
Vibration transmission through different helicopter seat cushions
A80-32596

SECRETIONS
The effects of restraint on uptake of radioactive sulfate in the salivary and gastric secretions of rats with pyloric ligation
[NASA-TM-76073] N80-21964

SERVOMECHANISMS
Advanced industrial robot control systems
[PB80-106396] N80-21986

SHORT HAUL AIRCRAFT
Human comfort response to random motions with a dominant pitching motion
[NASA-CR-159140] N80-21034

SIGNAL DETECTION
Complex statistical analysis of the detection of the QRS complex --- in electrocardiography
A80-31634

SLEEP
The psychoacoustic effects of aircraft noise on sleep - An in situ study
A80-30815
Sleep pattern variation during adaptation to high-altitude hypoxia
A80-32234
The influence of intermittent aircraft noise on sleep. II
A80-32584

SOCIAL FACTORS
Psycho-social aspects of aircraft accidents
A80-31591

SODIUM
Effect of space flight on sodium, copper, manganese and magnesium content in the skeletal bones
[NASA-TM-75506] N80-21025
SOLAR ENERGY ABSORBERS
Physical and chemical studies of chlorophyll in microemulsions
[COO-4452-001] N80-21969
SOYUZ SPACECRAFT
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory
A80-30513
SPACE FLIGHT
Effect of space flight on sodium, copper, manganese and magnesium content in the skeletal bones
[NASA-TM-75506] N80-21025
SPACE FLIGHT STRESS
Observation of the vestibular function during space flight
A80-30517
Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission
A80-30518
The psychological experiments 'Self-interrogation' and 'Relaxation'
A80-30520
Influence of microwave irradiation on the resistance of rats to transversely applied g forces
A80-31446
SPACE SUITS
Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6
A80-30515
SPACEBORNE EXPERIMENTS
Fifth Working Conference (Space Biology) at the 21st Plenary Session of COSPAR
[NASA-TM-76107] N80-21017
SPACECRAFT CONTAMINATION
Guidelines for spacecraft cleanliness control
[ESA-PSS-51/QRA-23-ESTEC-ISS-1] N80-21985
SPACECRAFT ENVIRONMENTS
Testing evaluation of the electrochemical organic content analyzer
[NASA-CR-160569] N80-21981
SPECIFICATIONS
Guidelines for spacecraft cleanliness control
[ESA-PSS-51/QRA-23-ESTEC-ISS-1] N80-21985
SPEECH RECOGNITION
Influence of auditory fatigue on masked speech intelligibility
A80-31800
SPHYGMOGRAPHY
Clinical application of carotid electrosphygmography
A80-29680
Genesis of the sphygmogram from the kinetocardiogram
A80-29681
Sphygmographic assessment of arterial distensibility in patients at risk of degenerative arterial disease
A80-29682
Comparative examination of the pulse of both right and left carotid arteries
A80-29683
STATISTICAL ANALYSIS
Complex statistical analysis of the detection of the QRS complex --- in electrocardiography
A80-31634
STEREOSCOPY
Development of a stereofluoroscopy system
[NASA-CR-160568] N80-21972
STRESS (PHYSIOLOGY)
Adrenocortical response in rats subjected to a stress of restraint by immobilization whether accompanied by hypothermia or not
[NASA-TM-76119] N80-21015
Atherosclerotic changes of vessels caused by restriction of movement
[NASA-TM-76022] N80-21020
Effect of immobilization stress on the level of macroergic phosphates in the blood of rats
[NASA-TM-76021] N80-21959
Effects of immobilization articular cartilage: Autohistoradiographic findings with S35
[NASA-TM-76070] N80-21961
Effects of motor patterns on water-soluble and membrane proteins and cholinesterase activity in subcellular fractions of rat brain tissue
[NASA-TM-76115] N80-21963
The effects of restraint on uptake of radioactive sulfate in the salivary and gastric secretions of rats with pyloric ligation
[NASA-TM-76073] N80-21964
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966
Content of lipids in blood and tissues of animals during hypodynamia
[NASA-TM-76023] N80-21967
Age related changes in the bone tissue under conditions of hypokinesia
[NASA-TM-76019] N80-21971
Effect of syrepar and oxaphenamide on liver function in experimental hypokinesia
[NASA-TM-76011] N80-21973
Effect of hyperbaric oxygenation on carbohydrate metabolism protein synthesis in the myocardium during sustained hypodynamia
[NASA-TM-76012] N80-21974
Hazards of high altitude decompression sickness during falls in barometric pressure from 1 atm to a fraction thereof
[NASA-TM-76015] N80-21977
Main trends in experimental morphological research in angiology and outlook for its development
[NASA-TM-75980] N80-21978
STRUCTURAL VIBRATION
Vibration transmission through different helicopter seat cushions
A80-32596
SUBMERGING
Influence of longitudinal accelerations on fluid-electrolyte metabolism and renal function under conditions of immersion
A80-32230
Functional state of the cardiovascular system following a three-day immersion and prophylactic rotations in a small-radius centrifuge
A80-32233
SUITS
Liquid conditioned suit and its use in alleviating heat stress in military flying
A80-31584

T

TASK COMPLEXITY
Summary of Department of Transportation/Federal Aviation Administration task force on crew workload report
[AD-A068189] N80-21032
TASTE
Electrogustometric studies in orbital flight
A80-30516
TECHNOLOGY TRANSFER
Development of a stereofluoroscopy system
[NASA-CR-160568] N80-21972
TEMPERATURE EFFECTS
Liquid conditioned suit and its use in alleviating heat stress in military flying
A80-31584
THERMOREGULATION
Role of thyroxin in the thermoregulation of albino rats following cold acclimation
A80-31075
THORAX
Dynamic characteristics of the thorax connected with the heart action
A80-29686
THRESHOLDS (PERCEPTION)
Suprathreshold processing of complex visual stimuli - Evidence for linearity in contrast perception
A80-32413
THYROXINE
Role of thyroxin in the thermoregulation of albino rats following cold acclimation
A80-31075
TISSUES (BIOLOGY)
Significance of blood flow in calculations of temperature in laser irradiated tissue
A80-29179

Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission
A80-30518
Absorption characteristics of prolate spheroidal model of man and animals at and near resonance frequency
[PB80-108293] N80-21028
Formulation of a preliminary assessment of halogenated organic compounds in man and environmental media
[PB80-112170] N80-21029
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966

TOMOGRAPHY
Abdominal echotomography - Its place in the evaluation of flight personnel
A80-32587

TOXICOLOGY
The importance of toxicological studies in aircraft accidents
A80-32578

TRAFFIC
Marine traffic data of Chicago, Illinois and South Shore of Lake Michigan
[AD-A080060] N80-21979

TRANQUILIZERS
Effect of tranquilizers on animal resistance to the adequate stimuli of the vestubular apparatus
[NASA-TM-76109] N80-21960

U

ULCERS
Gastric ulcers affecting pilots of the Peruvian air force
A80-32599
Reduction of the duration of restraint for the production of experimental ulcers in rats: Application to the study of protective substances
[NASA-TM-76136] N80-21016

UROLOGY
Effect of normobaric hyperoxia on renal ammoniogenesis
A80-32594

V

VASCULAR SYSTEM
Coagulating activity of the blood, vascular wall, and myocardium under hypodynamia conditions
[NASA-TM-76056] N80-21023

VASOCONSTRICTION
An evaluation protocol for fighter aircrew with non specific ST-T abnormalities
A80-31585

VASODILATION
An evaluation protocol for fighter aircrew with non specific ST-T abnormalities
A80-31585

VEGETABLES
The effect of variety and maturity on the quality of freeze-dried carrots. The effect of microwave blanching on the nutritional and textural quality of freeze-dried spinach
[NASA-CR-160567] N80-21982

VEGETATION GROWTH
Effect of scenedesmus acuminatus green algae extracts on the development of Candida lipolytic yeast in gas condensate-containing media
[NASA-TM-76081] N80-21965

VERTICAL MOTION
Investigation of transitional characteristics of the equilibrium preservation system --- human vertical posture response during acceleration
A80-29909

VESTIBULAR NYSTAGMUS
Investigation of the predictive value of electronystagmograms /ENGs/ in professional-selection vestibulometry
A80-32235

VESTIBULAR TESTS
Investigation of the predictive value of electronystagmograms /ENGs/ in professional-selection vestibulometry
A80-32235

Glycerol test in diagnosing increased intralabyrinth pressure
[NASA-TM-76110] N80-21022

VESTIBULES
Observation of the vestibular function during space flight
A80-30517
Cold shivering activity after unilateral destruction of the vestibular apparatus
[NASA-TM-76099] N80-21021
Effect of tranquilizers on animal resistance to the adequate stimuli of the vestubular apparatus
[NASA-TM-76109] N80-21960

VIBRATION EFFECTS
Dynamic vision under vibration and changes with curvature of transparencies
A80-31589

VIBRATION MEASUREMENT
Use of double pulse holography for vibration analysis on a human ear in vivo
A80-29359
Dynamic characteristics of the thorax connected with the heart action
A80-29686

VIBRATION MODE
Vibration of the basilar membrane in the mammalian cochlea
A80-31480

VIBRATION TESTS
Vibration transmission through different helicopter seat cushions
A80-32596

VIBRATIONAL STRESS
A physical study of vibratory stress - Physiological interpretation - Importance in aircraft accidents
A80-32580

VISION
Considerations with regard to a test of the Essilor visiotest
A80-32585

VISUAL ACUITY
Dynamic vision under vibration and changes with curvature of transparencies
A80-31589

VISUAL DISCRIMINATION
Visual learning and interhemispherical interaction
A80-30455

VISUAL FIELDS
Central field of vision and electroculography in moderate hypoxia
A80-32588

VISUAL PERCEPTION
Visual learning and interhemispherical interaction
A80-30455
Flicker-induced asymmetries in border enhancement and the distinction between brightness and darkness systems
A80-30674
Suprathreshold processing of complex visual stimuli - Evidence for linearity in contrast perception
A80-32413
Study of pilot's sight direction on Mercure flight simulator
A80-32590

VISUAL STIMULI
Suprathreshold processing of complex visual stimuli - Evidence for linearity in contrast perception
A80-32413

W

WATER QUALITY
Testing evaluation of the electrochemical organic content analyzer
[NASA-CR-160569] N80-21981

WEIGHTLESSNESS
Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6
A80-30515
Observation of the vestibular function during space flight
A80-30517

WINDSHIELDS
Dynamic vision under vibration and changes with curvature of transparencies
A80-31589
WORK CAPACITY
Procedures and facilities for studying the capacity for work of cosmonauts
A80-30514
The circadian rhythm of aerobic efficiency
A80-32231
WORKLOADS (PSYCHOPHYSIOLOGY)
Summary of Department of Transportation/Federal Aviation Administration task force on crew workload report
[AD-A068189] N80-21032
Principles for classification of work load for women
[NASA-TM-76084] N80-21983

X

X RAYS
Changes in the rhythmicity of the cerebral bioelectric potentials of head-shielded rabbits subjected to roentgen irradiation of the body in the minimum lethal dose
A80-30456

Y

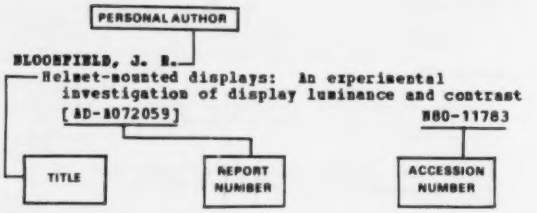
YEAST
Effect of scenedesmus acuminatus green algae extracts on the development of Candida lipolytic yeast in gas condensate-containing media
[NASA-TM-76081] N80-21965

blank page

PERSONAL AUTHOR INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 208)* JULY 1980

Typical Personal Author Index Listing


PERSONAL AUTHOR
BLOOMFIELD, J. R.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059]
N80-11783
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ADAVAL, S. K.
An evaluation protocol for fighter aircrew with non specific ST-T abnormalities
A80-31585

AFANASENKO, N. E.
Determination and elimination of low-frequency zero-level oscillations of an EKG during automated processing
A80-31633

AKHTAR, M.
An evaluation protocol for fighter aircrew with non specific ST-T abnormalities
A80-31585

ALEKSANDROVA, E. A.
Influence of longitudinal accelerations on fluid-electrolyte metabolism and renal function under conditions of immersion
A80-32230

ALEKSINA, L. A.
Effects of hypokinesia and hypodynamia on the intraorganic arteries of the heart
[NASA-TM-76069] N80-21026

ALLEN, M. A.
The crew activity planning system bus interface unit
[NASA-CR-160566] N80-21980

ANDERSON, T.
Advanced industrial robot control systems
[PB80-106396] N80-21986

ANDREYEV, S. V.
Coagulating activity of the blood, vascular wall, and myocardium under hypodynamia conditions
[NASA-TM-76056] N80-21023

ANIKINA, A. Y.
On the cellular autoimmune mechanism for eliminating erythrocytes normally and under extreme influences
[NASA-TM-75735] N80-21014

AOSHIMA, K.
An investigation of the effects of impulse noise exposure on man - Impulse noise with a relatively low peak level
A80-30854

AUFFRET, R.
Medical considerations in light aircraft accidents
A80-32582

B

BABICH, V. M.
Vibration of the basilar membrane in the mammalian cochlea
A80-31480

BADES, T.
Effect of normobaric hyperoxia on renal ammoniogenesis
A80-32594

BANCROFT, W. H., JR.
Kinetocardiography - Past and present
A80-29679

BANNERJEE, P. K.
Liquid conditioned suit and its use in alleviating heat stress in military flying
A80-31584

BARANSKI, S.
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory
A80-30513
Procedures and facilities for studying the capacity for work of cosmonauts
A80-30514
Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6
A80-30515
Electrogustometric studies in orbital flight
A80-30516
Observation of the vestibular function during space flight
A80-30517
Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission
A80-30518
The psychological experiments 'Self-interrogation' and 'Relaxation'
A80-30520

BAUM, S. A.
Establishment of the repeatability of performance of the SA103C three year old child test dummies
[PB80-112204] N80-21036

BEECK, M.-A.
Use of double pulse holography for vibration analysis on a human ear in vivo
A80-29359

BENDER, J.
Advanced industrial robot control systems
[PB80-106396] N80-21986

BENNETTI, T. E.
Plasma cortisol levels and auditory functioning in humans exposed to short and prolonged durations of noise
N80-21018

BERG, E.
Advanced industrial robot control systems
[PB80-106396] N80-21986

BIKOV, I. I.
Initial dynamics of the EKG during an electrical defibrillation of the heart
[NASA-TM-76002] N80-21019

BILMES, B. I.
Effect of scenedesmus acuminatus green algae extracts on the development of Candida lipolytic yeast in gas condensate-containing media
[NASA-TM-76081] N80-21965

BLANC, P.
Considerations regarding sudden deafness - Aeronautical incidents
A80-32591

Impedance measurement - Importance in otologic assessment of air flight personnel A80-32592

BLOSZCZYNSKI, R.
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory A80-30513
Procedures and facilities for studying the capacity for work of cosmonauts A80-30514
Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6 A80-30515
Electrogustometric studies in orbital flight A80-30516
Observation of the vestibular function during space flight A80-30517
Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission A80-30518
The psychological experiments 'Self-interrogation' and 'Relaxation' A80-30520

BOISSIN, J. P.
On the feasibility of contact lenses for flight personnel A80-32589

BORREDON, P.
A physical study of vibratory stress - Physiological interpretation - Importance in aircraft accidents A80-32580

BORREDON, P. J.-P.
Investigation of the cardiac inotropic effect occurring at the onset of hypoxic hypoxia A80-32593

BOUR, L. J.
MTF of the defocused optical system of the human eye for incoherent monochromatic light A80-30673

BRESLAV, I. S.
Effect of gas-mixture density on the performance of the respiratory system A80-32232

BROWN, D.
Advanced industrial robot control systems
[PB80-106396] N80-21986

BUCHEL, L.
Adrenocortical response in rats subjected to a stress of restraint by immobilization whether accompanied by hypothermia or not
[NASA-TM-76119] N80-21015
Reduction of the duration of restraint for the production of experimental ulcers in rats: Application to the study of protective substances
[NASA-TM-76136] N80-21016
Metabolism and activity of zoxazolamine in white rats during forced immobilization with and without hyperthermia
[NASA-TM-76074] N80-21968

BUZUNOV, V. A.
Principles for classification of work load for women
[NASA-TM-76084] N80-21983

C

CAIN, C. A.
A theoretical basis for microwave and RF field effects on excitable cellular membranes A80-32305

CANNON, M. W.
Suprathreshold processing of complex visual stimuli - Evidence for linearity in contrast perception A80-32413

CARNOW, B. W.
Model for measuring the health impact from changing levels of ambient air pollution: Morbidity study
[PB80-107030] N80-21027

CHARTERS, R. H.
Marine traffic data of Chicago, Illinois and South Shore of Lake Michigan
[AD-A080060] N80-21979

CHAYVIALLE, J. A.
The effects of restraint on uptake of radioactive sulfate in the salivary and gastric secretions of rats with pyloric ligation
[NASA-TM-76073] N80-21964

CHAZOV, E. I.
Coagulating activity of the blood, vascular wall, and myocardium under hypodynamia conditions
[NASA-TM-76056] N80-21023

CHEBOTAREV, I. P.
Initial dynamics of the EKG during an electrical defibrillation of the heart
[NASA-TM-76002] N80-21019

CHEKAILO, M. A.
Design principles for a system of automated processing of cardiological data on the M-6000 computer A80-31638

CHERESHAROV, L.
Effects of motor patterns on water-soluble and membrane proteins and cholinesterase activity in subcellular fractions of rat brain tissue
[NASA-TM-76115] N80-21963

CHERNOMORETS, V. A.
Measurement of local indices of operator performance in the tracking mode A80-31635

CHERRY, J. J., III
Marine traffic data of Chicago, Illinois and South Shore of Lake Michigan
[AD-A080060] N80-21979

CHERTKOVA, E. S.
Fermentative activity of neutrophil leukocytes in rats under conditions of hypoxic hypoxia A80-30457

CHEVALERAUD, J.
Central field of vision and electroculography in moderate hypoxia A80-32588

CHEVALERAUD, J. P.
Considerations with regard to a test of the Essilor visiotest A80-32585

CHLEBUS, H.
Clinical application of carotid electrosphygmography A80-29680
Sphygmographic assessment of arterial distensibility in patients at risk of degenerative arterial disease A80-29682
Comparative examination of the pulse of both right and left carotid arteries A80-29683

CISWICKA-SZNAJDERMAN, M.
Sphygmographic assessment of arterial distensibility in patients at risk of degenerative arterial disease A80-29682

CONRAD, J.
Acute microwave irradiation with regard to a case recently monitored at Begin Hospital A80-32600

CUETO DUTHURBURU, A.
Gastric ulcers affecting pilots of the Peruvian air force A80-32599

D

DAMONGEOT, A.
A psychoacoustic study of impulsive helicopter noise A80-30813

DANIIAROV, S. B.
Cardiac output at high altitude A80-30434

DANILIN, V. P.
Sleep pattern variation during adaptation to high-altitude hypoxia A80-32234

DARNAUD, B.
Central field of vision and electroculography in moderate hypoxia A80-32588

DAVENPORT, R. J.
Testing evaluation of the electrochemical organic content analyzer
[NASA-CR-160569] N80-21981

DEKANOSIDZE, T. I.
Atherosclerotic changes of vessels caused by restriction of movement
[NASA-TM-76022] N80-21020

DELAHAYE, R. P.
Abdominal echotomography - Its place in the evaluation of flight personnel
A80-32587
Acute microwave irradiation with regard to a case recently monitored at Begin Hospital
A80-32600

DELCROIX, J. P.
The importance of toxicological studies in aircraft accidents
A80-32578

DESANTIS, E.
Effects of immobilization articular cartilage: Autohistoradiographic findings with S35
[NASA-TM-76070] N80-21961

DIGIOVANNI, C.
Effects of immobilization articular cartilage: Autohistoradiographic findings with S35
[NASA-TM-76070] N80-21961

DIGO, R. J.
The place of the psychological factor among the causes of aircraft accidents in general aviation
A80-32583

DOROKHOVA, B. R.
Influence of longitudinal accelerations on fluid-electrolyte metabolism and renal function under conditions of immersion
A80-32230

DOURY, P.
Acute microwave irradiation with regard to a case recently monitored at Begin Hospital
A80-32600

DRONIOU, J.
The application of echocardiography to the cardiological evaluation of flight personnel
A80-32586

DUBININA, L. G.
Investigation of the effect of space flight factors on chromosomes in seeds
[NASA-TM-76113] N80-21962

DURET, J. C.
The application of echocardiography to the cardiological evaluation of flight personnel
A80-32586

DZHAVAKHISHVILI, N. A.
Main trends in experimental morphological research in angiology and outlook for its development
[NASA-TM-75980] N80-21978

DZHUGAN, P. K.
Analog-digital converter for the ELKAR electrocardiograph
A80-31637

E

ECONOMOS, A. C.
Favorable effects of the antioxidants sodium and magnesium thiazolidine carboxylate on the vitality and life span of Drosophila and mice
A80-29085

EMRI, I.
Dynamic characteristics of the thorax connected with the heart action
A80-29686

ERICKSON, M. D.
Formulation of a preliminary assessment of halogenated organic compounds in man and environmental media
[PB80-112170] N80-21029

F

FARLEY, W. N.
Research on new electronic display technologies
[AD-A079323] N80-21035

FEDEROV, I. V.
Content of lipids in blood and tissues of animals during hypodynamia
[NASA-TM-76023] N80-21967

FEIGIN, G. V.
Changes in the rhythmicity of the cerebral bioelectric potentials of head-shielded rabbits subjected to roentgen irradiation of the body in the minimum lethal dose
A80-30456

FISCHLER, H.
Investigation of the cardiac inotropic effect occurring at the onset of hypoxic hypoxia
A80-32593

FLAGEAT, J.
Abdominal echotomography - Its place in the evaluation of flight personnel
A80-32587

FLOURNOY-GILL, Z.
Model for measuring the health impact from changing levels of ambient air pollution: Morbidity study
[PB80-107030] N80-21027

FRITZE, W.
Use of double pulse holography for vibration analysis on a human ear in vivo
A80-29359

G

GAGNEUX, J. M.
The psychoacoustic effects of aircraft noise on sleep - An in situ study
A80-30815

GALITSKII, A. K.
Design principles for a system of automated processing of cardiological data on the M-6000 computer
A80-31638

GALLAIRE, D.
Reduction of the duration of restraint for the production of experimental ulcers in rats: Application to the study of protective substances
[NASA-TM-76136] N80-21016

GALUSKO, Y. S.
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966

GENIN, A. M.
Hazards of high altitude decompression sickness during falls in barometric pressure from 1 atm to a fraction thereof
[NASA-TM-76015] N80-21977

GINSBURG, A. P.
Suprathreshold processing of complex visual stimuli - Evidence for linearity in contrast perception
A80-32413

GOEDHARD, W. J. A.
Ballistocardiography - Past, present and future
A80-29677

GRIGOREV, A. I.
Influence of longitudinal accelerations on fluid-electrolyte metabolism and renal function under conditions of immersion
A80-32230

GROUSSET, C.
Investigation of the cardiac inotropic effect occurring at the onset of hypoxic hypoxia
A80-32593

GUTMANN, J. C.
Research on new electronic display technologies
[AD-A079323] N80-21035

GVISHIANI, G. S.
Atherosclerotic changes of vessels caused by restriction of movement
[NASA-TM-76022] N80-21020

H

HAY, G. C.
Summary of Department of Transportation/Federal Aviation Administration task force on crew workload report
[AD-A068189] N80-21032

HERMASZEWSKI, M.
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory
A80-30513
Procedures and facilities for studying the capacity for work of cosmonauts
A80-30514
Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6
A80-30515
Electrogustometric studies in orbital flight
A80-30516

Observation of the vestibular function during space flight
A80-30517

Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission
A80-30518

The psychological experiments 'Self-interrogation' and 'Relaxation'
A80-30520

HIKICHI, T.
An investigation of the effects of impulse noise exposure on man - Impulse noise with a relatively low peak level
A80-30854

HIRAMATSU, S.
An investigation of the effects of impulse noise exposure on man - Impulse noise with a relatively low peak level
A80-30854

An investigation of the effects of impulse noise exposure on man - Impulse noise with a relatively low peak level
A80-30854

HOUSE, C. D.
Summary of Department of Transportation/Federal Aviation Administration task force on crew workload report
[AD-A068189] N80-21032

HOYLE, F.
The identification of the 3-micron spectral feature in galactic infrared sources
A80-30342

J

JAGODIC, A.
Further observations on modelling of the cardiovascular function in the electrical model
A80-29687

JAIN, U.
Diagnostic accuracy of the conventional 12-lead and the orthogonal Frank-lead electrocardiograms in detection of myocardial infarctions with classifiers using continuous and Bernoulli features
A80-30873

JERNIGAN, M. E.
Compensation for distortion in eye-movement monitors
A80-29178

JOHNSTON, P. A.
Influence of auditory fatigue on masked speech intelligibility
A80-31800

JUZNIC, G.
Noninvasive access to cardiovascular dynamics: Experimental and applied; Proceedings of the Eleventh European Congress on Ballistocardiography, Noninvasive Cardiography, and Cardiovascular Dynamics, Univerza v Ljubljani, Ljubljana, Yugoslavia, March 20-22, 1978
A80-29676

Genesis of the sphygmogram from the kinetocardiogram
A80-29681

Dynamic characteristics of the thorax connected with the heart action
A80-29686

Further observations on modelling of the cardiovascular function in the electrical model
A80-29687

K

KALACHEVA, E. L.
Effect of gas-mixture density on the performance of the respiratory system
A80-32232

KARAKASHYAN, A. N.
Principles for classification of work load for women
[NASA-TM-76084] N80-21983

KARAVAYEVA, N. N.
Effect of scenedesmus acuminatus green algae extracts on the development of Candida lipolytic yeast in gas condensate-containing media
[NASA-TM-76081] N80-21965

KARPALA, F.
Compensation for distortion in eye-movement monitors
A80-29178

KASYMOVA, G. A.
Effect of scenedesmus acuminatus green algae extracts on the development of Candida lipolytic yeast in gas condensate-containing media
[NASA-TM-76081] N80-21965

KENTERA, D.
Evaluation of the pulse contour method in beat-to-beat determination of the cardiac output in small laboratory animals
A80-29684

KENTON, E.
Signs and display systems: Graphic design and human engineering. A bibliography with abstracts
[PB80-803158] N80-21031

KHINCHIKASHVILI, N. V.
Effect of tranquilizers on animal resistance to the adequate stimuli of the vestubular apparatus
[NASA-TM-76109] N80-21960

KLEIN, M. J.
Preliminary results of microwave effects on the central nervous system of a primate /Macaca mulatta/
A80-32595

KLEITZ, C.
Abdominal echotomography - Its place in the evaluation of flight personnel
A80-32587

KOBAKHIDZE, N. G.
Atherosclerotic changes of vessels caused by restriction of movement
[NASA-TM-76022] N80-21020

KOLESNIK, A. G.
Effect of space flight on sodium, copper, manganese and magnesium content in the skeletal bones
[NASA-TM-75506] N80-21025

KOMISSAROVA, N. A.
Effect of space flight on sodium, copper, manganese and magnesium content in the skeletal bones
[NASA-TM-75506] N80-21025

KOVALENKO, Y. A.
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966

KOVTUN, V. P.
Express-diagnostic criteria of the cardiohemodynamic efficiency of juvenile athletes
A80-32216

KREITLOW, H.
Use of double pulse holography for vibration analysis on a human ear in vivo
A80-29359

KRIVOSHCHEKOV, S. G.
The circadian rhythm of aerobic efficiency
A80-32231

KUBICZKOVA, J.
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory
A80-30513

Procedures and facilities for studying the capacity for work of cosmonauts
A80-30514

Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6
A80-30515

Electrogustometric studies in orbital flight
A80-30516

Observation of the vestibular function during space flight
A80-30517

Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission
A80-30518

The psychological experiments 'Self-interrogation' and 'Relaxation'
A80-30520

KULIKOVA, M. V.
Glycerol test in diagnosing increased intralabyrinth pressure
[NASA-TM-76110] N80-21022

KUBAN, V.
Psycho-social aspects of aircraft accidents
A80-31591

KUNZRU, G. N.
An evaluation protocol for fighter aircrew with non specific ST-T abnormalities
A80-31585

KUZMINA, G. I.
Cold shivering activity after unilateral destruction of the vestibular apparatus
[NASA-TM-76099] N80-21021

L

LAMBERT, E.
The effects of restraint on uptake of radioactive sulfate in the salivary and gastric secretions of rats with pyloric ligation
[NASA-TM-76073] N80-21964

LANDUKHOVA, E. F.
Sleep pattern variation during adaptation to high-altitude hypoxia
A80-32234

LAVERNHE, J.
Medical considerations in light aircraft accidents
A80-32582
The place of the psychological factor among the causes of aircraft accidents in general aviation
A80-32583

LEE, H.
Absorption characteristics of prolate spheroidal model of man and animals at and near resonance frequency
[PB80-108293] N80-21028

LEIBOWITZ, H. W.
Saccadic eye movements and body sway
A80-32414

LIBIAN, L.
Adrenocortical response in rats subjected to a stress of restraint by immobilization whether accompanied by hypothermia or not
[NASA-TM-76119] N80-21015

LIENHARD, F.
Investigation of the cardiac inotropic effect occurring at the onset of hypoxic hypoxia
A80-32593

LIENHART, H.
Considerations regarding sudden deafness - Aeronautical incidents
A80-32591
Impedance measurement - Importance in otologic assessment of air flight personnel
A80-32592

LIMAR, D. Y.
Glycerol test in diagnosing increased intralabyrinth pressure
[NASA-TM-76110] N80-21022

LIN, C. S.
Advanced industrial robot control systems
[PB80-106396] N80-21986

LOBOVA, T. M.
Content of lipids in blood and tissues of animals during hypodynamia
[NASA-TM-76023] N80-21967

LUH, J.
Advanced industrial robot control systems
[PB80-106396] N80-21986

LYSENKO, IU. V.
Investigation of the predictive value of electronystagmograms /ENGs/ in professional-selection vestibulometry
A80-32235

M

MACKAY, R. A.
Physical and chemical studies of chlorophyll in microemulsions
[COO-4452-001] N80-21969

MAILLE, M.
Considerations with regard to a test of the Essilor visiotest
A80-32585

MAILYAN, E. S.
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966

MAKAROV, G. A.
Effect of hyperbaric oxygenation on carbohydrate metabolism protein synthesis in the myocardium during sustained hypodynamia
[NASA-TM-76012] N80-21974

MAKASHVILI, M. A.
Visual learning and interhemispherical interaction
A80-30455

MAKEEV, S. M.
Complex statistical analysis of the detection of the QRS complex
A80-31634

MAKSIMOVICH, Y. B.
Effect of tranquilizers on animal resistance to the adequate stimuli of the vestubular apparatus
[NASA-TM-76109] N80-21960

MALKIN, V. B.
Sleep pattern variation during adaptation to high-altitude hypoxia
A80-32234

MAMASAKHLISOV, G. V.
Investigation of transitional characteristics of the equilibrium preservation system
A80-29909

MARIN, M.
Investigation of the cardiac inotropic effect occurring at the onset of hypoxic hypoxia
A80-32593

MARTENS, W. L.
Influence of auditory fatigue on masked speech intelligibility
A80-31800

MASLOVA, E. M.
Recognition of EKG structural elements in an automated complex
A80-31636
Design principles for a system of automated processing of cardiological data on the M-6000 computer
A80-31638

MASSARD, J.-D.
Investigation of the cardiac inotropic effect occurring at the onset of hypoxic hypoxia
A80-32593

MCHEDLISHVILI, M. G.
Atherosclerotic changes of vessels caused by restriction of movement
[NASA-TM-76022] N80-21020

MELMAN, Y. P.
Main trends in experimental morphological research in angiology and outlook for its development
[NASA-TM-75980] N80-21978

METGES, P. J.
Abdominal echotomography - Its place in the evaluation of flight personnel
A80-32587
Acute microwave irradiation with regard to a case recently monitored at Begin Hospital
A80-32600

MILHAUD, C. L.
Preliminary results of microwave effects on the central nervous system of a primate /Macaca mulatta/
A80-32595

MINSKY, M.
K-lines: A theory of memory
[AD-A078116] N80-21030

MIQUEL, J.
Favorable effects of the antioxidants sodium and magnesium thiazolidine carboxylate on the vitality and life span of Drosophila and mice
A80-29085

MISCHANCHUK, N. S.
Glycerol test in diagnosing increased intralabyrinth pressure
[NASA-TM-76110] N80-21022

MURANSKY, M.
Metabolism and activity of zoxazolamine in white rats during forced immobilization with and without hyperthermia
[NASA-TM-76074] N80-21968

N

NAAD, K. N.
Establishment of the repeatability of performance of the SA103C three year old child test dummies
[PB80-112204] N80-21036

NAMEKATA, T.
Model for measuring the health impact from changing levels of ambient air pollution: Morbidity study
[PB80-107030] N80-21027

NASTOIU, I.
Effect of normobaric hyperoxia on renal ammoniogenesis
A80-32594

NAVAKATIKYAN, A. O.
Principles for classification of work load for women
[NASA-TM-76084] N80-21983

NEBOIT, M.
Study of pilot's sight direction on Mercure flight simulator
A80-32590

NELSON, M. A.
Suprathreshold processing of complex visual stimuli - Evidence for linearity in contrast perception
A80-32413

NIKOLAEV, V. G.
Initial dynamics of the EKG during an electrical defibrillation of the heart
[NASA-TM-76002] N80-21019

NIKOLIC, S.
Evaluation of the pulse contour method in beat-to-beat determination of the cardiac output in small laboratory animals
A80-29684

NITOCHKINA, I. A.
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966

NOGUES, C.
The contribution of histopathology to investigations following aircraft accidents
A80-32579

NOSKOV, V. B.
Influence of longitudinal accelerations on fluid-electrolyte metabolism and renal function under conditions of immersion
A80-32230

NOVOSELOVA, S. M.
Vibration of the basilar membrane in the mammalian cochlea
A80-31480

O

OFARRELL, R. B.
Model for measuring the health impact from changing levels of ambient air pollution: Morbidity study
[PB80-107030] N80-21027

OKHRIMENKO, A. P.
Principles for classification of work load for women
[NASA-TM-76084] N80-21983

ONOPCHUK, IU. N.
Design characteristics of an imitation system for the study of physiological processes on a digital computer
A80-31639

OSIPOV, V. P.
The circadian rhythm of aerobic efficiency
A80-32231

OZEROV, IU. P.
Investigation of the predictive value of electronystagmograms /ENGs/ in professional-selection vestibulometry
A80-32235

P

PAPIN, J. P.
Study of pilot's sight direction on Mercure flight simulator
A80-32590

PARAMONOV, IU. V.
Determination and elimination of low-frequency zero-level oscillations of an EKG during automated processing
A80-31633

PARKER, D. E.
Influence of auditory fatigue on masked speech intelligibility
A80-31800

PATTIN, S.
Acute microwave irradiation with regard to a case recently monitored at Begin Hospital
A80-32600

PAUL, R.
Advanced industrial robot control systems
[PB80-106396] N80-21986

PEKHTEREV, A. G.
Analog-digital converter for the ELKAR electrocardiograph
A80-31637

PELLIEU, L.
A physical study of vibratory stress - Physiological interpretation - Importance in aircraft accidents
A80-32580

PELLIZZARI, E. D.
Formulation of a preliminary assessment of halogenated organic compounds in man and environmental media
[PB80-112170] N80-21029

PERMIAKOV, B. V.
Investigation of the predictive value of electronystagmograms /ENGs/ in professional-selection vestibulometry
A80-32235

PERNOD, J.
The application of echocardiography to the cardiological evaluation of flight personnel
A80-32586

PETEREC, D.
Dynamic characteristics of the thorax connected with the heart action
A80-29686
Further observations on modelling of the cardiovascular function in the electrical model
A80-29687

PETROVSKII, B. V.
Coagulating activity of the blood, vascular wall, and myocardium under hypodynamia conditions
[NASA-TM-76056] N80-21023

PEVZNER, L. Z.
Effects of motor patterns on water-soluble and membrane proteins and cholinesterase activity in subcellular fractions of rat brain tissue
[NASA-TM-76115] N80-21963

PICART, P. E.
The importance of toxicological studies in aircraft accidents
A80-32578

PINTILIE, I.
Effect of normobaric hyperoxia on renal ammoniogenesis
A80-32594

PIORKO, A.
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory
A80-30513
Procedures and facilities for studying the capacity for work of cosmonauts
A80-30514
Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6
A80-30515
Electrogustometric studies in orbital flight
A80-30516
Observation of the vestibular function during space flight
A80-30517
Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission
A80-30518
The psychological experiments 'Self-interrogation' and 'Relaxation'
A80-30520

PLANTUREUX, G.
Medical considerations in light aircraft accidents
A80-32582

PODRUSHNIAK, E. P.
Age related changes in the bone tissue under conditions of hypokinesia
[NASA-TM-76019] N80-21971

POIRIER, J. L.
Vibration transmission through different helicopter seat cushions
A80-32596

POLIAKOV, B. I.
Investigation of the predictive value of electronystagmograms /ENGs/ in professional-selection vestibulometry
A80-32235
POPKOV, V. L.
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966
POST, R. B.
Saccadic eye movements and body sway
A80-32414
POYOT, G.
The organization of medical aid in air disasters - Berlin-Tegel international airport
A80-32591
PREPADNIK, M.
Dynamic characteristics of the thorax connected with the heart action
A80-29686
PRIEBE, L. A.
Significance of blood flow in calculations of temperature in laser irradiated tissue
A80-29179
PRIOUX-GUYONNEAU, M.
Adrenocortical response in rats subjected to a stress of restraint by immobilization whether accompanied by hypothermia or not
[NASA-TM-76119] N80-21015
PROKHONCHUKOV, A. A.
Effect of space flight on sodium, copper, manganese and magnesium content in the skeletal bones
[NASA-TM-75506] N80-21025
PUDOV, V. I.
Effect of immobilization stress on the level of macroergic phosphates in the blood of rats
[NASA-TM-76021] N80-21959
PUKHOVA, Y. I.
On the cellular autoimmune mechanism for eliminating erythrocytes normally and under extreme influences
[NASA-TM-75735] N80-21014

Q

QUANDIEU, P.
A physical study of vibratory stress - Physiological interpretation - Importance in aircraft accidents
A80-32580
Investigation of the cardiac inotropic effect occurring at the onset of hypoxic hypoxia
A80-32593

R

RABOSH, G. N.
Analog-digital converter for the ELKAR electrocardiograph
A80-31637
RACZYNSKI, J.
Comparative examination of the pulse of both right and left carotid arteries
A80-29683
RAI, K.
An evaluation protocol for fighter aircrew with non specific ST-T abnormalities
A80-31585
RAUTAHARJU, P. M.
Diagnostic accuracy of the conventional 12-lead and the orthogonal Frank-lead electrocardiograms in detection of myocardial infarctions with classifiers using continuous and Bernoulli features
A80-30873
REBYAKOVA, N. A.
Preservation of equilibrium in orthograde and inverted body positions
[NASA-TM-76112] N80-21976
REDA, D.
Model for measuring the health impact from changing levels of ambient air pollution: Morbidity study
[PB80-107030] N80-21027
REMINTON, M.
Advanced industrial robot control systems
[PB80-106396] N80-21986
REMOLE, A.
Flicker-induced asymmetries in border enhancement and the distinction between brightness and darkness systems
A80-30674
RICHART, J. C.
The application of echocardiography to the cardiological evaluation of flight personnel
A80-32586
RIVERS, D. B.
Development of a stereofluoroscopy system
[NASA-CR-160568] N80-21972
ROBIN, E.
Abdominal echotomography - Its place in the evaluation of flight personnel
A80-32587
RUET, D.
The effects of restraint on uptake of radioactive sulfate in the salivary and gastric secretions of rats with pyloric ligation
[NASA-TM-76073] N80-21964
RUNOV, V. I.
Effect of scenedesmus acuminatus green algae extracts on the development of Candida lipolytic yeast in gas condensate-containing media
[NASA-TM-76081] N80-21965
RYAZHSKIY, A. P.
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966
RYLNIKOV, Y. P.
Content of lipids in blood and tissues of animals during hypodynamia
[NASA-TM-76023] N80-21967

S

SAGANIAK, R.
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory
A80-30513
Procedures and facilities for studying the capacity for work of cosmonauts
A80-30514
Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6
A80-30515
Electrogustometric studies in orbital flight
A80-30516
Observation of the vestibular function during space flight
A80-30517
Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission
A80-30518
The psychological experiments 'Self-interrogation' and 'Relaxation'
A80-30520
SALGAS, P.
Considerations regarding sudden deafness - Aeronautical incidents
A80-32591
SANT, J. S.
Liquid conditioned suit and its use in alleviating heat stress in military flying
A80-31584
Dynamic vision under vibration and changes with curvature of transparencies
A80-31589
SANTUCCI, G.
Considerations with regard to a test of the Essilor visiotest
A80-32585
SANTUCCI, G. F.
Central field of vision and electroculography in moderate hypoxia
A80-32588
SABOL, Z.
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory
A80-30513
Procedures and facilities for studying the capacity for work of cosmonauts
A80-30514

Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6
A80-30515

Electrogustometric studies in orbital flight
A80-30516

Observation of the vestibular function during space flight
A80-30517

Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission
A80-30518

The psychological experiments 'Self-interrogation' and 'Relaxation'
A80-30520

SEMENOV, L. P.
Preservation of equilibrium in orthograde and inverted body positions
[NASA-TM-76112] N80-21976

SEREBRENNIKOV, N. I.
Investigation of the predictive value of electronystagmograms /ENGs/ in professional-selection vestibulometry
A80-32235

SHAGINIAN, V. S.
Express-diagnostic criteria of the cardiohemodynamic efficiency of juvenile athletes
A80-32216

SHAKHUNOV, B. A.
Effect of space flight on sodium, copper, manganese and magnesium content in the skeletal bones
[NASA-TM-75506] N80-21025

SHAKUNTHALA, D. T.
Dynamic vision under vibration and changes with curvature of transparencies
A80-31589

SHARDA, P. C.
Aeromedical evaluation of aircraft accidents - Human engineering aspects
A80-31590

SHASHKIN, A. V.
On the cellular autoimmune mechanism for eliminating erythrocytes normally and under extreme influences
[NASA-TM-75735] N80-21014

SHULZHENKO, E. B.
Influence of longitudinal accelerations on fluid-electrolyte metabolism and renal function under conditions of immersion
A80-32230

Functional state of the cardiovascular system following a three-day immersion and prophylactic rotations in a small-radius centrifuge
A80-32233

SILVA, R. A.
Marine traffic data of Chicago, Illinois and South Shore of Lake Michigan
[AD-A080060] N80-21979

SIMONNET, F.
The psychoacoustic effects of aircraft noise on sleep - An in situ study
A80-30815

SINGH, M. M.
An evaluation protocol for fighter aircrew with non specific ST-T abnormalities
A80-31585

SINGH, R.
Injury dynamics in aircraft accident
A80-31592

SKAKUN, L. N.
Effect of syrepar and oxaphenamide on liver function in experimental hypokinesia
[NASA-TM-76011] N80-21973

SKIBNIEWSKI, F.
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory
A80-30513

Procedures and facilities for studying the capacity for work of cosmonauts
A80-30514

Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6
A80-30515

Electrogustometric studies in orbital flight
A80-30516

Observation of the vestibular function during space flight
A80-30517

Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission
A80-30518

The psychological experiments 'Self-interrogation' and 'Relaxation'
A80-30520

SNYDER, H. L.
Research on new electronic display technologies
[AD-A079323] N80-21035

SOBOLEV, V. I.
Role of thyroxin in the thermoregulation of albino rats following cold acclimation
A80-31075

SOODAN, K. S.
Effects of alcohol on aircrew performance - A field study
A80-31588

SOSENKOV, V. A.
Effect of immobilization stress on the level of macroergic phosphates in the blood of rats
[NASA-TM-76021] N80-21959

STARC, V.
Influence of diastolic fibre orientation on the left ventricular power generation
A80-29685

STENDERA, J.
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory
A80-30513

Procedures and facilities for studying the capacity for work of cosmonauts
A80-30514

Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6
A80-30515

Electrogustometric studies in orbital flight
A80-30516

Observation of the vestibular function during space flight
A80-30517

Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission
A80-30518

The psychological experiments 'Self-interrogation' and 'Relaxation'
A80-30520

STONE, R. W., JR.
Human comfort response to dominant random motions in longitudinal modes of aircraft motion
[NASA-CR-159186] N80-21033

Human comfort response to random motions with a dominant pitching motion
[NASA-CR-159140] N80-21034

STRUMZA, M. V.
The influence of intermittent aircraft noise on sleep. II
A80-32584

STULOVA, L. V.
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966

SULZER, R. L.
Summary of Department of Transportation/Federal Aviation Administration task force on crew workload report
[AD-A068189] N80-21032

SUSIC, D.
Evaluation of the pulse contour method in beat-to-beat determination of the cardiac output in small laboratory animals
A80-29684

SUSLOV, E. I.
Age related changes in the bone tissue under conditions of hypokinesia
[NASA-TM-76019] N80-21971

T

TABOURY, J.
Abdominal echotomography - Its place in the evaluation of flight personnel
A80-32587

TAITSEV, V. P.
Effect of space flight on sodium, copper, manganese and magnesium content in the skeletal bones
[NASA-TM-75506] N80-21025

TARABRENKO, A. G.
Complex statistical analysis of the detection of the QRS complex
A80-31634

TERSKOV, I. A.
On the cellular autoimmune mechanism for eliminating erythrocytes normally and under extreme influences
[NASA-TM-75735] N80-21014

TIKHONCHUK, V. S.
Influence of microwave irradiation on the resistance of rats to transversely applied g forces
A80-31446

TIMBAL, J.
Air safety in 1978 from the medical point of view
A80-32576

TRIPATHI, V. K.
Absorption characteristics of prolate spheroidal model of man and animals at and near resonance frequency
[PB80-108293] N80-21028

U

UTKIN, V. L.
Reliability and information content of tests with cardioleader in cyclic types of sports
[NASA-TM-76090] N80-21975

V

VAISMAN, I. M.
Analog-digital converter for the ELKAR electrocardiograph
A80-31637

VALLET, M.
The psychoacoustic effects of aircraft noise on sleep - An in situ study
A80-30815

VENKOV, L.
Effects of motor patterns on water-soluble and membrane proteins and cholinesterase activity in subcellular fractions of rat brain tissue
[NASA-TM-76115] N80-21963

VERGHESE, C. A.
Liquid conditioned suit and its use in alleviating heat stress in military flying
A80-31584
Dynamic vision under vibration and changes with curvature of transparencies
A80-31589

VIARD, D.
Study of pilot's sight direction on Mercure flight simulator
A80-32590

VIGIER, M.
The investigator confronted with medical problems in technical investigations of aircraft accidents
A80-32577

VIL-VILIAMS, I. F.
Functional state of the cardiovascular system following a three-day immersion and prophylactic rotations in a small-radius centrifuge
A80-32233

VLASOV, IU. A.
The circadian rhythm of aerobic efficiency
A80-32231

VOLKHONSKAIA, T. A.
Recognition of EKG structural elements in an automated complex
A80-31636
Design principles for a system of automated processing of cardiological data on the M-6000 computer
A80-31638

VYAWAHARE, M. K.
Liquid conditioned suit and its use in alleviating heat stress in military flying
A80-31584
Dynamic vision under vibration and changes with curvature of transparencies
A80-31589

W

WACLAWEK, J.
Sphygmographic assessment of arterial distensibility in patients at risk of degenerative arterial disease
A80-29682

WALICHNOWSKI, W.
Medical research work onboard the Soyuz 30-Salyut 6 orbital laboratory
A80-30513
Procedures and facilities for studying the capacity for work of cosmonauts
A80-30514
Use of a cardioleader to monitor the heart rate of cosmonauts during physical exercises and under conditions of a low-pressure suit onboard Salyut 6
A80-30515
Electrogustometric studies in orbital flight
A80-30516
Observation of the vestibular function during space flight
A80-30517
Determination of oxygen tension in the subcutaneous tissue of cosmonauts during the Salyut-6 mission
A80-30518
The psychological experiments 'Self-interrogation' and 'Relaxation'
A80-30520

WALKER, M.
Advanced industrial robot control systems
[PB80-106396] N80-21986

WELCH, A. J.
Significance of blood flow in calculations of temperature in laser irradiated tissue
A80-29179

WHINNERY, J. E.
Aeromedical and physiologic aspects of fighter pilot selection and performance - Theoretical considerations
A80-31586

WHITE, K. D.
Saccadic eye movements and body sway
A80-32414

WICKRAMASINGHE, C.
The identification of the 3-micron spectral feature in galactic infrared sources
A80-30342

WINER, D. J.
Direct body ballistocardiography - A 25 year survey - Landmarks in its representation of cardiac dynamics
A80-29678

WISSLER, E. H.
Significance of blood flow in calculations of temperature in laser irradiated tissue
A80-29179

WU, C. H.
Advanced industrial robot control systems
[PB80-106396] N80-21986

Y

YAMAMURA, K.
An investigation of the effects of impulse noise exposure on man - Impulse noise with a relatively low peak level
A80-30854

YEFREMENKO, M.
Prophylaxis and treatment of seasickness
[NASA-TM-76108] N80-21024

YERMILOVA, V. I.
Glycerol test in diagnosing increased intralabyrinth pressure
[NASA-TM-76110] N80-21022

YOUNG, M. E.
Marine traffic data of Chicago, Illinois and South Shore of Lake Michigan
[AD-A080060] N80-21975

YUROV, S. S.
Fifth Working Conference (Space Biology) at the 21st Plenary Session of COSPAR
[NASA-TM-76107] N80-21017

Z

ZAYTSEVA, I. I.
Changes of gas metabolism, gas homeostatis and tissue respiration in rats during prolonged hypokinesia
[NASA-TM-75982] N80-21966

ZEKI, S.
The representation of colours in the cerebral cortex
A80-29421

ZHIZHINA, V. A.
Effect of space flight on sodium, copper, manganese and magnesium content in the skeletal bones
[NASA-TM-75506] N80-21025

ZON, G.
A study of agent-reactive fabrics for use in protective clothing
[AD-A079940] N80-21984

ZWEIDINGER, R. A.
Formulation of a preliminary assessment of halogenated organic compounds in man and environmental media
[PB80-112170] N80-21029

1. Report No.
NASA-SP-7011(208)

2. Government Accession No.

3. Recipient's Catalog No.

4. Title and Subtitle
AEROSPACE MEDICINE AND BIOLOGY
A Continuing Bibliography (Supplement 208)

5. Report Date
July 1980

6. Performing Organization Code

7. Author(s)
National Aeronautics and Space Administration
Washington, D. C. 20546

8. Performing Organization Report No.

9. Performing Organization Name and Address

10. Work Unit No.

11. Contract or Grant No.

12. Sponsoring Agency Name and Address

13. Type of Report and Period Covered

14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This bibliography lists 138 reports, articles, and other documents introduced into the NASA scientific and technical information system in June 1980.

17. Key Words (Suggested by Author(s))
Aerospace Medicine
Bibliographies
Biological Effects

18. Distribution Statement
Unclassified - Unlimited

19. Security Classif. (of this report)
Unclassified

20. Security Classif. (of this page)
Unclassified

21. No. of Pages
56

22. Price*
$7.00 HC

*For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1980

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to eleven special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley
COLORADO
University of Colorado, Boulder
DISTRICT OF COLUMBIA
Library of Congress
GEORGIA
Georgia Institute of Technology, Atlanta
ILLINOIS
The John Crerar Library, Chicago
MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge
MISSOURI
Linda Hall Library, Kansas City
NEW YORK
Columbia University, New York
OKLAHOMA
University of Oklahoma, Bizzell Library
PENNSYLVANIA
Carnegie Library of Pittsburgh
WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library
COLORADO
Denver Public Library
CONNECTICUT
Hartford Public Library
MARYLAND
Enoch Pratt Free Library, Baltimore
MASSACHUSETTS
Boston Public Library
MICHIGAN
Detroit Public Library
MINNESOTA
Minneapolis Public Library
MISSOURI
Kansas City Public Library
St. Louis Public Library
NEW JERSEY
Trenton Public Library
NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library
OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library
TENNESSEE
Memphis Public Library
TEXAS
Dallas Public Library
Fort Worth Public Library
WASHINGTON
Seattle Public Library
WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019.

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy of microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESA - Information Retrieval Service, European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

U.S.MAIL

NASA

POSTMASTER: **If Undeliverable (Section 158**
Postal Manual) Do Not Return

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP-7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP-7037	AERONAUTICAL ENGINEERING Engineering, design, and operation of aircraft and aircraft components	Monthly
NASA SP-7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP-7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP-7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP-7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C. 20546

NASA

7011 (209)

Aerospace Medicine and Biology
A Continuing Bibliography with Indexes

NASA SP-7011 (209)
August 1980

National Aeronautics and Space Administration

NEWARK PUBLIC LIBRARY

OCT 14 1980

U. S. GOVT. PUBS.
DEPOSITORY 276

Aerospace Medicine & Biolog
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi
ine & Biology Aerospace Medi
ce Medicine & Biology Aerosp
Aerospace Medicine & Biolog
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi

NASA SP-7011 (209)

Aerospace Medicine and Biology
A Continuing Bibliography with Indexes

Pages 143—165

August 1980

NAS 1.21:

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series)	N80-22255 – N80-24258
IAA (A-10000 Series)	A80-32627 – A80-36306

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by PRC Data Services Company.

NASA SP-7011(209)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 209)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in July 1980 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*

Scientific and Technical Information Branch 1980
National Aeronautics and Space Administration
Washington, DC

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This Supplement is available from the National Technical Information Service (NTIS), Springfield, Virginia 22161, at the price $7.00 domestic; $14.00 foreign.

INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 169 reports, articles and other documents announced during July 1980 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1980 Supplements.

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A80-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies of accessions are available at $7.00 per document up to a maximum of 40 pages. The charge for each additional page is $0.25. Microfiche(1) of documents announced in *IAA* are available at the rate of $3.00 per microfiche on demand, and at the rate of $1.25 per microfiche for standing orders for all *IAA* microfiche. The price for the *IAA* microfiche by category is available at the rate of $1.50 per microfiche plus a $1.00 service charge per category per issue. Microfiche of all the current AIAA Meeting Papers are available on a standing order basis at the rate of $1.50 per microfiche.

Minimum air-mail postage to foreign countries is $1.00 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

STAR ENTRIES (N80-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page vii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the * symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard $3.50 price, for those documents identified by a # symbol.)

---

(1) A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts*. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: Fachinformationszentrum, Karlsruhe. Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM).

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: U.S. Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free.

Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is $65.00 domestic; $130.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics
and Astronautics
Technical Information Service
555 West 57th Street, 12th Floor
New York, New York 10019

British Library Lending Division,
Boston Spa, Wetherby, Yorkshire,
England

Commissioner of Patents and
Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service
ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Scientific and Technical Information
Facility
P.O. Box 8757
B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Branch (NST-41)
Washington, D.C. 20546

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, California 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey
1033 General Services Administration
Building
Washington, D.C. 20242

U.S. Geological Survey
601 E. Cedar Avenue
Flagstaff, Arizona 86002

U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

U.S. Geological Survey
Bldg. 25, Denver Federal Center
Denver, Colorado 80225

Fachinformationszentrum Energie, Physik,
Mathematik GMBH
7514 Eggenstein Leopoldshafen
Federal Republic of Germany

NTIS PRICE SCHEDULES

Schedule A

STANDARD PAPER COPY PRICE SCHEDULE

(Effective January 1, 1980)

Price Code	Page Range	North American Price	Foreign Price
A01	Microfiche	$ 3.50	$ 5.25
A02	001-025	5.00	10.00
A03	026-050	6.00	12.00
A04	051-075	7.00	14.00
A05	076-100	8.00	16.00
A06	101-125	9.00	18.00
A07	126-150	10.00	20.00
A08	151-175	11.00	22.00
A09	176-200	12.00	24.00
A10	201-225	13.00	26.00
A11	226-250	14.00	28.00
A12	251-275	15.00	30.00
A13	276-300	16.00	32.00
A14	301-325	17.00	34.00
A15	326-350	18.00	36.00
A16	351-375	19.00	38.00
A17	376-400	20.00	40.00
A18	401-425	21.00	42.00
A19	426-450	22.00	44.00
A20	451-475	23.00	46.00
A21	476-500	24.00	48.00
A22	501-525	25.00	50.00
A23	526-550	26.00	52.00
A24	551-575	27.00	54.00
A25	576-600	28.00	56.00
A99	601-up	-- 1/	-- 2/

1/ Add $1.00 for each additional 25 page increment or portion thereof for 601 pages up

2/ Add $2.00 for each additional 25 page increment or portion thereof for 601 pages and more

Schedule E

EXCEPTION PRICE SCHEDULE

Paper Copy & Microfiche

Price Code	North American Price	Foreign Price
E01	$ 5.50	$ 11.50
E02	6.50	13.50
E03	8.50	17.50
E04	10.50	21.50
E05	12.50	25.50
E06	14.50	29.50
E07	16.50	33.50
E08	18.50	37.50
E09	20.50	41.50
E10	22.50	45.50
E11	24.50	49.50
E12	27.50	55.50
E13	30.50	61.50
E14	33.50	67.50
E15	36.50	73.50
E16	39.50	79.50
E17	42.50	85.50
E18	45.50	91.50
E19	50.50	100.50
E20	60.50	121.50
E99 - Write for quote		
N01	28.00	40.00

TABLE OF CONTENTS

Page

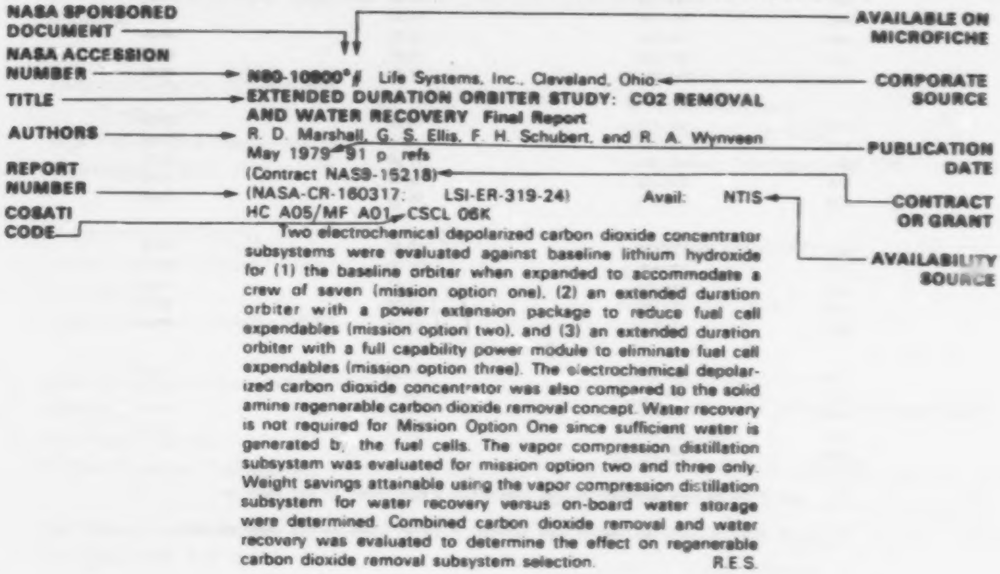
IAA ENTRIES (A80-10000) 143

STAR ENTRIES (N80-10000) 155

Subject Index I-1

Personal Author Index I-19

TYPICAL CITATION AND ABSTRACT FROM *STAR*

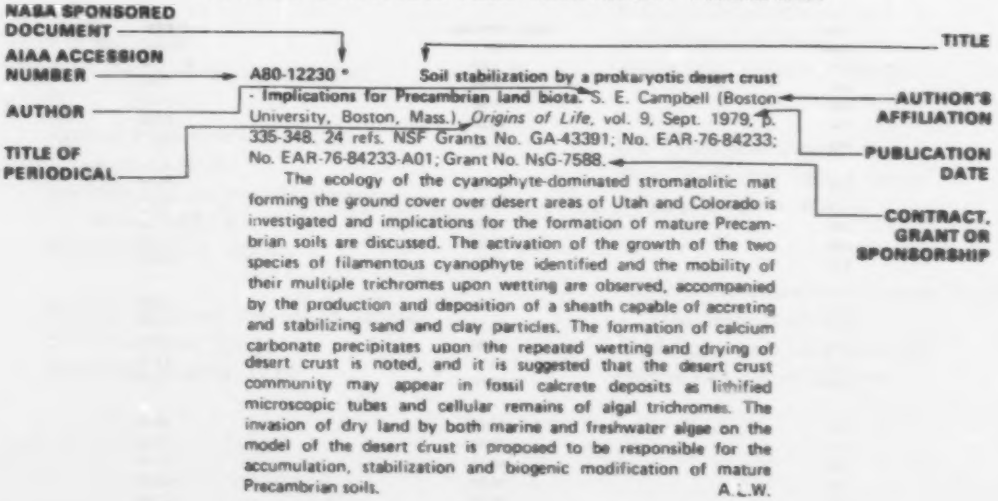


NASA SPONSORED DOCUMENT
NASA ACCESSION NUMBER
TITLE
AUTHORS
REPORT NUMBER
COSATI CODE
AVAILABLE ON MICROFICHE
CORPORATE SOURCE
PUBLICATION DATE
CONTRACT OR GRANT
AVAILABILITY SOURCE

N80-10000*# Life Systems, Inc., Cleveland, Ohio.
EXTENDED DURATION ORBITER STUDY: CO2 REMOVAL AND WATER RECOVERY Final Report
R. D. Marshall, G. S. Ellis, F. H. Schubert, and R. A. Wynveen
May 1979 91 p refs
(Contract NAS9-15218)
(NASA-CR-160317; LSI-ER-319-24) Avail: NTIS
HC A05/MF A01 CSCL 06K

Two electrochemical depolarized carbon dioxide concentrator subsystems were evaluated against baseline lithium hydroxide for (1) the baseline orbiter when expanded to accommodate a crew of seven (mission option one), (2) an extended duration orbiter with a power extension package to reduce fuel cell expendables (mission option two), and (3) an extended duration orbiter with a full capability power module to eliminate fuel cell expendables (mission option three). The electrochemical depolarized carbon dioxide concentrator was also compared to the solid amine regenerable carbon dioxide removal concept. Water recovery is not required for Mission Option One since sufficient water is generated by the fuel cells. The vapor compression distillation subsystem was evaluated for mission option two and three only. Weight savings attainable using the vapor compression distillation subsystem for water recovery versus on-board water storage were determined. Combined carbon dioxide removal and water recovery was evaluated to determine the effect on regenerable carbon dioxide removal subsystem selection. R.E.S.

TYPICAL CITATION AND ABSTRACT FROM *IAA*



NASA SPONSORED DOCUMENT
AIAA ACCESSION NUMBER
AUTHOR
TITLE OF PERIODICAL
TITLE
AUTHOR'S AFFILIATION
PUBLICATION DATE
CONTRACT, GRANT OR SPONSORSHIP

A80-12230 * **Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota.** S. E. Campbell (Boston University, Boston, Mass.), *Origins of Life*, vol. 9, Sept. 1979, p. 335-348. 24 refs. NSF Grants No. GA-43391; No. EAR-76-84233; No. EAR-76-84233-A01; Grant No. NsG-7588.

The ecology of the cyanophyte-dominated stromatolitic mat forming the ground cover over desert areas of Utah and Colorado is investigated and implications for the formation of mature Precambrian soils are discussed. The activation of the growth of the two species of filamentous cyanophyte identified and the mobility of their multiple trichromes upon wetting are observed, accompanied by the production and deposition of a sheath capable of accreting and stabilizing sand and clay particles. The formation of calcium carbonate precipitates upon the repeated wetting and drying of desert crust is noted, and it is suggested that the desert crust community may appear in fossil calcrete deposits as lithified microscopic tubes and cellular remains of algal trichromes. The invasion of dry land by both marine and freshwater algae on the model of the desert crust is proposed to be responsible for the accumulation, stabilization and biogenic modification of mature Precambrian soils. A.L.W.

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 209)

AUGUST 1980

IAA ENTRIES

A80-32685 **Origin of life - Consideration of alternatives to proteins and nucleic acids.** G. L. Nelsestuen (Minnesota, University, St. Paul, Minn.). *Journal of Molecular Evolution*, vol. 15, Mar. 1980, p. 59-72. 24 refs. Grant No. NIH-HL-15728.

Starting with relatively simple, nonhydrolyzable compounds in aqueous solution, entirely spontaneous condensations give rise to polymers that contain purines, pyrimidines, amino acids, coenzymes, lipid components and even phosphate. The presence of certain lipid micelles allows significant product formation at millimolar substrate concentrations. The first step involves formation of a Michael adduct from alpha-beta-unsaturated carbonyl compounds and various nucleophiles. Polymerization of these adducts occurs via sequential Knoevenagel condensations. All reactions take place readily at temperatures below 45 C. The polymers can act as macromolecular catalysts as evidenced by hydrolytic activity. The purines and pyrimidines in the polymers appear to be capable of both base pairing and stacking interactions with ribonucleic acids. Specific examples of potential alternatives to base pairing are presented. These results are discussed from the standpoint of the spontaneous development of reproducing molecules. Proteins and nucleic acids may be evolutionary developments which have displaced earlier biopolymers. (Author)

A80-32748 * **Role of thermal and exercise factors in the mechanism of hypervolemia.** V. A. Convertino, J. E. Greenleaf, and E. M. Bernauer (NASA, Ames Research Center, Biomedical Research Div., Moffett Field, Calif.). *Journal of Applied Physiology: Respiratory Environmental and Exercise Physiology*, vol. 48, Apr. 1980, p. 657-664. 40 refs.

The present study was undertaken to determine whether the chronic increase in plasma volume, resulting from heat exposure and exercise training, was due only to elevated rectal temperature or whether there were additional nonthermal factors related to the exercise. The study was conducted on eight volunteer, healthy, moderately trained male college subjects (18-26 yr). Exercise-induced hypervolemia was associated with thermal factor(s) that contributed 40% and nonthermal factors that accounted for the remaining 60%. In addition, some nonthermal, exercise-induced factors were twofold increases in plasma osmotic and vasopressin levels during exercise, and a fivefold increase in resting plasma protein content. S.D.

A80-32749 * **Exercise training-induced hypervolemia - Role of plasma albumin, renin, and vasopressin.** V. A. Convertino, P. J. Brock, L. C. Keil, E. M. Bernauer, and J. E. Greenleaf (NASA, Ames Research Center, Biomedical Research Div., Moffett Field, Calif.). *Journal of Applied Physiology: Respiratory Environmental and Exercise Physiology*, vol. 48, Apr. 1980, p. 665-669. 32 refs.

The purpose of the present study was twofold: (1) to determine the rate of induction and decay of exercise-training hypervolemia with a short-duration high-intensity training regimen; and (2) to assess the protein, osmotic, and endocrine responses that contribute to that mechanism. The test subjects were eight volunteer, healthy, trained college men (20-22 yr) engaged in isotonic exercise on a bicycle ergometer. Factors associated with plasma hypervolemia during training are identified. The results suggest that an efficient procedure for increasing plasma volume is the daily performance of high-intensity isotonic leg exercise for 2 h/day. S.D.

A80-32750 **Control of skin blood flow during exercise by thermal reflexes and baroreflexes.** M. F. Roberts (John B. Pierce Foundation Laboratory, New Haven, Conn.) and C. B. Wenger (Yale University, New Haven, Conn.). *Journal of Applied Physiology: Respiratory Environmental and Exercise Physiology*, vol. 48, Apr. 1980, p. 717-723. 32 refs. Grants No. NIH-HL-17732; No. NIH-HL-20634; No. NIH-ES-00354.

An experimental study was carried out on four healthy male subjects to assess the relationship between forearm blood flow, internal temperature, and cardiac stroke volume during supine and upright exercise at cool to hot ambient temperatures. The objective was to determine how vasodilator reflexes responsive to increased body temperature interact with vasoconstrictor reflexes responsive to impaired cardiac filling. The reduced stroke volume during upright exercise in the heat shows that gravity compounds the effect of cutaneous venodilation by allowing blood to pool in dependent limbs and thus impairing cardiac filling. The proportionality between reduced stroke volume and reduced forearm blood flow suggests that the reduction in blood flow may be mediated by cardiopulmonary baroreflexes which are activated by reduced cardiac filling pressure. S.D.

A80-32751 * **Excursion of vibrating microelectrodes in tissue.** E. W. Kanabus, C. Feldstein, and D. W. Crawford (California Institute of Technology, Jet Propulsion Laboratory, Pasadena; Southern California University, Los Angeles, Calif.). *Journal of Applied Physiology: Respiratory Environmental and Exercise Physiology*, vol. 48, Apr. 1980, p. 737-741. 7 refs. Grants No. NIH-HL-14138; No. NIH-HL-18969.

The paper deals with a vibrating microelectrode holder consisting of a support rod attached to the cone of a miniature loudspeaker. This holder facilitates a microelectrode penetration into arterial wall tissue, eliminates surface dimpling, and relieves polarographic artifacts believed to be due to tissue compression. The paper presents construction and performance details of the electrode holder, and evaluates the extent of possible damage incurred during such vibration by measuring electrode motion relative to surrounding tissue in an excised segment of femoral artery in the rabbit. It is concluded that under proper vibratory conditions microelectrodes can be easily inserted into the arterial wall with minimum tissue disturbance. S.D.

A80-32833 * **Temperature and frequency dependence of ultrasonic attenuation in selected tissues.** P. M. Gammell, D. H. L. Croissette (California Institute of Technology, Jet Propulsion Laboratory, Pasadena; Southern California, University, Los Angeles, Calif.), and R. C. Heyser (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.). *Ultrasound in Medicine and Biology*, vol. 5, 1979, p. 269-277. 29 refs. NSF Grant No. APR-75-17388.

Ultrasonic attenuation over the frequency range of 1.5-10 MHz has been measured as a function of temperature for porcine liver, backfat, kidney and spleen as well as for a single specimen of human liver. The attenuation in these excised specimens increases nearly linearly with frequency. Over the temperature range of approximately 4-37 C the attenuation decreases with increasing temperature for most soft tissue studied. (Author)

A80-32835 * **Wipe-rinse technique for quantitating microbial contamination on large surfaces.** L. E. Kirschner and J. R. Puleo (California Institute of Technology, Jet Propulsion Laboratory, Planetary Protection Laboratory, Cape Canaveral, Fla.). *Applied and Environmental Microbiology*, vol. 38, Sept. 1979, p. 466-470. 22 refs. Contract No. NAS7-100.

The evaluation of an improved wipe-rinse technique for the bioassay of large areas was undertaken due to inherent inadequacies in the cotton swab-rinse technique to which assay of spacecraft is currently restricted. Four types of contamination control cloths were initially tested. A polyester-bonded cloth (PBC) was selected for further evaluation because of its superior efficiency and handling characteristics. Results from comparative tests with PBC and cotton swabs on simulated spacecraft surfaces indicated a significantly higher recovery efficiency for the PBC than for the cotton (90.4 versus 75.2%). Of the sampling area sites studied, PBC was found to be most effective on surface areas not exceeding 0.74 sq m (8.0 sq ft). (Author)

A80-32836 **The psychophysics of sensory systems (Psikhofizika sensornykh sistem).** Edited by B. F. Lomov and Iu. M. Zabrodin. Moscow, Izdatel'stvo Nauka, 1979. 200 p. In Russian.

The present collection of papers is concerned with the latest trends in psychophysical research, experimental techniques and procedures, and the findings of specific studies. Papers are presented on the dynamic aspects of signal detection, detection threshold variance and its causes, physiological premises of the laws of psychophysics, and regulation of sensory perception in psychiatric subjects. V.L.

A80-32837 # **Dynamic aspects of detection (Dinamicheskie aspekty protsessa obnaruzheniia).** Iu. M. Zabrodin, V. N. Nosulenko, and A. P. Pakhomov. In: The psychophysics of sensory systems. Moscow, Izdatel'stvo Nauka, 1979, p. 9-46. 27 refs. In Russian.

The dynamic aspects of sensory processes are discussed with reference to signal detection. The instabilities of the sensory image and decision-making processes associated with signal detection are investigated by a number of the existing theoretical and experimental tools of modern psychophysics. Guidelines for future studies of sensory phenomena by a dynamic systems approach are suggested. V.L.

A80-32838 # **Detection threshold variance and its causes (Variativnost' porogov obnaruzheniia i ee prichiny).** E. Z. Frishman. In: The psychophysics of sensory systems. Moscow, Izdatel'stvo Nauka, 1979, p. 46-64. 73 refs. In Russian.

The dynamics of signal detection threshold is discussed in relation to introversion and extroversion, arousal, habituation, and drug administration. Since detection thresholds are found to depend on many variables, it is suggested that the threshold dynamics might provide a more adequate way of subject characterization. It is shown that in order to correctly define the mechanisms of the subject responses, the psychophysical threshold measurements must be combined with the concepts of signal detection theory. V.L.

A80-32839 # **Detection and recognition of pure tones in noise (Obnaruzhenie i raspoznavanie chistykh tonov v shume).** D. M. Green, D. Veber, and D. Dunkan. In: The psychophysics of sensory systems. Moscow, Izdatel'stvo Nauka, 1979, p. 64-80. 6 refs. In Russian.

A new theorem which relates signal recognition to signal detection is investigated experimentally to verify its validity. In the experiment, the subjects, after 3 to 5 days of training, were to detect and identify acoustic signals of 500, 1100, 1900, and 2700 Hz against a continuous noise background of 46 dB. Experimental results are found to be in reasonably good agreement with the expected probability of correct signal identification predicted by the recognition theorem. V.L.

A80-32840 # **A review of advances in modern psychophysics /Strategies in psychophysical analyses/ (Obzor dostizhenii v sovremennoi psikhofizike /Strategii v psikhofizicheskikh analizakh/).** H.-G. Geissler. In: The psychophysics of sensory systems. Moscow, Izdatel'stvo Nauka, 1979, p. 81-94. 75 refs. In Russian.

The paper reviews general trends in modern psychophysics with particular reference to the systems approach in psychophysical analysis, systems analysis in formal generalization of discrete structures, and relations between the physical reality and mental experiences. The following features of the system approach in psychophysics are emphasized: the use of multivariate empirical relations between the input and the output, identification and decomposition of subsystems, and the use of heuristic rating criteria in identification and decomposition. V.L.

A80-32841 # **Physiological premises of the laws of psychophysics (Fiziologicheskie predposylki zakonov psikhofiziki).** A. N. Lebedev, B. G. Bovin, A. V. Pasynkova, V. A. Sadov, and Iu. A. Shpatenko. In: The psychophysics of sensory systems. Moscow, Izdatel'stvo Nauka, 1979, p. 94-106. 5 refs. In Russian.

Perceptual processes and memory are studied in relation to the bioelectric activity of the brain. It is suggested that during the process of perception the signals are transformed into oscillatory systems consisting of wave sequences. The wave sequences are characterized by definite combinations of phase and period which are determined by the neuron activity fluctuations. The mechanisms whereby the signals transmitted by the receptors are matched against the signals stored in the memory are investigated. Experimental results are presented. V.L.

A80-32842 # **Possible sources of false-alarm responses and psychophysiological optimization mechanisms of weak-signal detection (Vozmozhnye istochniki reaktsii lozhnoi trevogi i psikhofiziologicheskie mekhanizmy optimizatsii protsessa obnaruzheniia slabykh signalov).** N. I. Chuprikova. In: The psychophysics of sensory systems. Moscow, Izdatel'stvo Nauka, 1979, p. 121-128. 9 refs. In Russian.

A80-32843 # **Accuracy of perception in the tracking of continuous signals (O kharakteristikakh tochnosti vospriiatiia pri slezhenii za nepreryvnymi signalami).** A. P. Chernyshev and V. G. Zazykin. In: The psychophysics of sensory systems. Moscow, Izdatel'stvo Nauka, 1979, p. 189-198. 14 refs. In Russian.

A80-32846 # **Assessment of physical working capacity in clinic and athletics (Opredelenie fizicheskoi rabotosposobnosti v klinike i sporte).** I. V. Aulik. Moscow, Izdatel'stvo Meditsina, 1979. 192 p. 114 refs. In Russian.

The monograph outlines methods of using graded physical exercises for the diagnosis of the status of practically healthy persons, patients, and athletes. The concepts of 'health' and 'physical working capacity' are discussed. The necessity of assessing the so-called dynamic health is stressed. An original method of quantitative evaluation of physical working capacity in clinic and athletics is proposed. A review of literature regarding the influence of hypokinesia on one's health condition is given. A methodology is presented for assessing selected indicators of physical working capacity. Attention is given to methods of evaluating the working capacity of children and juveniles, as well as patients and convalescents. Basic principles of maintaining and enhancing physical working capacity are briefly outlined. In particular, physiological essentials of motor tests are briefly described. S.D.

A80-32854 # **Social and psychological problems of extended space missions.** B. J. Bluth (California State University, Northridge, Calif.). *American Institute of Aeronautics and Astronautics, International Meeting and Technical Display on Global Technology 2000, Baltimore, Md., May 6-8, 1980, Paper 80-0826.* 8 p. 37 refs.

As space missions become longer and more routine, the socio/psychological factors become more significant. Russian experiences with difficulties in the area of socio/psychological problems in long duration space flight are noted which point to critical areas that impinge on safety and mission effectiveness. These include communication distortion, interpersonal hostility, and mixed nationality crew misunderstanding and disharmony. Recent reports from the National Transportation Safety Board on aircraft accidents show lack of assertiveness can be a major factor in flight accidents, and work with groups in isolation and confinement raises important questions related to authority systems, sexually mixed crews, and means of crew selection. Optimization of safety and crew effectiveness on long duration space missions requires carefully researched, designed, and tested training and organizational systems. (Author)

A80-32973 **Effects of spatial parameters on the perceptual organization of a bistable motion display.** A. J. Pantle and J. T. Petersik (Miami University, Oxford, Ohio). *Perception and Psychophysics,* vol. 27, no. 4, Apr. 1980, p. 307-312. 14 refs. Contract No. F33615-76-C-5006.

In a dynamic visual display which consisted of two alternating frames, each with three line elements, the individual elements which possessed a high degree of spatial correspondence from one frame to the next were paired perceptually and moved about locally. Any remaining elements moved independently and followed different movement rules. When there was no high degree of spatial correspondence of any elements across frames, or when the interval of time between frames was long, the elements behaved as a perceptual unit and moved about as a group. The local pairings and movements appeared to be mediated by a process with different functional characteristics from those of the process which mediated the wholistic movement of the elements as a group. (Author)

A80-32974 **Static and dynamic factors in the perception of rotary motion.** M. L. Braunstein and K. R. Stern (California, University, Irvine, Calif.). *Perception and Psychophysics,* vol. 27, no. 4, Apr. 1980, p. 313-320. 14 refs. NSF Grant No. BNS-76-81499.

Direction of rotation and static slant judgments were collected for a series of outline plane forms in four experiments with 106 subjects. Direction was judged more accurately for forms displaying the same perspective gradients as trapezoids, but with right-angled contours, than for trapezoids. There was no consistent differences among these forms in judged slant. Direction of rotation judgments were affected by a static false interposition cue, with interposition increasing the proportion of veridical judgments when placed in conflict with a relative size gradient and decreasing this proportion when a size gradient was absent. Both a dynamic factor (contour angle change) and a static factor (misperceived relative distance of the vertical sides) were found to affect perceived direction of rotation, with direction judgments based primarily on the dynamic factor. (Author)

A80-32976 **Psychological problems of space flight (Psikhologicheskie problemy kosmicheskikh poletov).** Edited by B. F. Lomov and N. D. Samsonov. Moscow, Izdatel'stvo Nauka, 1979. 240 p. In Russian.

Papers based on investigations and cosmonaut observation are presented concerning the psychological aspects of manned space flight. Specific topics include the role of the human factor in space flights, the modeling of human activity in space flight, means of increasing cosmonaut effectiveness, crew member interactions during emergency situations, operator ability during continuous activity and the investigation of cosmonaut cognitive styles in individual and group activities. Particular attention is also given to the psychological problems of cosmonaut preparation, including weightlessness adaptation, preparation for emotional stress, the use of spacecraft trainers and the evaluation of progress in flight vehicle control training, and to human factors engineering aspects of space psychology, including the design of cosmonaut mobility devices, the optimization of human visual abilities during space flight, and the use of psychological principles in the resolution of man-machine system operational problems. A.L.W.

A80-32977 # **Psychological problems of space flight (Psikhologicheskie problemy kosmicheskogo poleta).** B. F. Lomov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 5-17. 40 refs. In Russian.

The problems with which the new discipline of space psychology is to be concerned, arising in the various stages of manned space flight, are surveyed. Consideration is given to the psychological aspects of spacecraft design development, cosmonaut selection, the preparation of cosmonauts for space flight, the space flight itself and the period of readaptation following space flight. In addition to current problems, it is noted that space psychology must also deal with those problems arising from future technological innovations determining the duration and activities of future space flights. A.L.W.

A80-32978 # **The role of the human factor in space flights (Rol' chelovecheskogo faktora v kosmicheskikh poletakh).** G. T. Beregovoi. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 17-24. 12 refs. In Russian.

Consideration is given to the characteristically human, as opposed to technical or biological, aspects of manned space flight. The nature of cosmonaut activities is discussed as a specific category of labor with emphasis on the selection of individuals with the required psychological and physical capacities and the role of cosmonaut as observer. Man-machine systems are considered in relation to spacecraft control under the unique condition of weightlessness, and illusory sensations experienced by astronauts and cosmonauts are reported. The importance of space psychology in dealing with the human factors in space flight is concluded. A.L.W.

A80-32979 # **Space exploration prospects and psychology (Perspektivy osvoeniia kosmosa i psikhologiia).** A. A. Leonov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 25-28. In Russian.

Psychological problems hindering the successful completion of space missions are discussed as factors which must be overcome in the future exploration of space. Attention is given to the creation of artificial gravity in large, permanent orbital space stations and to the problem of preventing sensory deprivation during long-duration space flights and lunar exploration. The significance of psychological compatibility among members of space crews spending long periods of time in isolation is considered, taking into account the special conditions of the space flight environment. Finally, problems requiring psychological stability arising during space flights are illustrated by the circumstances of various space accidents, and it is pointed out that, in addition to stresses caused by weightlessness, the disturbance of circadian rhythms may have a considerable influence in the genesis of unsatisfactory situations. A.L.W.

A80-32980 # **The appearence of certain human psychological traits during space flight (Proiavlenie nekotorykh psikhofiziologicheskikh osobennostei cheloveka v usloviiakh kosmicheskogo poleta).** V. I. Sevast'ianov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 29-37. 14 refs. In Russian.

Examples of the various types of effects the space flight environment may have on human psychology are presented. Personal experience with space motion sickness and difficulties in orientation perception during the period of weightlessness adaptation are related, along with improvements in visual perception and motor coordination. The organization of cosmonaut tasks so as to increase the effectiveness of activities while taking into account psychological and psychophysical limitations during weightlessness adaptation is discussed, and emotional and mental states experienced during flight are considered. Finally, interpersonal relations between crew members are discussed, and the necessity for the planning of the psychological safety of spaceflights in stressed. A.L.W.

A80-32981 # **Several characteristics of crew activity during space flight (Nekotorye osobennosti deiatel'nosti ekipazha v usloviiakh kosmicheskogo poleta).** P. R. Popovich and Iu. P. Artiukhin. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 38-41. In Russian.

Various characteristics of cosmonaut activity are examined, with particular attention given to those connected with spacecraft living conditions and interactions with space technology. The missions and spacecraft designs of the Vostok, Soyuz and Salyut programs are reviewed, stressing the increases in cabin space represented by successive spacecraft. The advantages of two- and three-member crews are indicated, and the psychological compatibility of crew members is briefly considered. The complexity of cosmonaut duties during the Soyuz-Salyut mission in which the authors participated is discussed, and the increasing complexity of present and future missions is pointed out. A.L.W.

A80-32982 # **The modeling of human activity in space flight (Modelirovanie deiatel'nosti cheloveka v kosmicheskom polete).** G. M. Kolesnikov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 42-46. 13 refs. In Russian.

The modeling of human activity is discussed as it relates to the bionic and human activity planning approaches to increasing cosmonaut effectiveness. Various structural, operating systems and heuristic models of human activity are indicated, and a multi-level hierarchical model incorporating the above principles is formulated. The development of models of cosmonaut activity from human activity models is examined, taking into account the influence of weightlessness and stress factors encountered in the space environment, and it is noted that the validity of the models can only be determined by future flights and ground simulations. A.L.W.

A80-32983 # **The investigation of the influence of space flight conditions on the statistical characteristics of operator activity (Issledovanie vliianiia uslovii kosmicheskogo poleta na statisticheskie kharakteristiki operatorskoi deiatel'nosti).** B. V. Volynov, F. D. Sukhanov, L. D. Smirichevskii, and A. J. Iakovlev. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 47-52. 5 refs. In Russian.

A method for analyzing the influence of the specific conditions of space flight on the statistical characteristics of human operator activity during tracking operations is developed. The human operator in the control task is represented in a systems analysis approach as a system transforming an input vector into an output vector by a process governed by a linear mathematical operator and an error function characterized by a normalized correlation function. The correlation function is determined experimentally on the basis of the ergodic and steady-state characteristic of a random error process in manual tracking simulator tests for the fundamental operation and under disturbing conditions. Results indicate that the presence of disturbing conditions influences not only the dispersion of operator errors, but the normalized correlation coefficient, and should be taken into account in instrument design. A.L.W.

A80-32984 # **The investigation of operator activity in the performance of standard activities under conditions simulating extended space flight (Issledovanie operatorskoi deiatel'nosti pri vypolnenii tipovykh funktsii v usloviiakh, modeliruiushchikh dlitel'nyi kosmicheskii polet).** L. D. Smirichevskii. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 53-60. In Russian.

A80-32985 # **Possible means for increasing the effectiveness of cosmonaut activity (Vozmozhnye puti povysheniia effektivnosti deiatel'nosti kosmonavta).** N. V. Krylova and V. Iu. Krylov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 61-68. 8 refs. In Russian.

A method for obtaining an integral evaluation of performance quality in a systems approach is proposed as a means of increasing cosmonaut effectiveness. The method involves the analysis of operator activity and the derivation of quality criteria, the construction of a laboratory model of the activity, laboratory modeling of the psychophysiological and environmental states which may arise during the performance of the activity, the determination of an integral evaluation of performance quality, taking into account external conditions and the psychophysiological state of the operator, and the application of the evaluation to increasing actual operator effectiveness. Results of simulator experiments demonstrate the validity of predictions made on the basis of an integral evaluation of performance quality, and indicate that in-flight testing of cosmonaut performance in an activity simulator would allow the evaluation of spacecraft control abilities. A.L.W.

A80-32986 # **The evaluation of the effectiveness of crew work under stress (Otsenka effektivnosti raboty ekipazha v usloviiakh stressa).** G. P. Shibanov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 69-84. 5 refs. In Russian.

The evaluation of the effectiveness of cosmonaut performance during each step of activities as an operator-controller, a repair worker and a back-up to automatic equipment is examined. Attention is given to the stages of (1) information search, perception and interpretation; (2) information evaluation and the partitioning of informative indicators; (3) the formation of a conceptual model of the activity and solution finding; and (4) the practical realization of the solution arrived at under conditions of space flight stress. The evaluation of the psychological preparation of persons to deal with emergency situations of different severities is also discussed. A.L.W.

A80-32987 # **Some aspects of space crew member interactions in emergency situations (Nekotorye aspekty vzaimodeistviia chlenov kosmicheskogo ekipazha v avariinykh situatsiiakh).** V. L. Pavlov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 84-90. 12 refs. In Russian.

A social psychological analysis of space crew member interactions during the elimination of an emergency situation is presented. Consideration is given to the influence of the unexpectedness and lack of time in emergency situations on the organizational structure of the crew, intercrew verbal and nonverbal communication and the coordination of competitive activities. Requirements for the experimental investigation of the effectiveness of small group interactions in emergency-type situations are then formulated. A.L.W.

A80-32988 # **The possibility of distinguishing between emotional stress levels according to speech indicators in aerospace activities (O vozmozhnosti vydeleniia urovnei emotsional'nogo stressa po rechevym pokazateliam v praktike letno-kosmicheskoi deiatel'nosti).** I. S. Zamaletdinov, N. V. Krylova, S. A. Kiselev, and E. V. Trufanova. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 91-101. 13 refs. In Russian.

The applicability of psycholinguistic tests to the determination of the levels of emotional stress in aerospace activities is considered. An experiment in which experienced and first-time parachutists were given a series of tests (free association, constrained and free narration, thematic apperception, and operational memory) prior to and immediately following parachute jumps, with test results compared to responses recorded 1-2 days before the jump, is reported, and results of a component analysis of the data allowing the division of the parachutists into three basic groups based on test responses are presented. Results are then used to formulate a hierarchy of emotional stress levels separable according to speech indicators, and it is concluded that the technique may be valuable in further investigations of emotional states. A.L.W.

A80-32989 # Assurance of stable work capacity during prolonged space flight (Voprosy obespecheniia ustoichivoi rabotosposobnosti cheloveka v dlitel'nom kosmicheskom polete). A. N. Litsov and I. F. Saraev. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 101-105. 11 refs. In Russian.

The factors influencing astronaut performance during prolonged space flight are reviewed. Attention is given to the cyclogram of crew activities, to the dependence of crew work capacity on the time of day, and to the organization of work with regard to reliability and efficiency of the performance. Measures necessary to achieve successful operator performance are pointed out including the development of the optimum conditions of daily work in all stages of preparation and flight, careful selection of crew on the basis of psychological and physiological characteristics of each astronaut, improvement of human stress resistance, and the onboard availability of a means for enhancing the functional capacities of astronauts. L.M.

A80-32990 # Investigation of operator work capacity under conditions of continuous activity (Issledovanie rabotosposobnosti operatora v usloviiakh rezhima nepreryvnoi deiatel'nosti). V. V. Pozdniakov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 106-109. 7 refs. In Russian.

The effects of a regime of continuous activity on the quality and effectiveness of the manual control of a dynamic system are investigated. Eight subjects familiar with aviation technology performed a compensatory tracking task lasting 18 min at four- to five-hour intervals over the course of 74 h within a 10-day period, and twice daily during the remainder of the experiment. Measurements of control quality, as indicated by the sum of the square of the mathematical expectancy and the observed dispersion of tracking the target to within the required accuracy, and of control effectiveness, as indicated by the intensity of error information flow, reveal compensatory tracking performance to deteriorate from 25 to 30% during a period of continuous activity, increasing to initial levels following a night's sleep and subsequently decreasing with the amount of performance reduction depending in all cases on task difficulty. A.L.W.

A80-32991 # Dependence of the activity and behavior of individuals and groups on the characteristics of the individual cognitive styles (Obuslovlennost' deiatel'nosti i povedeniia lichnosti i gruppy osobennostiami individual'nykh kognitivnykh stilei). I. S. Zamaletdinov and O. I. Zhdanov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 110-114. 5 refs. In Russian.

The characteristics of individual operator behavior, group interaction, and behavioral pattern of individuals and groups in the process of performing professional tasks under stringent conditions are examined. An attempt is made to interpret these characteristics in terms of the specific features of the individual cognitive styles and group interactions. V.P.

A80-32992 # Possible approaches to the study of cosmonaut cognitive behavioral styles during individual and group activity (Vozmozhnye podkhody k izucheniiu stilia poznavatel'nogo povedeniia kosmonavta v individual'nom i gruppovom variantakh deiatel'nosti). O. I. Zhdanov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 115-118. 6 refs. In Russian.

A80-32994 # The preservation capacity of spacecraft control skills during extended flights (O sokhrannosti navykov upravleniia kosmicheskim korablem v usloviiakh dlitel'nykh poletov). V. A. Popov and A. K. Popov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 123-129. In Russian.

Means of preserving spacecraft and spacecraft systems control skills during prolonged space flights are discussed. The inadequacies of present preflight preparation procedures in forming control skills and selecting the necessary skill evaluation criteria are examined, with attention given to the lack of indicators of the consequences of control activities in ground-based flight simulators. The complexity of skill formation is illustrated for the case of compensatory tracking, and logic conditions involved in the task are examined. Existing simplified in-flight control training facilities are considered, and a technique for maintaining fully developed control skills during extended flight by the remote control of a miniature spacecraft model within the spacecraft cabin is proposed. A.L.W.

A80-32995 # Psychophysiological selection, crew staffing and preparation for space flight (Psikhofiziologicheskii otbor, komplektovanie ekipazhei i podgotovka k kosmicheskomu poletu). M. A. Novikov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 130-135. In Russian.

A80-32996 # Adaptation to weightlessness (K voprosu ob adaptatsii v nevesomosti). L. A. Kitaev-Smyk. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 135-152. 39 refs. In Russian.

The paper is concerned with the physiological and psychological effects of exposure to weightlessness. Experiments in a revolving space station simulator show that in short-duration exposure, subjects can be classified into active and passive groups based on their emotional and motor response pattern. In long-duration exposure, all subjects exhibit the passive response pattern. Particular consideration is given to motion sickness, distortion of space perception, and change in sleep and eating habits. V.L.

A80-32997 # Methodological and organizational principles of the psychological preparation of cosmonauts (Metodicheskie i organizatsionnye printsipy psikhologicheskoi podgotovki kosmonavtov). V. P. Stupnitskii. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 152-160. 9 refs. In Russian.

The fundamental methodological and organizational principles of the psychological preparation of cosmonauts for activity in the space flight environment are discussed. It is pointed out that psychological training must take into account individual personality factors in the mobilization of the necessary mental functions, the formation of conceptual models of spaceflight activities and the effective utilization of psychological resources, and thus must occur throughout the active training period. Consideration is then given to the various personality characteristics, individual tactics of problem-solving in a critical situation, and the methodological principles based on these considerations underlying training during the learning, perfecting and preflight states of spaceflight preparation. A.L.W.

A80-32998 # Objectivization of the basic elements of the process of crew preparation for space flight (Ob'ektivizatsiia osnovnykh elementov protsessa podgotovki ekipazha k kosmicheskomu poletu). R. B. Bogdashevskii, G. I. Vorob'ev, V. M. Usov, and V. I.

Iaropolov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 160-164. In Russian.

The objectivization of the basic components of space flight preparation by various mathematical and computational procedures is discussed. Basic approaches followed in the objectivization of cosmonaut preparation and problems in maintaining it are indicated. Problems arising from the training of cosmonauts on trainers instead of the actual spacecraft are then considered, with attention given to questions of the required degrees of similarity of the trainer to the spacecraft, the identification and characterization of component operator activities, and the determination of cosmonaut suitability and flight readiness in accordance with a formalized framework and defined criteria. The necessary level of automation in the evaluation of the state of crew preparation is considered, and a training regime consisting of compulsory and free periods of trainer instruction is proposed. A.L.W.

A80-32999 # **Psychological training of an astronaut operator under the conditions of emotional stress (Psikhologicheskaia podgotovka kosmonavta-operatora v usloviiakh emotsional'nogo stressa).** I. B. Solov'eva. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 164-169. In Russian.

Psychological training of astronauts is discussed with regard to the ways of ensuring the efficiency of astronaut performance under complex and emergency flight conditions. In order to achieve this objective, the astronaut must be trained to retain the ability to function efficiently under emotional stress. A stress situation where danger is combined with information deficiency and lack of time can be simulated for instance by parachute jumping with simultaneous performance of various assignments. V.L.

A80-33000 # **Physiological aspects of the psychophysiological security of cosmonaut preparation on trainer apparatus (Fiziologicheskie aspekty psikhofiziologichoskogo obespecheniia podgotovki kosmonatov na trenazhere).** V. P. Zaval'niuk, N. P. Anakhov, and E. G. Singatulin. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 169-172. In Russian.

A80-33001 # **Psychological training of astronauts using flight simulators (Psikhologicheskaia podgotovka kosmonavtov na professional'nykh trenazherakh).** V. M. Usov, R. B. Bogdashevskii, and A. V. Belozerov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 172-177. 7 refs. In Russian.

General principles of the professional training of cosmonauts using ground-based flight simulators are discussed with particular reference to training sequencing and psychological research in this field. Consideration is given to the methods used to evaluate the efficiency and psychophysiological responses of the operator under various control and environmental situations. The proposed special statistical evaluation technique includes discriminatory analysis, the use of a multiparameter regression model, and the use of nonparametric criteria to verify the statistical hypotheses. V.L.

A80-33002 # **The role and significance of the crew instructor in cosmonaut training (Rol' i znachenie instruktora ekipazha v podgotovke kosmonavta).** E. G. Diatlov and V. A. Dmitrov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 178-181. In Russian.

The duties and responsibilities of the space crew instructor during cosmonaut training are discussed. The major areas and principles of cosmonaut instruction are indicated, and the psychological observations and professional decisions required of the instructor are considered, in light of the required psychological preparation of the crew to deal with problems arising upon extended and complex space flights and the mental state of the crew. Changes in the roles of instructors with changing cosmonaut roles are noted, with attention given to the evolution of the instructor from a physiological trainer to a specialist engaged in preparing the crew for effective and reliable activity in the course of an extended space flight. Finally, the professional and educational requirements of the instructor are outlined. A.L.W.

A80-33003 # **A variance method of objective evaluation of the training process and learning level of operators in flight vehicle control regimes (Dispersionnyi metod ob'ektivnoi otsenki protsessa trenirovki i stepeni obuchennosti operatorov v rezhimakh upravleniia letatel'nymi apparatami).** V. P. Varenov, G. P. Shibanov, L. V. Riabinin, E. F. Lobanov, and V. V. Rodchenko. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 181-187. In Russian.

A80-33004 # **Engineering and psychological aspects of maintenance work in space (Inzhenerno-psikhologicheskie voprosy tekhnicheskogo obsluzhivaniia v kosmose).** V. N. Stepanov and E. N. Stepanov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 188-194. 5 refs. In Russian.

The strategy of spacecraft equipment servicing during spaceflights is discussed within the framework of engineering psychology. The effect of weightlessness and other factors of space flight are analyzed with respect to the astronaut performance. The results of experimental studies during space missions and simulated space flights indicate that about 60% of maintenance operations take significantly more time in space than on the ground. V.L.

A80-33005 # **The design of maneuvering units for cosmonauts in referenceless space and requirements for engineering psychology (Proektirovanie ustanovok peremeshcheniia kosmonavta v bezopornom prostranstve i trebovaniia inzhenernoi psikhologii).** Iu. N. Glazkov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 194-203. 12 refs. In Russian.

The role of engineering psychology in the design and testing of maneuvering units for cosmonauts working in free space is discussed. Constraints on mobility and perception imposed by the space suit are pointed out, and the physiological and psychological effects of weightlessness and the lack of a reference system for the cosmonaut at a distance from the spacecraft and without a tether are considered. The characteristics of the cosmonaut-maneuvering unit system are examined, taking into account its dynamics and the role of the cosmonaut as both the operator and the object of control, and possible cosmonaut trajectories with respect to the spacecraft are considered. Results of the experimental simulation of cosmonaut maneuvering in the vicinity of the spacecraft with an idealized maneuvering unit are presented and the control characteristics of the cosmonaut-maneuvering unit are examined. Finally, the inadequacies of airborne, underwater and model simulations of maneuvering in the space environment are indicated and the utility of space-borne testing is pointed out. A.L.W.

A80-33006 # **Engineering-psychological aspects of optimizing human visual work capacity in space flight (Inzhenerno-psikhologicheskie aspekty optimizatsii zritel'noi rabotosposobnosti cheloveka v kosmicheskom polete).** V. M. Kazachkov, V. I. Metlik, E. N. Khludeev, and E. V. Khrunov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 203-209. In Russian.

A80-33007 # **The feasibility and psychological aspects of verbal interaction of man and automatic systems (O vozmozhnostiakh i psikhologicheskikh aspektakh rechevogo obshcheniia cheloveka i avtomaticheskoi sistemy).** V. N. Trunin-Donskoi. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 210-214. 8 refs. In Russian.

Verbal communication between man and machine is examined as a possible means of improving technology control effectiveness in the space flight environment. Developments in computer technology and artificial intelligence leading to the possibility of speech understanding by an automatic system are considered, and possible applications of such systems in astronaut motion control and the remote control of extravehicular space robots are indicated. The psychological problems which may arise in man-computer communication during future extended planetary manned space flights are discussed, with attention given to means of ensuring accuracy, astronaut and machine roles, and the believability of machine commands. It is pointed out that the speech communication system must be capable of verifying operator identity, and that crews must be psychologically trained to deal with artificial intelligence systems. A.L.W.

A80-33008 # **Reflection of the dynamics of the psychophysiological state of the human operator in his speech signals (Otrazhenie v radioobmene dinamiki psikhofiziologicheskogo sostoianiia cheloveka-operatora).** A. V. Nikonov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 214-219. 5 refs. In Russian.

The present paper deals with the problem of monitoring and controlling the psychophysiological state and the functional efficiency of crew members during space missions. Means of using the information provided through telemetry, TV, and radio-link channels to assess the psychophysiological state and operational efficiency of the crew are examined. V.P.

A80-33009 # **Construction of a model simulating human-operator activity in manual rendezvous control (Postroenie modeli, imitiruiushchei deiatel'nost' cheloveka-operatora pri ruchnom upravlenii kosmicheskim korablem na etape sblizheniia).** S. A. Minaev and I. P. Meshcheriakov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 219-231. 13 refs. In Russian.

The activity of a human operator during manual rendezvous control is examined on the basis of the operator's information field. The activity of the operator is broken down into several stages. It is shown that the activity under consideration can be effectively interpreted as a combination of algorithmic descriptions in the form of logic circuits and individual and compensating servo operations, which can be modeled by the method of equivalent describing functions. V.P.

A80-33010 # **Utilization of general psychological principles for solving problems concerning the operation of man/machine systems (Ispol'zovanie obshchikh psikhologicheskikh printsipov dlia resheniia zadach ekspluatatsii sistem 'chelovek-mashina').** A. M. Volkov. In: Psychological problems of space flight. Moscow, Izdatel'stvo Nauka, 1979, p. 231-236. 6 refs. In Russian.

A80-33183 **A microprocessor-controlled echocardiographic tracking system.** M. S. Hostetler (Akron, University, Akron, Ohio), L. E. Roemer, G. S. Malindzak, Jr. (Akron, University, Akron; Northeastern Ohio Universities, Rootstown, Ohio), E. J. Cauffield (Northeastern Ohio Universities, Rootstown, Ohio), and M. L. Petrovick (U.S. Environmental Protection Agency, Health Effects Research Laboratory, Chapel Hill, N.C.). *IEEE Transactions on Biomedical Engineering,* vol. BME-27, May 1980, p. 249-254. Research supported by the American Heart Association and Northeastern Ohio Universities.

A real-time echocardiographic tracking system (ETS) has been designed and implemented to provide continuous real-time information on the position and motion of cardiac structures such as the anterior and posterior left ventricular wall. The ETS is capable of tracking two separate cardiac structures simultaneously and simplifies the task of extracting the dynamic positional information from an M-mode echocardiogram. A study has been performed to demonstrate the feasibility of analyzing and processing signals from the motion of the left ventricular septal and posterior wall on three normal adult male subjects. This study demonstrates that the ETS can provide reliable and useful information relative to the simultaneous motion of the endocardial surface of the anterior and posterior walls of the left ventricle and of the mitral valve. From this information, it will be possible to evaluate dynamic ventricular function in human subjects noninvasively and in real time. (Author)

A80-33311 # **Abiogenic synthesis of nucleoside-like compounds under the influence of extremal factors (Abiogennyi sintez nukleozidopodobnykh soedinenii pod vliianiem ekstremal'nykh faktorov).** M. A. Khenokh, E. A. Kuzicheva, N. V. Tsupkina, N. I. Kon'shin, A. L. Mashinskii, and G. S. Nechitailo (Akademiia Nauk SSSR, Institut Tsitologii, Leningrad, USSR). *Akademiia Nauk SSSR, Doklady,* vol. 249, no. 3, 1979, p. 749-752. 8 refs. In Russian.

The paper deals with a space-borne experiment aimed at studying the feasibility of nonbiological synthesis of nucleosides in a space environment with allowance for the influence of various energy sources. To this end, a Medusa facility containing evacuated ampules made of quartz and molybdenum glass, with dry mixtures of adenine ribose, adenine desoxyribose, and thymine desoxyribose in molar proportion, was exposed for 10 months at the outer wall of Salyut 6. The results are diagrammed, tabulated, and analyzed. V.P.

A80-33363 # **Suppression of the biosynthesis of sphingomyelin under gamma irradiation and exposure to ubiquinone-9 (Ugnetenie biosinteza sfingomielina v pecheni krys pri gamma-obluchenii i nagruzkakh ubikhinonom-9).** I. K. Kolomiitseva, E. G. Novoselova, E. A. Obol'nikova, G. I. Samokhvalov, and A. M. Kuzin (Akademiia Nauk SSSR, Institut Biologicheskoi Fiziki, Pushchino, USSR). *Akademiia Nauk SSSR, Doklady,* vol. 251, no. 1, 1980, p. 240-242. 10 refs. In Russian.

The paper investigates the influence of ubiquinone-9 on the incorporation of 2-C-14-glycerin into phosphatidylcholine, phosphatidylethanolamine, and sphingomyelin of the liver under healthy conditions and 48 hr after gamma irradiation of rats at a dose of 800 rad. The objective is to elucidate the influence of ubiquinone-9, gamma irradiation and their combined action on the biosynthesis of basic structural phospholipids of organelles in the rat liver. It follows from the analysis of the results that the biosynthesis of common lipids (triglycerides and phospholipids) in the rat liver remains unchanged upon incorporation of C-14-glycerin 48 hr after 800-rad gamma irradiation, exposure to ubiquinone-9 and their combined action. Factors influencing the abatement of sphingomyelin biosynthesis are identified. S.D.

A80-33873 **Diagnosis and quantification of aortic stenosis with pulsed Doppler echocardiography.** J. B. Young, M. A. Quinones, A. D. Waggoner, and R. R. Miller (Baylor College of Medicine; Methodist Hospital, Houston, Tex.). *American Journal of Cardiology,* vol. 45, May 1980, p. 987-994. 27 refs. Research supported by the American Heart Association; Grant No. NIH-HL-17269.

Pulsed Doppler echocardiography was used to evaluate patients with clinical characteristics of aortic stenosis, all of whom subsequently underwent complete diagnostic cardiac catheterization. The findings in patients with aortic stenosis were compared with those of normal subjects and of patients with a prosthetic aortic valve. The premise examined was that the presence of disturbed or turbulent flow distal to the aortic valve in the ascending aorta would allow detection and quantification of aortic valve stenosis. The Doppler technique was found to be successful in identifying the presence of aortic stenosis and in distinguishing between aortic valves with areas greater or smaller than 1.0 sq cm. S.D.

A80-33874 **Sources of variability in echocardiographic measurements.** J. M. Felner, B. A. Blumenstein, R. C. Schlant, A. D. Carter, B. N. Alimurung, M. J. Johnson, S. W. Sherman, M. W. Klicpera, M. H. Kutner, and L. W. Drucker (Emory University, Atlanta, Ga.). *American Journal of Cardiology,* vol. 45, May 1980, p. 995-1004. 22 refs.

The paper analyzes results of a large, complex experiment designed to estimate sources of variability, including human factors, in echocardiographic measurements. The objectives of the experi-

best copy available

ment were to quantify the sources of variability inherent in echocardiographic measurements, to assess the statistical and clinical significance of these sources of variability by comparing their relative magnitudes, and to identify possible variance-reducing modifications in the procedures used to obtain echocardiographic measurements. It is shown that variability within and between interpreters can be a significant factor influencing the accuracy of echocardiographic measurements. Each echocardiogram should be read at least twice by each of at least two interpreters. Minimally, each echocardiogram should be read either by one interpreter on two separate occasions or by two interpreters. S.D.

A80-33875 **Clinical uses of two dimensional echocardiography.** M. N. Kotler, G. S. Mintz, B. L. Segal, and W. R. Parry (Hahnemann Medical College and Hospital, Philadelphia, Pa.). *American Journal of Cardiology,* vol. 45, May 1980, p. 1061-1062. 104 refs.

The added advantages of two-dimensional echocardiography over M mode electrocardiography in the diagnosis of cardiac disorders occurring in adults are reviewed. The increased diagnostic utility of two-dimensional echocardiography is highlighted by examining clinical applications relative to coronary artery disease, mitral valve disease, left ventricular outflow obstruction, the tricuspid valve, pulmonary valve, endocarditis, prosthetic valves, pericardial effusion, cardiac masses, aortic aneurysms, and interatrial septum and right atrium. With newer designs and modifications, including digital scan conversion and Doppler flow capabilities, two-dimensional echocardiography may provide better images and more information. S.C.

A80-33881 # **Translational motion of anthropomorphic mechanisms in the pulsed excitation mode (Peredvizhenie antropomorfnykh mekhanizmov pri impul'snykh vozdeistviiakh).** V. A. Vasenin, R. A. Velershtein, and A. M. Formal'skii. In: Dynamics of controllable systems. Novosibirsk, Izdatel'stvo Nauka, 1979, p. 53-71. 20 refs. In Russian.

The paper considers the ballistic motion of a walking machine, that is, motion that takes place without the aid of controlling actions. This ballistic motion is accomplished by stepwise changes of velocity, i.e., by pulsed excitation of the joints of the machine. Solutions are obtained for the linear and nonlinear problems of ballistic motion of a walking machine. B.J.

A80-33897 # **Semiautomatic and interactive control systems for manipulator robots (Poluavtomaticheskie i interaktivnye sistemy upravleniia manipuliatsionnykh robotov).** E. P. Popov, V. S. Medvedev, A. G. Leskov, and A. S. Iushchenko. In: Dynamics of controllable systems. Novosibirsk, Izdatel'stvo Nauka, 1979, p. 224-236. 5 refs. In Russian.

The design of an interactive system for the control of manipulators is presented. Attention is given to the block diagram, the mathematical model of the control system and of the robot mechanisms, and the stability of motion. B.J.

A80-34229 * **Electrophoretic cell separation by means of microspheres.** A. J. K. Smolka, B. H. Nerren (NASA, Marshall Space Flight Center, Space Sciences Laboratory, Huntsville, Ala.), S. Margel, and A. Rembaum (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.). *Biochimica et Biophysica Acta,* vol. 558, 1979, p. 246-255. 20 refs. Research supported by the Universities Space Research Association and NASA.

The electrophoretic mobility of fixed human erythrocytes immunologically labeled with poly(vinylpyridine) or poly(glutaraldehyde) microspheres was reduced by approximately 40%. This observation was utilized in preparative scale electrophoretic separations of fixed human and turkey erythrocytes, the mobilities of which under normal physiological conditions do not differ sufficiently to allow their separation by continuous flow electrophoresis. We suggest that resolution in the electrophoretic separation of cell subpopulations, currently limited by finite and often overlapping mobility distributions, may be significantly enhanced by immunospecific labeling of target populations using microspheres. (Author)

A80-34475 # **Acute cardiovascular adaptation to altitude (Sur l'adaptation cardiovasculaire aiguë à l'altitude).** A. M. Cession-Fossion, J. Juchmes, A. Brose, J. Lecomte (Liège, Université, Liège, Belgium), and G. Roland (Liège, Université, Cointe-Ougrée, Belgium). *Société Royale des Sciences de Liège, Bulletin,* vol. 48, no. 9-10, 1979, p. 407-412. 15 refs. In French.

The effects of sudden altitude exposure on catecholamine levels in the blood and urine are investigated in order to discover the role of orthosympathetic regulation in cardiovascular adaptation to altitude. Cardiovascular functions, characterized by measurements of heart rate and arterial pressure, orthosympathetic stimulation levels, characterized by catecholamine elimination, and glomerular filtration levels, determined from creatinine elimination measurements, were measured in six subjects at sea level and following a move to 3580 m. None of the subjects experienced mountain sickness, and measurements revealed permanent tachycardia and a transitory hypertension, which were not accompanied by changes in glomerular filtration, nonradrenalinuria or adrenalinuria during the first two days of altitude exposure. It is thus concluded that the altitude response of the cardiovascular system is brought about by the stimulation of arterial chemoreceptors by hypoxia, which causes an orthosympathetic tachycardia without significant vasoconstriction. A.L.W.

A80-34499 # **Greenhouses in space (Kosmicheskie oranzherei).** M. Milov and G. Rusakova. *Aviatsiia i Kosmonavtika,* Mar. 1980, p. 36, 37. In Russian.

Space experiments have shown that vegetables and plants producing grains grow and develop better under natural conditions than in space. The present paper deals with research work carried out in space to study and circumvent the unfavorable effect of space factors on plant growth. V.P.

A80-35401 **Cochlear anatomy related to cochlear micromechanics - A review.** D. J. Lim (Ohio State University, Columbus, Ohio). *(Acoustical Society of America, Meeting, 97th, Cambridge, Mass., June 11-15, 1979.) Acoustical Society of America, Journal,* vol. 67, May 1980, p. 1686-1695. 43 refs. Research supported by the Deafness Research Foundation; Contract No. F33615-77-C-0512.

The paper reviews morphological characteristics along the length of the cochlea that may be suggestive of an additional tuning mechanism in the organ of Corti besides the basilar membrane. Such characteristics include an orderly gradation in height of the sensory cilia along the length of the cochlea, gradations in width and thickness in the movable portion of the tectorial membrane, and gradations in the relationship between the tectorial membrane and the slope of the reticular lamina along the length of the cochlea. V.L.

A80-35675 **Splenic erythropoiesis in polycythemic response of the rat to high-altitude exposure.** L. C. Ou, D. Kim, W. M. Layton, Jr., and R. P. Smith (Dartmouth College, Hanover, N.H.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology,* vol. 48, May 1980, p. 857-861. 19 refs. Grants No. NIH-HL-21159; No. NIH-HL-14127.

The role of splenic erythropoiesis in the polycythemic response of rats to simulated high altitudes is investigated. Male rats were exposed to 30 days of simulated altitudes from 12,000 to 20,000 ft, following which the spleens of half the altitude-exposed rats were removed 24 h before killing. Red cell and reticulocyte counts and spleen size are found to increase sharply following 30 days at altitudes greater than 18,000 ft; however, the reticulocyte count is sharply lowered following splenectomy. Histological examination reveals splenic erythropoiesis to also increase with altitude, while studies of Fe-59 intake show no altitude-related changes in Fe-59 uptake by the bone marrow or liver. Results suggest that rat spleen is primarily responsible for the increased erythropoiesis in response to hypoxia, and may exert inhibitory effect on bone marrow erythropoiesis. Observations of a slow decrease in reticulocytosis in intact rats returned to sea level conditions suggest the presence of a persistent hypoxia-induced stimulus or a committed pool of reticulocyte precursors. A.L.W.

A80-35751 * Insulin binding and glucose uptake of adipocytes in rats adapted to hypergravitational force. M. Kobayashi, C. E. Mondon, and J. Oyama (NASA, Ames Research Center, Biomedical Research Div., Moffett Field; Stanford University, Palo Alto, Calif.). *American Journal of Physiology*, vol. 238, Apr. 1980, p. E330-E335. 27 refs. NASA-supported research; Grant No. NIH-AM-07217.

Rats were exposed to 4.15 g for 1 yr and weight and age matched, and lean noncentrifuged rats were used as control groups. Rats exposed to chronic hypergravity (hypergravic rats) were found to show lower ambient insulin levels, greater food intake with smaller body weight gain, and decreased size of isolated adipocytes. The ability of adipocytes from the hypergravic rats to bind insulin was increased. With Scatchard analysis, both number and affinity of receptors were increased. In contrast to the increased binding, glucose transport was found to be decreased in adipocytes from these animals. However, when the data were expressed as a percentage of maximal effect, the half maximal insulin effect for both the hypergravic and lean control groups was produced at an insulin concentration of 0.23 + or - 0.02 ng/ml, which was lower than the insulin concentration of 0.31 + or - 0.02 ng/ml for the weight-matched control group (P less than 0.05). This increased insulin sensitivity in the hypergravic group was accounted for by an increased number of receptors. (Author)

A80-35778 Binocular retinal image motion during active head rotation. R. M. Steinman (Maryland, University, College Park, Md.) and H. Collewijn (Maryland, University, College Park, Md.; Rotterdam, Universiteit, Rotterdam, Netherlands). *Vision Research*, vol. 20, no. 5, 1980, p. 415-429. 16 refs. Research supported by the Nederlandse Organisatie voor Zuiver-Wetenschappelijk Onderzoek; NSF Grant No. BNS-77-16474.

Horizontal binocular eye and head movements of four human subjects were recorded by means of the sensor coil-rotating magnetic field technique while they actively rotated their heads about a vertical axis and maintained fixation on a distant target. The frequency and peak-to-peak amplitude of these rotations ranged from about 0.25 Hz to 5 Hz and 30 deg to 15 arcmin. Eye movement compensation of such head rotations was far from perfect and compensation was different in each eye. Average retinal image speed was on the order of 4 deg/sec within each eye and the speed of the changes in retinal image position between the eyes was on the order of 3 deg/sec. Vision, subjectively, remained fused, stable and clear. Attention is called to implications of these results for visual and oculomotor physiology. (Author)

A80-35779 Grating induction - A new type of aftereffect. C. W. Tyler and K. Nakayama (Smith-Kettlewell Institute of Visual Sciences, San Francisco, Calif.). *Vision Research*, vol. 20, no. 5, 1980, p. 437-441. 11 refs. Research supported by the Smith-Kettlewell Eye Research Foundation; Grants No. NIH-5-R01-EY-01582; No. NIH-5-S01-RR-05566.

After adaptation to a spatiotemporal counterphase flickering grating, a fine grating of the same orientation may be perceived in a uniform blank field. The spatial frequency of the induced grating remains approximately constant at about 18 c/deg regardless of the spatial frequency of the adapting spatiotemporal grating. It does not exhibit interocular transfer. The induced grating is not produced by contingent aftereffects, spatial frequency doubling, retinal afterimages, spatial frequency inhibition, Fourier harmonics or any other known type of aftereffect. It therefore represents a new class of aftereffect in the human visual system, suggesting unsuspected neuronal interactions in monocular pathways. (Author)

A80-35859 # Investigation of the kinetics of pyrolysis of amino acids (Issledovanie kinetiki piroliza aminokislot). G. A. Lavrent'ev, A. S. Timoshchenko, T. F. Strigunkova, and I. A. Egorov (Akademiia Nauk SSSR, Institut Biokhimii, Moscow, USSR). *Akademiia Nauk SSSR, Doklady*, vol. 251, no. 2, 1980, p. 486-489. 13 refs. In Russian.

The pyrolysis of 0.01 M aqueous solutions of amino acids has been studied by several investigators, while pyrolysis of some specific amino acids under anhydrous conditions was accomplished by Olafsson and Bryan (1971). The objective of the present study is to simulate the geochemical processes under relatively anhydrous conditions by pyrolysis of a dry mixture of amino acids and investigation of the kinetics of the process. V.P.

A80-35860 # Changes in concentration of 2,3-glycerodiphosphoric acid in rat erythrocytes during adaptation to hypoxia (Izmeneniia kontsentratsii 2,3-difosfoglitserinovoi kisloty v eritrotsitakh krys pri adaptatsii k gipoksii). O. I. Moiseeva, A. K. Baishukurova, and V. M. Alekseev (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). *Akademiia Nauk SSSR, Doklady*, vol. 251, no. 2, 1980, p. 504, 505. 12 refs. In Russian.

A80-36059 * The implications and limitations of the findings of the Viking organic analysis experiment. K. Biemann (MIT, Cambridge, Mass.). *Journal of Molecular Evolution*, vol. 14, Dec. 1979, p. 65-70. 15 refs. Contract No. NAS1-9684; Grants No. NGR-22-009-005; No. NsG-7432.

The gas chromatograph mass spectrometer instrument of the Viking mission has demonstrated the absence of organic compounds in the immediate surface layer of the two landing sites. The demonstration of the successful operation of the instrument (comparison of ground-based test data with those obtained during interplanetary flight and the data from the surface of the planet) and its limitations (e.g., the detection of highly cross-linked polymers or polymeric carbon suboxide) are reviewed. The measurements for bound water are based on indirect data, the detectability of evolved carbon dioxide and ammonia is poor, and oxygen, liberated from the soil samples, can not be detected. (Author)

A80-36060 Possible oxidant sources in the atmosphere and surface of Mars. D. M. Hunten (Arizona, University, Tucson, Ariz.). *Journal of Molecular Evolution*, vol. 14, Dec. 1979, p. 71-78. 27 refs.

The stability of CO2 in the Martian atmosphere and the factors responsible for the red color of the planet are discussed in terms of the possible sources of oxidants in the Martian atmosphere and surface. The photochemistry of hydrogen in the Martian atmosphere is examined, and the presence of large quantities of OH predicted by various models and responsible for the oxidation of carbon compounds, including organic carbon not detected by Viking, to CO2 is pointed out. The oxidation of surface iron on Mars by adsorbed water vapor is considered, and it is pointed out that on Mars, oases of humidity may be even more hostile towards life than the average region. It is concluded that the above mechanisms, under consideration long before the Viking landing, are capable of accounting for the various types of oxidants implicated in Viking observations. A.L.W.

A80-36062 * Heterogeneous phase reactions of Martian volatiles with putative regolith minerals. B. C. Clark, S. L. Kenley, D. L. O'Brien (Martin Marietta Aerospace, Planetary Sciences Laboratory, Denver, Colo.), G. R. Huss (New Mexico, University, Albuquerque, N. Mex.), R. Mack (NASA, Ames Research Center, Moffett Field, Calif.), and A. K. Baird (Pomona College, Claremont, Calif.). *Journal of Molecular Evolution*, vol. 14, Dec. 1979, p. 91-102. 17 refs. Contracts No. NAS1-9000; No. NAS1-11855; No. NAS1-11858.

The chemical reactivity of several minerals thought to be present in Martian fines is tested with respect to gases known in the Martian atmosphere. In these experiments, liquid water is excluded from the system, environmental temperatures are maintained below 0 C, and the solar illumination spectrum is stimulated in the visible and UV using a xenon arc lamp. Reactions are detected by mass spectrometric analysis of the gas phase over solid samples. No reactions were detected for Mars nominal gas over sulfates, nitrates, chloride, nontronite clay, or magnetite. Oxidation was not observed for basaltic glass, nontronite, and magnetite. However, experiments incorporating SO2 gas - an expected product of volcanism and intrusive volatile release - gave positive results. Displacement of CO2 by SO2 occurred in all four carbonates tested. These reactions are catalyzed by irradiation with the solar simulator. A calcium nitrate hydrate released NO2 in the presence of SO2. These results have implications for the cycling of atmospheric CO2, H2O, and N2 through the regolith. (Author)

A80-36065 * The photolytic degradation and oxidation of organic compounds under simulated Martian conditions. J. Oro and G. Holzer (Houston, University, Houston, Tex.). *Journal of Molecular Evolution,* vol. 14, Dec. 1979, p. 153-160. 21 refs. Contract No. NAS1-9685; Grant No. NGR-44-005-002.

Cosmochemical considerations suggest various potential sources for the accumulation of organic matter on Mars. However the Viking Molecular Analysis did not indicate any indigenous organic compounds on the surface of Mars. Their disappearance from the top layer is most likely caused by the combined action of the high solar radiation flux and various oxidizing species in the Martian atmosphere and regolith. In this study the stability of several organic substances and a sample of the Murchison meteorite was tested under simulated Martian conditions. After adsorption on powdered quartz, samples of adenine, glycine and naphthalene were irradiated with UV light at various oxygen concentrations and exposure times. In the absence of oxygen, adenine and glycine appeared stable over the given irradiation period, whereas a definite loss was observed in the case of naphthalene, as well as in the volatilizable and pyrolizable content of the Murchison meteorite. The presence of oxygen during UV exposure caused a significant increase in the degradation rate of all samples. It is likely that similar processes have led to the destruction of organic materials on the surface of Mars. (Author)

A80-36066 * Simulation of the Viking biology experiments - An overview. H. P. Klein (NASA, Ames Research Center, Moffett Field, Calif.). *Journal of Molecular Evolution,* vol. 14, Dec. 1979, p. 161-165. 24 refs.

In the present paper, ground-based investigations of the Viking Martian biology data, which have resulted in reasonable simulations of these data, are reviewed. These simulations, which in strong oxidants, UV-treated materials, iron-containing clays, or iron salts were used as Martian analogs, are capable of explaining the ambiguity between the GCMS (gas-chromatography mass-spectrometry) experiments, in which no organic compounds were found on Mars, and the Labeled Release experiments, in which added organics were decomposed. V.P.

A80-36067 * Completion of the Viking Labeled Release experiment on Mars. G. V. Levin and P. A. Straat (Biospherics, Inc., Rockville, Md.). *Journal of Molecular Evolution,* vol. 14, Dec. 1979, p. 167-183. 15 refs. Contracts No. NAS1-9690; No. NASw-3162.

The final Labeled Release (LR) cycle on each Viking lander tested a surface sample that had been stored for several months at approximately 10 C prior to the onset of the active sequence. At each lander site, activity was strongly diminished. This thermal sensitivity of the active agent on the surface of Mars is consistent with a biological explanation of the LR experiment. At the end of one of these cycles, the incubation mixture was heated to 50 C to release any radioactive gas trapped in the sample matrix. The results suggest that more than one carbon substrate is involved in the LR reaction on Mars. The thermal data from the stored samples, coupled with data from previous cycles, have formed the basis for evaluation of the thermal decomposition of the Mars active agent. The slope of the resulting Arrhenius plot has been used to test the fit of other flight data and to calculate the activation energy for thermal decomposition of the Mars agent. The results and their interpretation still leave unresolved the question of whether the Mars LR data were generated by biological or chemical activity. (Author)

A80-36068 * Laboratory simulations of the Viking Labeled Release experiment - Kinetics following second nutrient injection and the nature of the gaseous end product. G. V. Levin and P. A. Straat (Biospherics, Inc., Rockville, Md.). *Journal of Molecular Evolution,* vol. 14, Dec. 1979, p. 185-197. 8 refs. Contracts No. NAS1-9690; No. NASw-3162.

Injection of (C-14)-labeled nutrient onto Mars soil produced an evolution of C-14 gas in the Viking Labeled Release (LR) experiment. However, a second injection of nutrient seven days later was followed by an abrupt diminution of the amount of radioactive gas in the test cell. Simulation experiments performed in the LR Test Standards Module (TSM) have yielded a plausible explanation for this diminution. Radioactive carbon gases were injected into the TSM test cell in the presence and absence of two Mars analog soils. After equilibration, water was injected and its effect observed. The results indicate that the flight data following second nutrient injection can be explained on a physico-chemical basis involving a carbon dioxide/water/soil equilibrium in the test cell. The results also suggest that the gaseous end product of the Labeled Release reaction on Mars is more likely carbon dioxide than carbon monoxide. (Author)

A80-36069 * A model of Martian surface chemistry. V. I. Oyama and B. J. Berdahl (NASA, Ames Research Center, Extraterrestrial Research Div., Moffett Field, Calif.). *Journal of Molecular Evolution,* vol. 14, Dec. 1979, p. 199-210. 46 refs.

Alkaline earth and alkali metal superoxides and peroxides, gamma-Fe2O3 and carbon suboxide polymer, are proposed to be constituents of the Martian surface material. These reactive substances explain the water modified reactions and thermal behaviors of the Martian samples demonstrated by all of the Viking Biology Experiments. It is also proposed that the syntheses of these substances result mainly from electrical discharges between wind-mobilized particles at Martian pressures; plasmas are initiated and maintained by these discharges. Active species in the plasma either combine to form or react with inorganic surfaces to create the reactive constituents. (Author)

A80-36070 * Laboratory simulations of the pyrolytic release experiments - An interim report. J. S. Hubbard (Georgia Institute of Technology, Atlanta, Ga.). *Journal of Molecular Evolution,* vol. 14, Dec. 1979, p. 211-221. 17 refs. Grant No. NsG-7069.

During its operation on Mars the pyrolytic release experiment (PR) detected the fixation of small amounts of CO2 and/or CO. Laboratory simulations of the experimental conditions were made in an attempt to substantiate the previous conclusion that these reactions were chemical rather than biological. After pretreatment and incubation under various conditions, pyrolytic analysis was used to indicate the extent of surface catalyzed conversion of (C-14)O2 or (C-14)O to (C-14)-organic compounds. This abiotic synthesis was detected in experiments with three iron oxides, viz. hematite, magnetite and maghemite. When the incubation atmosphere was supplemented with water vapor, the levels of synthesis were in a range comparable to that detected in the Viking PR tests. An abiotic synthesis was also detected in experiments with a mixture of clays and minerals (Mars analog soil) or with montmorillonite artificially enriched in iron. With either substratum the reaction appeared to be the result of a photocatalytic synthesis of (C-14)-organics from (C-14)O and surface hydroxyl groups. This process was not dependent on the presence of water vapor in the incubation atmosphere. Although a duplication of the Viking data has not been achieved, these findings support the abiotic interpretation of the PR results. (Author)

A80-36071 The Viking mission - Implications for life on Mars. L. Margulis (Boston University, Boston, Mass.), P. Mazur (Oak Ridge National Laboratory, Oak Ridge, Tenn.), E. S. Barghoorn (Harvard University, Cambridge, Mass.), H. O. Halvorson (Brandeis University, Waltham, Mass.), T. H. Jukes (California, University, Berkeley, Calif.), and I. R. Kaplan (California, University, Los Angeles, Calif.). *Journal of Molecular Evolution,* vol. 14, Dec. 1979, p. 223-232. 28 refs.

The results of the Viking Biology experiments are best explained by non-biological phenomena: The interaction of the reagents with the materials comprising the regolith. Conditions of water activity, temperature, availability of carbon sources and others in most regions of the planet are too extreme for survival and growth of any known earth microorganisms. Although the possibility persists that some very unusual form of life is somewhere on that planet the evidence is best interpreted as negative. Even though there is no evidence for current life on Mars, whether or not life ever originated there is not known. (Author)

A80-36195 * **The role of metal ions in chemical evolution - Polymerization of alanine and glycine in a cation-exchanged clay environment.** J. G. Lawless and N. Levi (NASA, Ames Research Center, Moffett Field, Calif.). *Journal of Molecular Evolution*, vol. 13, Nov. 1979, p. 281-286. 33 refs.

The effect of the exchangeable cation on the condensation of glycine and alanine was investigated using a series of homoionic bentonites. A cycling procedure of drying, warming and wetting was employed. Peptide bond formation was observed, and the effectiveness of metal ions to catalyze the condensation was Cu(2+) greater than Ni(2) approximately equals Zn(2+) greater than Na(+). Glycine showed 6% of the monomer incorporated into oligomers with the largest detected being the pentamer. Alanine showed less peptide bond formation (a maximum of 2%) and only the dimer was observed. (Author)

A80-36197 **A new estimate of sequence divergence of mitochondrial DNA using restriction endonuclease mappings.** N. Kaplan and C. H. Langley (National Institutes of Health, National Institute of Environmental Health Sciences, Research Triangle Park, N.C.). *Journal of Molecular Evolution*, vol. 13, Nov. 1979, p. 295-304. 18 refs.

A new estimate of the sequence divergence of mitochondrial DNA in related species using restriction enzyme maps is constructed. The estimate is derived assuming a simple Poisson-like model for the evolutionary process and is chosen to maximize an expression which is a reasonable approximation to the true likelihood of the restriction map data. Using this estimate, four sets of mitochondrial DNA data are analyzed and discussed. (Author)

A80-36198 **The effect of clays on the oligomerization of HCN.** J. P. Ferris, E. H. Edelson, N. M. Mount (Rensselaer Polytechnic Institute, Troy, N.Y.), and A. E. Sullivan. *Journal of Molecular Evolution*, vol. 13, Nov. 1979, p. 317-330. 29 refs. NSF Grant No. CHE-76-11000.

The reactions of HCN and its oligomers are investigated in aqueous solutions at pH 8-9 and 25 C, in accordance with the primitive earth model in which aqueous solutions of HCN and diaminomaleonitrile react with clay mineral sediments. It is found that the oligomerization of 0.1 M HCN in aqueous solution is inhibited by monmorillonite and kaolinite. The rate of reaction of cyanide was approximately the same in the presence and absence of clays, which shows that the inhibitory effect of clays might be due to their interaction with an HCN oligomer and not HCN itself. The inhibition of oligomer formation is due to the clay-catalyzed decomposition of diaminomaleonitrile. The significance of these reactions in chemical evolution is discussed. V.L.

A80-36225 # **The psychophysiological characteristics of air traffic controller activity (Psikhofiziologicheskie osobennosti deiatel'nosti aviatsionnykh dispetcherov).** N. I. Frolov, A. N. Kol'tsov, and V. A. Sergeev. *Voenno-Meditsinskii Zhurnal*, Mar. 1980, p. 49-53. 11 refs. In Russian.

The psychophysiological factors associated with the work of an air traffic controller at various stages in his shift are investigated. Measurements of arterial pressure, heart rate, resting and stress electrocardiograms, critical frequency for light flash discrimination, muscle strength and static endurance, sensorimotor reaction time, excess reactions and sensorimotor coordination were used as indicators of the functional state of flight controllers, with 8-h duty periods, and air motion directors, with longer duty periods alternating with 48-72-hr off-duty periods. Results demonstrate the high levels of mental and emotional stress involved in the performance of air traffic control and guidance duties, and recommendations concerning the selection and optimal rest periods and duty cycles of the various classes of air traffic controllers are offered. A.L.W.

A80-36250 **On auditory evoked potentials and heart rate in man during whole-body vibration.** P. Ullsperger and H. Seidel (Zentralinstitut für Arbeitsmedizin, Berlin, East Germany). *European Journal of Applied Physiology*, vol. 43, no. 3, 1980, p. 183-192. 25 refs.

Auditory evoked brain potentials and heart rate were recorded from three healthy male subjects during sinusoidal whole-body vibration exposure in the longitudinal /+ or - a(z)/ direction (two intensities, I1 and I2) and under no-vibration control conditions according to a change-over design. All conditions were performed at a constant noise level. The part of vibration-synchronous activity contaminating the averaged evoked potentials (AEP) was eliminated by means of a subtraction technique. The AEP amplitude N1-P2 showed a significant decrease during vibration exposure; this decrease was slightly greater during I2 than during I1. Except for a shortening of P2 due to vibration of I1, the peak latencies did not change significantly. The heart rate increased when subjects were exposed to vibration at I1; there were interindividually opposite significant changes under I2 exposure. Time effects and subject effects were also proved. The AEPs are considered to be an informative means of studying the effect of vibration on central nervous information processing. (Author)

blank page

STAR ENTRIES

N80-22954 Illinois Univ. at Urbana-Champaign.
INACTIVATION OF ENTEROVIRUSES BY OZONE Ph.D. Thesis
Dipak Roy 1979 137 p
Avail: Univ. Microfilms Order No. 8009151

The kinetics of inactivation of enteroviruses was studied to a continuous flow, constant temperature reactor. Poliovirus 1 (Mahoney) was used as a model enteroviruses to study the mechanism of inactivation and to evaluate the effects of different environmental parameters on the kinetics of inactivation. Virus survival curves under all experimental conditions were observed to follow a similar pattern; a rapid rate of inactivation for the initial period followed by a slow rate of inactivation. The all or none effect, previously associated with ozone disinfection, was markedly absent. The survival curves did not follow single order kinetics: it is believed that the inherent nature of the virus may be responsible for this observation. Dissert. Abstr.

N80-22955*# National Aeronautics and Space Administration, Washington, D. C.
EFFECTS OF AUDIO-VISUAL STIMULATION ON THE INCIDENCE OF RESTRAINT ULCERS ON THE WISTAR RAT
M. S. Martin, F. Martin, and R. Lambert Dec. 1979 7 p refs Transl. into ENGLISH from Compt. Rend. Soc. Biol., v. 164, no. 8/9, 1970 p 1748-1750 Original document announced as N80-19748 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75950) Avail: NTIS HC A02/MF A01 CSCL 06C

The role of sensory simulation in restrained rats was investigated. Both mixed audio-visual and pure sound stimuli, ineffective in themselves, were found to cause a significant increase in the incidence of restraint ulcers in the Wistar Rat. R.E.S.

N80-22956*# National Aeronautics and Space Administration, Washington, D. C.
ROLE OF ADRENALS IN THE MOBILIZATION OF CARBOHYDRATE AND FAT RESOURCES AFTER OVERSTIMULATION OF RATS
G. G. Khechninashvili Jan. 1980 13 p refs Transl. into ENGLISH FROM Farmakol. Toksikol. (USSR), v. 35, no. 5, 1972 p 575-580 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by USSR Acad. of Med. Sci., Leningrad
(Contract NASw-3198)
(NASA-TM-75974) Avail: NTIS HC A02/MF A01 CSCL 06C

The role of the cortical and cerebral layers of the adrenal glands in mobilizing carbohydrate and fatty resources in response to the effect of an extreme stimulant was investigated. It is shown that following adrenodemedullation and adrenalectomy, the leading role is played by the secretion of the adrenal medullary layer, whereas the role of suprarenals in the mobilization of fats is only slightly pronounced. R.C.T.

N80-22957*# National Aeronautics and Space Administration, Washington, D. C.
STATE OF THE MITRAL VALVE IN RABBITS WITH HYPOKINESIA
V. Ye. Strelkovska Dec. 1979 7 p refs Transl. into ENGLISH from Dopov. Akad. Nauk Ukr. RSR, Ser. Geol., Khim. Biol. Nauky, V. 36, no. 1, 1974 p 72-75 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76003) Avail: NTIS HC A02/MF A01 CSCL 06C

In hypokinesia, edema of all the layers of the mitral value was observed, which resulted in morphological changes of the cellular and noncellular components. An increase in ratio of elastic and collagenic fibers in the value was also observed along with and changes in their structural and staining properties. The observed changes can limit valve mobility and can result in manifestations of cardiac valve insufficiency, which is found clinically. R.E.S.

N80-22958*# National Aeronautics and Space Administration, Washington, D. C.
ANIMAL EXPERIMENTAL RESEARCH ON MICROSTRUCTURAL BEHAVIOR ON THE HYALINE ARTHROIDAL CARTILAGE AFTER IMMOBILIZATION AND REMOBILIZATION
H. J. Refior 3 Feb. 1980 6 p refs Transl. into ENGLISH from Langenbecks Archmany Fuer Chirugie (West Germany), 1976 p 296-298 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76050) Avail: NTIS HC A02/MF A01 CSCL 06C

The degeneration of the articular cartilage after a period of immobilization was investigated. The experiment was carried out by the immobilization of the knee joints of rabbits. Even after remobilization there was an increase in the alterations. These changes did not prove to be reversible. R.C.T.

N80-22959*# National Aeronautics and Space Administration, Washington, D. C.
INCORPORATION OF GLYCINE-2-C-14 IN ACID-INSOLUBLE PROTEINS OF RAT BONES AND TEETH DURING HYPOKINESIA AND ADMINISTRATION OF THYROCALCITONINE
A. I. Volozhin, L. I. Stekolnikov, N. N. Uglova, and V. Ye. Potkin Dec. 1979 8 p refs Transl. into ENGLISH from Farmakol. Toksikol. (USSR), v. 37, no. 2, 1974, p 223-226 Original language document was announced as A72-40432 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75981) Avail: NTIS HC A02/MF A01

A forced limitation of the motor activity in rats (from 5 to 60 days) results in reduced incorporation of glycine 2-C14 in the total acid insoluble proteins of limb bones and its increase in the teeth and mandibular-maxillary bones. Daily administration of five micrograms of thyrocalcitonine together with polyvinylpyrrolidone normalizes the protein metabolism in the bone tissues during the 40 days of experimentation. E.D.K.

N80-22960*# National Aeronautics and Space Administration, Washington, D. C.
THE ULCEROGENIC EFFECT OF BILE AND BILE ACID IN RATS DURING IMMOBILIZATION STRESS
J. Weisener Feb. 1980 14 p refs Transl. into ENGLISH from Z. Gastroenterol. (West Germany), v. 12, no. 7, 1974 p 539-546 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76054) Avail: NTIS HC A02/MF A01 CSCL 06C

The effect of different concentrations of oxen bile and individual bile acids or their sodium salts on the gastric mucosa of rats was investigated in combination with immobilization stress. A statistically significant higher frequency of ulcers was only determined in the application of 10% oxen bile. Dosages on 10% sodium glycocholic acid demonstrated strong toxic damage with atonic dilation of the stomach and extensive mucosal bleeding. R.E.S.

N80-22961*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF PROLONGED HYPODYNAMIA ON CERTAIN PHYSIOLOGICAL FUNCTIONS IN DOGS

B. R. Yaremenko Dec. 1979 8 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), v. 14, no. 6, Nov. - Dec. 1970 p 10-13 Translation was announced as N74-19752 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75979) Avail: NTIS HC A02/MF A01

The behavior of 20 dogs whose mobility was restricted was experimentally investigated. Their reactions to hypodynamia were either active behavior or progressive general depression and increased muscular weakness. Arterial pressure, pressor sinocarotid reflex valve, body weight, pulse rate, body temperature, and plasma cholinesterase activity were monitered for 28 days. Results are reported. E.D.K.

N80-22962*# National Aeronautics and Space Administration, Washington, D. C.

THE EFFECT OF RESTRAINING ON THE HEART RATE IN GUINEA PIGS

H. Mikiskova Jan. 1980 12 p refs Transl. into ENGLISH from Activ. Nerv Super/ (Czech.), v. 10, no. 4, 1968 p 382-388 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76006) Avail: NTIS HC A02/MF A01 CSCL 06C

The emotional effect of different applications of electrodes and the fixation for cariographic examination was investigated using guinea pigs. The effect of the stress is discussed in terms of heart rhythm and behavior. R.E.S.

N80-22964 State Univ. of New York at Stony Brook.

MULTIVARIATE ANALYSIS OF PHYSIOLOGICAL RESPONSE TO ENVIRONMENTAL STRESS Ph.D. Thesis

Edith Alker Zang 1979 396 p
Avail: Univ. Microfilms Order No. 8007325

Forty-five physiological response variables were recorded at various time intervals on three volunteers during each of one hundred experimental sessions conducted in a controlled environmental chamber. Besides the physiological measurements, fourteen environmental variables were also recorded to examine their influence on the subjects during the tests. The data was analyzed using multivariate techniques including factor analysis nonmetric multidimensional scale analysis and regression analysis to determine the relationship among the variables under varying environmental combinations, and also to evaluate the effectiveness of these techniques when applied to physiological data. The results of the analyses indicate that multivariate techniques, particularly factor analysis, can accurately summarize the complex highly interactive physiological reactions recorded in the study. Dissert. Abstr.

N80-22965 Columbia Univ., New York.

MATHEMATICAL MODELING, SIMULATION, AND STABILITY OF THE RESPIRATORY CONTROL SYSTEM Ph.D. Thesis

Edward Firouztale 1979 288 p
Avail: Univ. Microfilms Order No. 8008722

A mathematical model of the respiratory control system was developed. This model consisted of a sub-model of the oxygen and carbon dioxide stores and a second sub-model of the controlling system. The models together with the reference parameter values, were used to simulate the effects of various periods of apnea (periods of nonbreathing) and recovery from apnea. The results are of interest in connection with studies of sudden infant death syndrome. Simulation and linear stability analysis were used to determine the stability of the system and, in particular, the gain that will render the respiratory control system unstable. It was found that limit cycles exist and that the cardiac output has a major effect on stability of the respiratory control system. Finally, the effect of O2-CO2 interactions at the controller level, on stability, was studied. Dissert. Abstr.

N80-22966 Michigan Univ., Ann Arbor.

INVESTIGATION OF CIRCADIAN RHYTHMS ON SELECT PSYCHOMOTOR AND NEUROLOGICAL FUNCTIONS Ph.D. Thesis

Andris Freivalds 1979 280 p
Avail: Univ. Microfilms Order No. 8007740

The existence of circadian rhythms in response variables that relate most meaningfully to the physiological and neurological state of the body throughout the day and which may be indices of performance was investigated. Various models, including a 2-parameter, 3-parameter and 6-parameter cosine model and an autoregressive model were fit to the data. For the variables with data pooled across subjects and days, the averaging effect tended to minimize the better fit of higher order models. The 2-parameter cosine model is sufficient to explain a (normal) average rhythm. On the other hand, the individual subject data of resting heart rate was more variable and yielded significantly better fits with the higher order models for all three subjects. Dissert. Abstr.

N80-22967*# National Aeronautics and Space Administration, Washington, D. C.

REACTIVITY OF ORGANISM IN PROLONGED SPACE FLIGHTS

P. V. Vasilyev Jan. 1980 14 p refs Transl. into ENGLISH from Astronaut. Acta (Austria), v. 17, 1972 p 107-112 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(NASA-TM-75975) Avail: NTIS HC A02/MF A01 CSCL 06S

An analysis of published data are presented as well as the results of experiments which show that the state of weightlessness and hypodynamia result in a reduced orthostatic and vestibular resistance, increased sensitivity to infections, decreased endurance of accelerations and physical exercises, and altered reactivity of the organism to drugs. Various consequences of weightlessness on the human body, especially weightlessness combined with other factors linked to long space flights are also considered. R.C.T.

N80-22968*# National Aeronautics and Space Administration, Washington, D. C.

DYNAMICS OF CHANGE OF LIPID AND MONOAMINE METABOLISMS AND THE BLOOD COAGULATION SYSTEM DURING EXPERIMENTAL ATHEROSCLEROSIS CAUSED BY RESTRICTION OF MOVEMENT

G. S. Gvishiani and N. G. Kobakhidze Apr. 1980 5 p Transl. into ENGLISH from Soobshch. Akad. Nauk Gruz SSR (USSR), v. 60, no. 2, 1970 p 445-447 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Georgian SSR Acad. of Sci., Tbilisi, USSR
(Contract NASw-3199)
(NASA-TM-76033) Avail: NTIS HC A02/MF A01 CSCL 06S

Shifts in lipid, catecholamine, and blood coagulation systems following various periods (1, 2, 3, and 4 months) of experimentally induced atherosclerosis were studied. The same indices were studied in the tissues of the myocardium, liver, and brain stem-reticular formation after decapitation of the animals at the end of the experiment. Periodic motion restriction caused an increase in blood beta-lipoproteins in the rabbits at the beginning of the experiment. An increase in general cholesterol content and a decrease in the lecithincholesterol index were established at the end of the experiment. Myocardial beta-lipoprotein and brain stem reticular formation general cholesterol contents were elevated; catecholamine content was increased at the end of the experiment. In the initial months, free adrenaline basically increased, while in later months blood adrenaline decreased and blood noradrenaline increased. R.E.S.

N80-22969*# National Aeronautics and Space Administration, Washington, D. C.

STATE OF THE BODY IN DISORDERS OF DIURNAL PHYSIOLOGICAL RHYTHMS AND LONG-TERM HYPOKINESIA

S. N. Razin and A. V. Rychko Mar. 1980 7 p Transl. into ENGLISH from Vrach. Delo, no. 5, 1976 p 104-106 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76051) Avail: NTIS HC A02/MF A01 CSCL 06S

In order to study the effects of hypokinesia and circadian rhythm restructuring on the morphological and functional status of the hypothalamo-hypophysic-adrenal system, young male Wistar rats were placed in small cages for varying periods. The animals were decapitated and preparations were made from sections of the brain and adrenals and numerous destructive changes were noted in the investigated regions of the brain, indicating that the condition of these areas is directly affected by disruption of established rhythms in physiological processes. Author

N80-22970*# National Aeronautics and Space Administration, Washington, D. C.

CATECHOLAMINES OF THE ADRENAL MEDULA AND THEIR MORPHOLOGICAL CHANGES DURING ADAPTATION TO REPEATED IMMOBILIZATION STRESS

R. Kvetnansky, A. Mitro, L. Mikulaj, and G. Hocman Mar. 1980 14 p refs Transl. into ENGLISH from Bratislav. Lek. Listy (Czechoslovakia), V. 46, no. 1, Jan. 1966 p 35-41 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76068) Avail: NTIS HC A02/MF A01 CSCL 06S

Changes of the adrenal medulla of rats were studied in the course of adaptation to repeated immobilization stress. An increase in the number of cells in the adrenal medulla was found in the adapted animals; this increase was confirmed by weight indices of the medulla and by cell counts per surface unit. Simultaneous karyometric measurements of the nuclei of adrenal medulla cells and an analysis of the catecholamine contents in the adrenals explain the increased activity of the adrenal medulla in the course of adaptation. R.C.T.

N80-22971*# National Aeronautics and Space Administration, Washington, D. C.

VESTIBULAR RECRUITMENT

S. G. Tsemakhov Mar. 1980 16 p refs Transl. into ENGLISH from Vestn. Otorino-Laringologii (USSR), no. 4, Jul. - Aug. 1979 p 75-83 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76088) Avail: NTIS HC A02/MF A01 CSCL 06P

Vestibular recruitment is defined through the analysis of several references. It is concluded that vestibular recruitment is an objective phenomenon which manifests itself during the affection of the vestibular receptor and thus serves as a diagnostic tool during affection of the vestibular system. R.C.T.

N80-22972*# National Aeronautics and Space Administration, Washington, D. C.

AUTOMATED SYSTEM FOR DIAGNOSING CRANIOCEREBRAL INJURY

N. I. Moiseyeva, G. D. Luchko, R. V. Kremleva, A. V. Morozov, L. I. Nikitina, K. K. Rodionov, A. F. Gurchin, and E. M. Shmatov Mar. 1980 10 p refs Transl. into ENGLISH from Sov. Med. (USSR), no. 10, Oct. 1979 p 94-98 Transl. by SCITTRAN, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76097) Avail: NTIS HC A02/MF A01 CSCL 06B

A Russian national computing and communication system designed to assist non-specialized physicians in the diagnosis and treatment of craniocerebral injury is described. R.E.S.

N80-22973# Bolt, Beranek, and Newman, Inc., Canoga Park, Calif.

LOW FREQUENCY ACOUSTIC DETECTION IN SUPPORT OF HUMAN DETECTION RANGE PREDICTION Final Report, Sep. 1978 - Sep. 1979

S. A. Fidell, R. D. Horonjeff, and D. M. Green Oct. 1979 88 p refs
(Contract DAAK51-78-C-00133; DA Proj. 1L1-62209-AH-76)
(AD-A080579; BBN-4006; USARTL-TR-79-25) Avail: NTIS HC A05/MF A01 CSCL 06/16

This project resulted in modifications to the acoustic range prediction software that were intended to increase the accuracy with which the program predicts detection ranges for targets that are audible primarily at low frequencies. These modifications were based on interpretations of the findings of a psychoacoustic experiment that sought to determine the effective masking bandwidth for human observers at frequencies as low as 40 Hz. The rationale for this experimentation was based on an extensive search of the masking literature. The possibility that acoustic detection ranges of unaided human observers are affected by infrasonic emissions of helicopters was considered both analytically and empirically. It was concluded from a literature review that the prospects for 'infrasonic cueing' of conventional acoustic detection were doubtful. A two-alternative forced choice task in which infrasound was available as a cue to detection produced results consistent with that conclusion. GRA

N80-22974# Research Inst. of National Defence, Stockholm (Sweden).

PERFORMANCE IN TASKS DIFFERING IN MEMORY LOAD AND ITS RELATIONSHIP WITH HABITUAL ACTIVITY PHASE AND BODY TEMPERATURE

Jan E. Froeberg Apr. 1979 28 p refs
(FOA-C-52002-H6) Avail: NTIS HC A03/MF A01

Twenty-four hour patterns in tasks differing in memory load were studied during a 75 hour vigil. Differences in performance were also studied between morning and evening active subjects, and between body temperature and performance rhythms. The task with a high memory load showed a 24 hr rhythm which was in inverse phase with the less memory loaded task and with body temperature. This was true only for the first 24 hr cycle, after that the memory loaded task tended to follow the other two variables, except in the case of the most extreme morning types for whom the inverse relationship continued to exist. Author (ESA)

N80-22975# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Bonn (West Germany). Inst. fuer Flugmedizin.

EVALUATION OF THYROID HORMONES BY GAS CHROMATOGRAPHY

Wolfgang Raabe Jan. 1979 26 p refs In GERMAN; ENGLISH summary Report will also be announced as translation (ESA-TT-620)
(DFVLR-FB-79-07) Avail: NTIS HC A03/MF A01; DFVLR, Cologne DM 7.20

Gas chromatography is discussed as a method to allow routine measurements of thyroid hormone concentration in human serum. It is shown that current methods using this technique are not sufficiently sensitive. A proposal is made to improve the sensitivity of the method by the use of vacuum techniques. A factor of 1000 in sensitivity gain is expected. Author (ESA)

N80-22976# Flying Personnel Research Committee, London (England).

COCKPIT THERMAL STRESS AND AIRCREW THERMAL STRAIN DURING ROUTINE JAGUAR OPERATIONS

T. M. Gibson, L. A. Cochrane, M. H. Harrison, and P. W. Rigden HMSO Mar. 1979 22 p refs
(FPRC/Rept-1376; BR70502) Avail: NTIS HC A02/MF A01

Thermal data were obtained using Jaguar aircraft flying routine, warm weather operations in Sardinia. The data were analyzed in terms of the ambient and cockpit wet bulb, globe temperatures (WBGT), and the mean body temperature (Tb) of the pilot. Relationships described by equations of negative slope were obtained between Tb and sortie time and between cockpit WBGT and sortie time. MODEL WAS developed for predicting aircrew thermal strain in the Jaguar from cockpit temperature and sortie time. Author (ESA)

N80-22977# Research Inst. for Environmental Hygiene, TNO, Delft (Netherlands). Sound, Light and Indoor Climate Div.

NOISE EFFECTS. EFFECTS OF NOISE EXPOSURE ON BLOOD CIRCULATION AND RESPIRATION OF MAN. PART 1: RESULTS OF A TWO-HOUR NOISE EXPOSURE ON GROUPS OF YOUNGER AND OLDER PEOPLE

A. J. M. Roevekamp and W. Passchier-Vermeer Jun. 1978 123 p refs

(IG-TNO-B-373-E) Avail: NTIS HC A06/MF A01

The influence of noise exposure on blood circulation and respiration was studied. The effects of such noise on the following parameters were examined: heartbeat frequency; absolute impedance plethysmogram: the total alternating current resistance of an extremity (arm, finger); relative impedance plethysmogram: the amplitude of that part of the alternating current resistance of an extremity, which varies with the heartbeat frequency; diastolic and systolic blood pressure and pulse pressure; and respiratory frequency. The results are compared to the effects caused by exposure to traffic noise and by exposure to a constant high sound level. Author (ESA)

N80-22978# National Technical Information Service, Springfield, Va.

EFFECTS OF FATIGUE ON HUMAN BEHAVIOR AND PERFORMANCE. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1964 - Jan. 1980

Mary E. Young Feb. 1980 205 p Supersedes NTIS/PS-79/0071; NTIS/PS-78/0126; NTIS/PS-77/0064

(PB80-804263; NTIS/PS-79-0071; NTIS/PS-78/0126; NTIS/PS-77/0064) Avail: NTIS HC $30.00/MF $30.00 CSCL 06S

The bibliography cites references on the psychological and physiological effects of mental and physical fatigue. Reports on circadian rhythm, work - rest schedules, sleep deprivation, and physical endurance are included. This updated bibliography contains 198 abstracts, 10 of which are new entries to the previous edition. GRA

N80-22979# National Technical Information Service, Springfield, Va.

BEHAVIOR AND PHYSIOLOGICAL EFFECTS OF NOISE, VOLUME 3. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1977 - Jan. 1980

Mary E. Young Jan. 1980 190 p Supersedes NTIS/PS-79/1014; NTIS/PS-78/0038; NTIS/PS-77/0031; NTIS/PS-76/0014; NTIS/PS-75/103

(PB80-803869; NTIS/PS-79/1014; NTIS/PS-78/0038; NTIS/PS-77/0031; NTIS/PS-76/0014; NTIS/PS-75/103) Avail: NTIS HC $30.00/MF $30.00 CSCL 06S

Research reports are cited on the medical, psychological and physiological problems of noise pollution. Human tolerances to noise from aircraft, community traffic, industry, and military weapons are discussed. Reports on protective measures, noise control and abatement are also included. This updated bibliography contains 183 abstracts, 34 of which are new entries to the previous edition. GRA

N80-22980# National Technical Information Service, Springfield, Va.

BIOLOGICAL EFFECTS OF LASER RADIATION, VOLUME 2. CITATIONS FROM THE NTIS DATA BASE Progress Report, Jan. 1978 - Jan. 1980

Elizabeth A. Harrison Jan. 1980 46 p Supersedes NTIS/PS-79/0020; NTIS/PS-78/0036; NTIS/PS-77/0028

(PB80-803935; NTIS/PS-79/0020; NTIS/PS-78/0036; NTIS/PS-77/0028) Avail: NTIS HC $30.00/MF $30.00 CSCL 06R

The bibliography cites reports on radiation injuries, permissible dosage, protective devices, and safety measures. Included are references on the pathology of eye lesions caused by lasers. This updated bibliography contains 39 abstracts, 17 of which are new entries to the previous edition. GRA

N80-22981# National Technical Information Service, Springfield, Va.

COLOR VISION. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1964 - Jan. 1980

Elizabeth A. Harrison Jan. 1980 202 p Supersedes NTIS/PS-79/0049; NTIS/PS-78/0047; NTIS/PS-77/0039

(PB80-803992; NTIS/PS-79/0049; NTIS/PS-78/0047; NTIS/PS-77/0039) Avail: NTIS HC $30.00/MF $30.00 CSCL 06P

Selected references are presented on defective color vision, genetic characteristics, tests for color blindness, and the use of optical filters in enhancing color images. Reports are included on human engineering for military personnel, pilots, and other operators. Color vision requirements for various occupations are discussed. This updated bibliography contains 195 abstracts, 14 of which are new entries to the previous edition. GRA

N80-22982# Health Effects Research Lab., Research Triangle Park, N. C. Clinical Studies Div.

BIOCHEMICAL CHANGES IN HUMANS UPON EXPOSURE TO OZONE AND EXERCISE

Suzanne Chaney, Paulette DeWitt, Wendy Blowquist, Keith Muller, Robert Bruce, and George Goldstein Aug. 1979 53 p refs

(PB80-105554; EPA-600/1-79-026) Avail: NTIS HC A04/MF A01 CSCL 06S

A total of 44 human subjects were exposed to 784 micrograms/cu m (0.4 ppm) ozone and 30 human subjects were exposed to air as controls. A four hour exposure was given on each of five consecutive days. Half of each group received a higher level of treadmill exercise than the other half. Nine biochemical blood parameters were measured pre and post exposure, red blood cell glutathione reductase, vitamin E, red blood cell cholinesterase, red blood cell glucose-6-phosphate dehydrogenase, lactic acid dehydrogenase, alpha sub I antitrypsin, haptoglobin, complement C3, and igM. Of these variables only vitamin E, red blood cell glucose-6-phosphate denydrogenase, and complement C3 showed significant changes due to treatment. GRA

N80-22983 Illinois Univ. at Urbana-Champaign.

MODELS OF HUMAN DECISION MAKING IN MULTI-TASK SITUATIONS: EVENT DETECTION, ATTENTION ALLOCATION, AND IMPLICATIONS FOR COMPUTER AIDING Ph.D. Thesis

Joel Sandor Greenstein 1979 120 p

Avail: Univ. Microfilms Order No. 8009048

Human decision making in multi-task situations is discussed. Mathematical models of human event detection and attention allocation performance in multi-task situations were developed and validated in a specific multiple process monitoring situation. The implications these models have for the design and implementation of computer aided decision making systems are also discussed. Dissert. Abstr.

N80-22984*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

THEORY OF THE DECISION/PROBLEM STATE

Duncan L. Dieterly Apr. 1980 21 p refs

(NASA-TM-81192; AFHRL/H80-104; A-8161) Avail: NTIS HC A02/MF A01 CSCL 05J

A theory of the decision-problem state was introduced and elaborated. Starting with the basic model of a decision-problem condition, an attempt was made to explain how a major decision-problem may consist of subsets of decision-problem conditions composing different condition sequences. In addition, the basic classical decision-tree model was modified to allow for the introduction of a series of characteristics that may be encountered in an analysis of a decision-problem state. The resulting hierarchical model reflects the unique attributes of the decision-problem state. The basic model of a decision-problem condition was used as a base to evolve a more complex model that is more representative of the decision-problem state and may be used to initiate research on decision-problem states. R.E.S.

N80-22985*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

PROBLEM SOLVING AND DECISIONMAKING: AN INTEGRATION
Duncan L. Dieterly Apr. 1980 20 p refs Prepared in cooperation with Air Force Human Resources Lab., Moffett Field, Calif.
(NASA-TM-81191; AFHRL/H80-103; A-8160) Avail: NTIS HC A02/MF A01 CSCL 05J

An attempt was made to redress a critical fault of decisionmaking and problem solving research-a lack of a standard method to classify problem or decision states or conditions. A basic model was identified and expanded to indicate a possible taxonomy of conditions which may be used in reviewing previous research or for systematically pursuing new research designs. A generalization of the basic conditions was then made to indicate that the conditions are essentially the same for both concepts, problem solving and decisionmaking. R.E.S.

N80-22986 Illinois Univ. at Urbana-Champaign.
MODELING THE HUMAN AS A CONTROLLER IN A MULTI-TASK ENVIRONMENT Ph.D. Thesis
Thiruvenkatasamy Govindaraj 1979 139 p
Avail: Univ. Microfilms Order No. 8009046

Two models were developed for the human controller in multitask siturations with preview. In the simpler heuristic model, control actions are performed when projected weighted error from the previewed reference exceeds a threshold. The second is a more rigorous analytical model based on optimal control theory. Performance of the model and the subjects are compared in terms of various remote manipulator systems (RMS) measures. For a good match, the RMS lateral error of the model is close to that of the experimental runs. The discrete task performance is compared in terms of RMS differences between the times the subject initiated the discrete tasks and the times the model initiated the corresponding tasks. Results for various experimental conditions are given, and the model match is discussed.
Dissert. Abstr.

N80-22987*# Life Systems, Inc., Cleveland, Ohio.
PERFORMANCE CHARACTERIZATION OF A BOSCH CO SUB 2 REDUCTION SUBSYSTEM Final Report
D. B. Heppner, T. M. Hallick, and F. H. Schubert Feb. 1980 40 p refs
(Contract NAS2-10204)
(NASA-CR-152342; LST-TR-379-11) Avail: NTIS HC A03/MF A01 CSCL 06K

The performance of Bosch hardware at the subsystem level (up to five-person capacity) in terms of five operating parameters was investigated. The five parameters were: (1) reactor temperature, (2) recycle loop mass flow rate, (3) recycle loop gas composition (percent hydrogen), (4) recycle loop dew point and (5) catalyst density. Experiments were designed and conducted in which the five operating parameters were varied and Bosch performance recorded. A total of 12 carbon collection cartridges provided over approximately 250 hours of operating time. Generally, one cartridge was used for each parameter that was varied. The Bosch hardware was found to perform reliably and reproducibly. No startup, reaction initiation or carbon containment problems were observed. Optimum performance points/ranges were identified for the five parameters investigated. The performance curves agreed with theoretical projections. R.E.S.

N80-22988# Bunker-Ramo Corp., Westlake Village, Calif Electronic Systems Div.
TOTAL AIRCREW WORKLOAD STUDY FOR THE AMST. VOLUME 1: RESULTS Final Report, Mar. 1976 - Nov. 1977
Ralph P. Madero, George A. Sexton, David Gunning, and Richard Moss Wright-Patterson AFB, Ohio AFFDL Feb. 1979 67 p refs 2 Vol.
(Contract F33615-76-C-3614; AF Proj. 2403)
(AD-A076422; AFFDL-TR-79-3080-Vol-1) Avail: NTIS HC A04/MF A01 CSCL 01/3

There is a growing realization within the USAF that state-of-the-art crew systems may allow cost effective reductions in crew complements. The present study, titled the Total Aircrew Workload Study (TAWS) addresses the minimum crew complement required and conceptually, the crew systems required to support the minimum crew of an Advanced Medium STOL Transport (AMST) in the accomplishment of the tactical transport mission. The study involved the simulation of a total tactical airlift mission which was flown by operational (C-130) tactical airlift aircrews in order to further refine crew complement and crew system concepts established in earlier mockup studies. The results of this study indicate that two pilots, a loadmaster and a crew chief type additional crew member can fly the total AMST mission if provided with adequate state-of-the-art crew system capabilities, as identified in this report. The report is presented in two volumes. Volume 1 describes the TAWS program and presents the results. Volume 2 presents a detailed description of the navigation and communication system used during the TAWS evaluation. GRA

N80-22989# Bunker-Ramo Corp., Westlake Village, Calif. Electronic Systems Div.
TOTAL AIRCREW WORKLOAD STUDY FOR THE AMST. VOLUME 2: COMMUNICATION NAVIGATION DESCRIPTION Final Report, Mar. 1976 - Nov. 1977
Ralph P. Madero, George A. Sexton, David Gunning, and Richard Moss Wright-Patterson AFB, Ohio AFFDL Feb. 1979 36 p 2 Vol.
(Contract F33615-76-C-3614; AF Proj. 2403; AF Proj. 6190)
(AD-A076498; AFFDL-TR-79-3080-Vol-2) Avail: NTIS HC A03/MF A01 CSCL 01/3

There is a growing realization within the USAF that state-of-the-art crew systems may allow cost effective reductions in crew complements. The present study, titled the Total Aircrew Workload Study (TAWS) addresses the minimum crew complement required and conceptually, the crew systems required to support the minimum crew of an Advanced Medium STOL Transport (AMST) in the accomplishment of the tactical transport mission. The study involved the simulation of a total tactical airlift mission which was flown by operational (C-130) tactical airlift aircrews in order to further refine crew complement and crew system concepts established in earlier mockup studies. The results of this study indicate that two pilots, a loadmaster and a crew chief type additional crew member can fly the total AMST mission if provided with adequate state-of-the-art crew system capabilities, as identified in this report. GRA

N80-22990# Payne, Inc., Annapolis, Md.
PRELIMINARY ANALYSIS OF WIND TUNNEL TEST OF A 1/2 SCALE MODEL OF AN EJECTING CREWMAN AND EJECTION SEAT Final Report, 15 Sep. 1976 - 30 Sep. 1978
Alastair Anthony May 1979 46 p ref
(Contract F33615-76-C-0530; AF Proj. 7231)
(AD-A069229; AMRL-TR-78-107; Working-Paper-210-8) Avail: NTIS HC A03/MF A01 CSCL 01/3

Doubts were raised as to the integrity of the rest of the structure when the neck member of a model crewman failed during tunnel measurements of the limb forces during ejection. The accuracy of the load estimates used in the pretest stress analysis clearly needed to be checked. Meanwhile, testing was resumed at restricted pressure values with a non-load-measuring replacement for the neck member. From a sampling of the test data, the distribution of bending and torsional moments along the limbs is clearly revealed and with its variation with attitude and Mach number, presents no great surprises. Values critical to the stress analysis confirm the estimated values. The neck pillar, designed by a subcontractor, had been designed for sensitivity in bending under the head loads without catering for torsion in the member if these loads should in the event be appreciably offset from its axis. Although there is little confirmation of the magnitude of the head loads, there is some indication the offsets in excess of one inch in these loads are to be expected in the real situation, and that the resulting torsion was the cause of the failure. GRA

N80-22991# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio. Biodynamic Environment Branch.
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 75: C-141A AIRCRAFT, NEAR AND FAR-FIELD NOISE

Robert G. Powell Jul. 1979 85 p refs
(AF Proj. 7231)
(AD-A079865; AMRL-TR-75-50-Vol-75) Avail: NTIS
HC A05/MF A01 CSCL 01/2

The USAF C-141A is a transport aircraft powered by four TF33-P-7 turbofan engines. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating on a concrete runup pad for three power conditions. Near-field data are reported for ten locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. GRA

N80-22992# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio. Biodynamic Environment Branch.
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 120. C-5A AIRCRAFT, NEAR AND FAR-FIELD NOISE
Robert G. Powell Jul. 1979 145 p refs
(AF Proj. 7231)
(AD-A079866; AMRL-TR-75-50-Vol-120) Avail: NTIS
HC A07/MF A01 CSCL 01/2

The USAF C-5A is a global, strategic airlift aircraft powered by four TF39-GE-1 turbofan engines. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating on a concrete runup pad for five engine/power configurations. Near-field data are reported for forty-five locations in a wide variety of physical and psychoacoustic measures: overall and band sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. GRA

N80-22993# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio. Biodynamic Environment Branch.
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 121: F-4C AIRCRAFT, NEAR AND FAR-FIELD NOISE
Robert G Powell Apr. 1979 153 p refs
(AF Proj. 7231)
(AD-A079867; AMRL-TR-75-50-Vol-121) Avail: NTIS
HC A08/MF A01 CSCL 01/2

The USAF F-4C is an all-weather, supersonic, fighter-bomber aircraft powered by two J79-GE-15 turbojet engines. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating on a concrete runup pad for six engine/power configurations. Near-field data are reported for six locations in a wide variety of physical and phychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-Field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distances from the s GRA

N80-22994# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio Biodynamic Environment Branch.
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 128: T-38 AIRCRAFT IN THE AF32A-18 NOISE SUPPRESSOR, NEAR AND FAR-FIELD NOISE
Robert A. Lee Jul. 1979 105 p refs
(AF Proj. 7231)
(AD-A079868; AMRL-TR-75-50-Vol-128) Avail: NTIS
HC A06/MF A01 CSCL 01/2

The AF32A-18 noise suppressor is made by General Acoustics Corporation for acoustical suppression of the T-38 aircraft. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating in this suppressor for five engine power configurations. Near-field data are reported for four locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. GRA

N80-22995# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio. Biodynamic Environment Branch.
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 131: F-4 AIRCRAFT IN THE AF32A-14 NOISE SUPPRESSOR, NEAR AND FAR-FIELD NOISE
Robert A. Lee Feb. 1979 69 p refs
(AF Proj. 7231)
(AD-A079869; AMRL-TR-75-50-Vol-131) Avail: NTIS
HC A04/MF A01 CSCL 01/2

The AF32A-14 noise suppressor is made by Koppers Environmental Elements Corporation for acoustical suppression of the F-4 aircraft. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating in this suppressor for three engine power configurations. Near-field data are reported for two locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. GRA

N80-22996# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio. Biodynamic Environment Branch.
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 132: F-5 AIRCRAFT IN THE AF32A-18 NOISE SUPPRESSOR, NEAR AND FAR-FIELD NOISE
Robert A. Lee Mar. 1979 69 p refs
(AF Proj. 7231)
(AD-A079870; AMRL-TR-75-50-Vol-132) Avail: NTIS
HC A04/MF A01 CSCL 01/2

The AF32A-18 noise suppressor is made by the General Acoustics Corporation for acoustical suppression of the F-5 aircraft. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating in this suppressor for three engine power configurations. Near-field data are reported for two locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. GRA

N80-22997# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio. Biodynamic Environment Branch.
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 133: F-15 AIRCRAFT IN THE AF32A-23 NOISE SUPPRESSOR, NEAR AND FAR-FIELD NOISE
Robert A. Lee Jul. 1979 89 p refs
(AF Proj. 7231)

(AD-A079871; AMRL-TR-75-50-Vol-133) Avail: NTIS
HC A05/MF A01 CSCL 01/2

The AF32A-23 noise suppressor is made by the Jetway Equipment Corporation for acoustical suppression of the F-15 aircraft. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating in this suppressor for four engine power configurations. Near-field data are reported for locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interferences level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 16 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. GRA

N80-22998# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio. Biodynamic Environment Branch.
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 134. KC-135A AIRCRAFT IN THE MODIFIED AF32A-52A NOISE SUPPRESSOR, FAR-FIELD NOISE
Robert A. Lee Mar. 1979 75 p refs
(AF Proj. 7231)
(AD-A079872; AMRL-TR-75-50-Vol-134) Avail: NTIS
HC A04/MF A01 CSCL 01/2

The AF32A-52A noise suppressor was made by Industrial Acoustics Corporation and modified by the Air Force for acoustical suppression of the KC-135A aircraft. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating in an AF32A-52A suppressor for three engine power configurations. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for seven acoustic measures as functions of angle and distance from the source. GRA

N80-22999# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio. Biodynamic Environment Branch.
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 135: F-106 AIRCRAFT IN THE AF32A-17 NOISE SUPPRESSOR, NEAR AND FAR-FIELD NOISE
Robert A. Lee Nov. 1978 104 p refs
(AF Proj. 7231)
(AD-A079873; AMRL-TR-75-50-Vol-135) Avail: NTIS
HC A06/MF A01 CSCL 01/2

The AF32A-17 noise suppressor is made by Jetway Equipment Corporation for acoustical suppression of the F-106 aircraft. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating in this suppressor for five engine power configurations. Near-field data are reported for two locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derived sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. GRA

N80-23000# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 136: F-111A AIRCRAFT IN THE AF32A-13 NOISE SUPPRESSOR, FAR-FIELD NOISE
Robert A. Lee Mar. 1979 100 p
(AF Proj. 7231)
(AD-A079874; AMRL-TR-75-50-VOl-136) Avail: NTIS
HC A05/MF A01 CSCL 01/2

The AF32A-13 noise suppressor is made by the Industrial Acoustics Corporation for acoustical suppression of the F-111A aircraft. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating in the AF32A-13 noise suppressor for five power conditions. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for seven acoustic measures as functions of angle and distance from the source. GRA

N80-23001# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.
USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK. VOLUME 140: F-16 AIRCRAFT IN THE AF32A-25 NOISE SUPPRESSOR, NEAR AND FAR-FIELD NOISE
Robert A. Lee Aug. 1979 87 p
(AF Proj. 7231)
(AD-A079875; AMRL-TR-75-50-Vol-140) Avail: NTIS
HC A05/MF A01 CSCL 01/2

The AF-32A-25 noise suppressor is made by the Jetway Equipment Corporation for acoustical suppression of the F-16 aircraft. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating in this suppressor for four engine power configurations. Near-field data are reported for three locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels, preferred speech interference level, perceived noise level and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. GRA

N80-23002# Defence Research Establishment, Ottawa (Ontario). Research and Development Branch.
ADDITIONAL STUDIES OF CHEMICALLY TREATED CLOTHING FOR PERSONNEL PROTECTION FROM BITING FLIES
I. S. Lindsay, B. Farnworth, and R. J. Osczenski Nov. 1979 19 p refs
(AD-A080612; DREO-TN-79-28) Avail: NTIS
HC A02/MF A01 CSCL 06/17

Combat clothing and wide-mesh hoods treated with the insecticide permethrin have been evaluated for protection against biting flies. Experiments on human subjects indicate excellent protection against mosquitoes from both the clothing and the hoods. Experiments on plastic heads baited with dry-ice indicate moderate protection against blackflies from the hoods whereas the diethyltoluanide (deet) treated hoods gave excellent protection to the uncovered face. GRA

N80-23003# Clemson Univ., S.C. Coll. of Engineering.
EXPERIMENTAL EVALUATIONS OF SELECTED IMMERSION HYPOTHERMIA PROTECTION EQUIPMENT Final Report, 5 Jun. 1978 - 30 Jun. 1979
R. Michael Harnett, Edward M. OBrien, Fred R. Sias, and James R. Pruitt 12 Oct. 1979 172 p refs
(Contract DOT-CG-72074-A)
(AD-A080470; USCG-D-79-79) Avail: NTIS
HC A08/MF A01 CSCL 06/17

This report summarizes an experimental test program conducted with state-of-the-art hypothermia protection equipment. Tests included the following attributes: cold-protection effectiveness, mobility reduction, fatigue induction, ease of donning, buoyancy, aesthetic appeal/wearer confidence, flame resistance and reliability. Cold-protection effectiveness is expressed in terms of survival-time estimates for individuals, with selected body structures, wearing the test articles in 1.7 C (35 F) water. The data from these investigations is intended to collectively support the selection of equipment best suited for use by recreational boaters, Coast Guard crewmen and merchant mariners. GRA

N80-23004# Air Force Flight Dynamics Lab., Wright-Patterson AFB, Ohio.
PROCEEDINGS OF THE FIFTEENTH ANNUAL CONFERENCE ON MANUAL CONTROL Interim Report, Apr. 1978 - Mar. 1979
Frank L. George, ed. Nov. 1979 809 p refs Conf. held at Wright State Univ., Ohio, 20-22 Mar. 1979
(AF Proj. 9994)
(AD-A080563; AFFDL-TR-79-3134) Avail: NTIS HC A99/MF A01 CSCL 05/8

Fifty-six papers were presented during this conference on Manual Control and all are represented, either as complete papers on as abstracts provided by the authors. Topics of the papers include higher order manual tasks involving attention allocation and decision-making, human dynamic modeling and identification, and design methodology for human operator controlled systems. Also covered were aspects of control manipulators and displays, as well as considerations for simulation of human operator-controlled systems. GRA

N80-23006# Michigan Univ., Ann Arbor. Highway Safety Research Inst.
CALIBRATION AND TEST PROCEDURES FOR THREE YEAR OLD CHILD DUMMY Final Report, 1 Feb. 1977 - 1 Nov. 1975
Joseph B. Benson and John W. Melvin 7 Feb. 1979 70 p
(Contract DOT-HS-6-01367)
(PB80-112246; UMICH-HSRI-79-4; DOT-HS-805-070) Avail: NTIS HC A04/MF A01 CSCL 13L

Four three year old child dummies, SA 103C models, were tested to determine the ranges of responses of these dummies in calibration type tests and to refine testing fixtures and techniques. The dummy head accelerometer mounting was revised to reduce ringing, and the ribcage structure attachment modified to eliminate bottoming. A revised loading fixture was designed to facilitate the lumbar spine calibration. The modified dummies produced consistent calibration response data within the proposed limits. GRA

N80-23007*# Stanford Univ., Calif. Inst. for Plasma Research.
UNCERTAINTY IN ESTIMATES OF THE NUMBER OF EXTRATERRESTRIAL CIVILIZATIONS
P. A. Sturrock Mar. 1980 16 p refs
(Contract NGR-05-020-668)
(NASA-CR-162637; SUIPR-808) Avail: NTIS HC A02/MF A01 CSCL 03B

An estimation of the number N of communicative civilizations is made by means of Drake's formula which involves the combination of several quantities, each of which is to some extent uncertain. It is shown that the uncertainty in any quantity may be represented by a probability distribution function, even if that quantity is itself a probability. The uncertainty of current estimates of N is derived principally from uncertainty in estimates of the lifetime of advanced civilizations. It is argued that this is due primarily to uncertainty concerning the existence of a Galactic Federation which is in turn contingent upon uncertainty about whether the limitations of present-day physics are absolute or (in the event that there exists a yet undiscovered hyperphysics) transient. It is further argued that it is advantageous to consider explicitly these underlying assumptions in order to compare the probable numbers of civilizations operating radio beacons, permitting radio leakage, dispatching probes for radio surveillance for dispatching vehicles for manned surveillance. R.C.T.

N80-23497*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
MANNED MANEUVERING UNIT LATCHING MECHANISM
Charles S. Allton *In* NASA. Langley Res. Center Proc. of the 14th Aerospace Mech. Symp. May 1980 p 9-18 (For primary document see N80-23495 14-31)
Avail: NTIS HC A15/MF A01 CSCL 05H

The astronaut/Manned Maneuvering Unit interface which presented a challenging set of requirements for a latching mechanism, is described. A spring loaded cam segment with variable ratio pulley release actuator was developed to meet the requirements. To preclude jamming of the mechanism, special precautions were taken such as spring loaded bearing points and careful selection of materials to resist cold welding. The mechanism successfully passed a number of tests which partially simulated orbital conditions. R.E.S.

N80-23965# Martin Marietta Labs., Baltimore, Md.
PHOTOCHEMISTRY AND ENZYMOLOGY OF PHOTOSYNTHESIS Progress Report
Richard Radmer 30 Jul. 1979 100 p refs
(Contract EY-76-C-02-3326)
(COO-3326-82) Avail: NTIS HC A05/MF A01

Three basic problems are addressed: (1) the effect of different preparative procedures on various photosynthetic reactions, with particular emphasis on photosystem II reactions in corn bundle sheath chloroplasts; (2) the development and testing of photosystem II assays; and (3) studies of the stoichiometry of electron carriers in bundle sheath chloroplasts, and whether cyclic phosphorylation could be a major pathway in this tissue. The instruments and techniques to be used in investigating the problems are discussed. DOE

N80-23966# California Univ., Berkeley. Lawrence Berkeley Lab. Chemical Biodynamics Div.
STUDIES OF PHOTOSYNTHETIC MEMBRANES USING CHLOROPHYLL FLUORESCENCE LIFETIMES Ph.D. Thesis
Grace Toy Brewington Sep. 1979 189 p refs
(Contract W-7405-eng-48)
(LBL-9795) Avail: NTIS HC A09/MF A01

Using a single photon counting system with spark discharge excitation, the in vivo flouroescence kinetics in samples that had been treated with DCMU/NH2OH, ferricyanide, dithionite, background actinic illumination, and different cations in the buffer were investigated. From the studies it was concluded that: (1) fluoresence at the F sub o level does not arise from pigments that are not connected to the PS II reaction center; (2) a puddle model is inadequate to explain these data; (3) these data can be accommodated by a model in which tau sub 1 arises from the chlorophyll a of the chlorophyll a/b light harvesting complexes, and tau sub 2 arises from chlorophylls more directly affected by the PS II reaction center, such as the PS II chlorophyll a antenna; and (4) the fluorescence lifetime data for samples treated with sodium or magnesium ion are consistent with the models of spillover and alpha change. The fluorescence lifetime behavior in chloroplasts as a function of the redox state of the primary acceptor of PS II was also studied. DOE

N80-23967# Unilever Research, Vlaardingen (Netherlands).
EFFECT OF HYDROGEN CHLORIDE ON THE MORPHOLOGY OF BACILLUS SUBTILIS SPORES
H. L. M. Lelieveld 1979 10 p refs Submitted for publication
Avail: NTIS HC A02/MF A01

Gaseous hydrogen chloride, in the presence of a minute amount of water vapor, rapidly inactivates bacterial spores. Scanning electron microscopy showed that the treatment caused spores of Bacillus subtilis to collapse. Based on modern theories of spore structure and resistance, it is likely that hydrogen chloride inactivates, and causes the collapse of spores by breaking disulphide bonds in coat protein and neutralizing, by protonation, peptidoglycan carboxyl groups in the underlying cortex.
Author (ESA)

N80-23968# Unilever Research, Vlaardingen (Netherlands).
STERILIZATION BY MEANS OF HYDROGEN CHLORIDE: INFLUENCE OF PROCESS PARAMETERS ON THE BIOCIDAL ACTIVITY
H. L. M. Lelieveld and H. M. J. vanEijk 1979 40 p refs
Submitted for publication
Avail: NTIS HC A03/MF A01

At ambient temperatures, hydrogen chloride is a strong bactericide. At a partial hydrogen chloride pressure of 30 mmHg, the number of spore bearing colony forming units present in straw-dust particles of 0-32 micrometers was reduced by a factor of more than 50,000 within 60 sec. Naked spores of Bacillus subtilis were reduced in viability by a factor of 100,000 within only 10 sec. Viability of vegetative cells of various kinds of bacteria was reduced by a factor of more than 10 to the 7th power within 10 sec. The manner of administration of the gas influenced the sterilization and must be adapted to the geometry of the surfaces to be sterilized. Increases in treatment time and concentration of hydrogen chloride enhanced the sterilizing effect to a lesser extent when large dust particles were involved. The partial water vapor pressure did not influence the sterilization between 0.3 and 6 mmHg. An increase in temperature decreased the sterilizing effect. Author (ESA)

N80-23969* National Aeronautics and Space Administration. Hugh L. Dryden Flight Research Center, Edwards, Calif.
PULSE TRANSDUCER WITH ARTIFACT SIGNAL ATTENUATOR Patent
Wilbur H. Cash, Jr. (Martin Marietta Aerospace, Denver) and John T. Polhemus, inventors (to NASA) (Martin Marietta Aerospace, Denver) Issued 22 Apr. 1980 4 p Filed 26 Jul. 1978 Supersedes N78-28339 (16 - 19, p 2520) Sponsored by NASA
(NASA-Case-FRC-11012-1; US-Patent-4,198,988;
US-Patent-Appl-SN-928137; US-Patent-Class-128-666;
US-Patent-Class-128-690) Avail: US Patent and Trademark Office CSCL 06B

An artifact signal attenuator for a pulse rate sensor is described. The circuit for attenuating background noise signals is connected with a pulse rate transducer which has a light source and a detector for light reflected from blood vessels of a living body. The heart signal provided consists of a modulated dc signal voltage indicative of pulse rate. The artifact signal resulting from light reflected from the skin of the body comprises both a constant dc signal voltage and a modulated dc signal voltage. The amplitude of the artifact signal is greater and the frequency less than that of the heart signal. The signal attenuator circuit includes an operational amplifier for canceling the artifact signal from the output signal of the transducer and has the capability of meeting packaging requirements for wrist-watch-size packages. A.R.H.

N80-23970 University of Northern Colorado, Greeley.
TIME FOR RECOVERY FROM SUCCESSIVE BOUTS OF EXERCISE AS MEASURED BY CHANGES IN THE ANAEROBIC THRESHOLD: A COMPARISON OF RECOVERY INTERVALS OF 24 AND 48 HOURS Ph.D. Thesis
Jeffrey Mark Broida 1979 194 p
Avail: Univ. Microfilms Order No. 8010467

The time course for recovery from successive bouts of prolonged and fatiguing exercise was examined to determine if a measure of anaerobic threshold (AT) could be used to differentiate the degree of recovery from exercise frequencies of 3.5 and 7 days per week in which the recovery times were 48 hours and 24 hours respectively. It was concluded that the AT level will decrease if an individual exercises too often with insufficient time for recovery to be complete. Twenty-four hours of recovery time is not sufficient during the first few weeks of prolonged exercise training if the activity consists of running for 45 minutes. Twenty-four hours of recovery time may be sufficient for the 'trained' individual whose physiological mechanisms have had time to adapt. This adaptation period may take from 3 to 6 weeks. Training at the AT either 3.5 or 7 days per week for 45 minutes each session will not increase the AT in a period of 9 weeks. The results of this study indicated that the AT holds potential for being a sensitive indicator of underlying physiological changes resulting from exercise. Dissert. Abstr.

N80-23971 Wayne State Univ., Detroit, Mich.
CORONARY PLEXUS IN MAN AND MONKEY Ph.D. Thesis
Arthur James Jackson 1979 116 p
Avail: Univ. Microfilms Order No. 8010147

The distribution of autonomic nerve fibers in relation to the coronary arteries and their branches is examined, and axon terminals in the region of arterioles and capillaries are identified. The left and right coronary plexuses were studied, macroscopically, in seven human hearts and three monkey (Macaca Mulatta) hearts with the aid of a binocular dissecting microscope. In addition, the coronary arteries and their branches with the adjacent myocardium, from a stump-tail (Macaca Arctoides) and Rhesus monkey, were studied by transmission electron microscopy with and without the 'false neurotransmitter, 5-hydroxydopamine. The results suggest that if the coronary arteries are subject to autonomic control, it may be at the level of the capillary bed. Dissert. Abstr.

N80-23972 Pennsylvania State Univ., University Park.
RELATIONSHIP BETWEEN URINARY 3-METHYLHISTIDINE EXCRETION AND COMPONENTS OF BODY COMPOSITION IN MAN Ph.D. Thesis
Henry Charles Lukaski 1979 124 p
Avail: Univ. Microfilms Order No. 8010079

The relationship between urinary 3-methylhistidine (3-Mehis) excretion and components of body composition was studied in 14 men (mean age 25.2 years). Based on energy and protein intakes derived from seven day dietary records, the subjects were given a meat diet for the first four days and a meat-free diet for the next seven days. Body weight was measured daily and all urine was collected daily and analyzed for creatinine, urea nitrogen, and 3-Mehis. Densitometry and skinfold measurements were performed and total body potassium (TBK), nitrogen (TBN), and water (TBW) were determined. During the meat-free diet, urea nitrogen output was constant, indicating no increase in protein catabolism, creatinine excretion was variable, and 3-Mehis reached its lowest level, endogenous output, on day three. 3-Mehis was more closely related to muscle weight (r = 0.91; p less than 0.001) calculated from measurements of TBK and TBN than to free fat (r = 0.81; p less than 0.001) calculated from densitometry. It is concluded that because endogenous 3-Mehis is closely and significantly related to muscle weight in man, it can be used to study skeletal muscle protein degradation provided that the necessary dietary restrictions are observed. Dissert. Abstr.

N80-23973*# National Aeronautics and Space Administration, Washington, D. C.
IDEAS OF I. M. SECHENOV IN AVIATION AND SPACE MEDICINE
Oleg Georgiyevich Gazenko and Yevgeniy Aleksandrovich Kovalenko Jan. 1980 18 p refs Transl. into ENGLISH from Priroda (USSR), no. 9, 1979 p 30-37 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75976) Avail: NTIS HC A02/MF A01 CSCL 06E

The contributions I. M. Sechenov (19th century) made to modern physiology are described, including his studies on gases in the blood (O2 and CO2), and how these studies were the basic building blocks of current efforts in aviation and space medicine. Sechenov also studied hypokinesia, which is becoming important in long duration space flights. R.E.S.

N80-23974*# National Aeronautics and Space Administration, Washington, D. C.
INFLUENCE OF EXPERIMENTAL HYPOKINESIA ON GASTRIC SECRETORY FUNCTION
O. O. Markova, V. I. Vavryshchuk, V. I. Rozvodovskyy, and V. A. Proshcheruk Apr. 1980 8 p refs Transl. into ENGLISH from Fiziol. Zh. (Kiev), v. 23, no. 5, 1977 p 653-656 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76034) Avail: NTIS HC A02/MF A01 CSCL 06S

The gastric secretory function of rats was studied in 4, 8, 16 and 30 day hypokinesia. Inhibition of both the gastric juice secretory and acid producing functions was found. The greatest inhibition was observed on day 8 of limited mobility. By days 16 and 30 of the experiment, a tendency of the gastric secretory activity to return to normal was observed, although it remained reduced. R.E.S.

N80-23975*# National Aeronautics and Space Administration, Washington, D. C.
POSSIBILITIES OF FORECASTING HYPERCHOLESTERINEMIA IN PILOTS

P. Vivilov Mar. 1980 9 p Transl. into ENGLISH from Kazanskiy Meditsinskiy Zh. (USSR), v. 60, no. 3, May-Jun. 1979 p 18-20 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76087) Avail: NTIS HC A02/MF A01 CSCL 06P

The dependence of the frequency of hypercholesterinemia on the age, average annual flying time, functional category, qualification class, and flying specialty of 300 pilots was investigated. The risk probability coefficient of hypercholesterinemia was computed. An evaluation table was developed which gives an 84% probability of forecasting risk of hypercholesterinemia. R.E.S.

N80-23976*# National Aeronautics and Space Administration, Washington, D. C.
PROCEDURE OF PRACTICAL EXERCISE WITH STUDENTS ON THE PATHOGENIC EFFECT OF ACCELERATIONS ON THE ORGANISM
I. M. Tyrtyshnikov and L. M. Tarasenko Apr. 1980 5 p refs Transl. into ENGLISH from Patol. Fiziol. Eksperim. Terapiya (USSR), no. 4, Jul Aug. 1978 p 81-82 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prepared by Poltava Med. Stomatological Inst., USSR
(Contract NASw-3198)
(NASA-TM-76120) Avail: NTIS HC A02/MF A01 CSCL 06S

The effects of acceleration alone and coupled with administration of either aminazine (chlorpromazine- a sedative) or caffeine (a stimulant) on the development of kinetoses in mice were studied. The problem is presented as a method to teach students and to demonstrate the role of the nervous factor in the development of kinetosis. R.E.S.

N80-23977*# National Aeronautics and Space Administration, Washington, D. C.
ON THE PRESERVATION OF EQUILIBRIUM IN THE ORTHOGRADE AND INVERTED POSITIONS OF THE BODY
L. P. Semenov and N. A. Rebyakova Apr. 1980 7 p Transl. into ENGLISH from Teor. i Prakt. Fiz. Kul't. (USSR), no. 5, 1979 p 29-30 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76141) Avail: NTIS HC A02/MF A01 CSCL 06P

The mechanism which regulates the vertical posture when maintaining equilibrium in an inverted position of the body is discussed. R.E.S.

N80-23978# Clemson Univ., S.C. College of Engineering.
AN EXPERIMENTAL EVALUATION OF SELECTED REWARMING THERAPIES FOR THE TREATMENT OF PROFOUND ACCIDENTAL HYPOTHERMIA, PART 2 Final Report, 5 Jun. 1978 - 30 Jun. 1979
R. Michael Harnett, Edward M. OBrien, Fred R. Sias, and James R. Pruitt 27 Aug. 1979 60 p refs
(Contract DOT-CG-72074-A)
(AD-A078292; USCG-D-65-79-Pt-2) Avail: NTIS HC A04/MF A01 CSCL 06/5

This report summarizes the results of rewarming experiments performed with mildly cooled volunteers. Rewarming therapies are studied which can be used for treatment of hypothermia at the rescue site. Other therapies are included in the study to serve as standards of comparison for the (portable) ones. The results are analyzed in the context of expected human responses to arrive at comparative evaluations of the therapies for use in the treatment of (profound) hypothermia. GRA

N80-23979# Battelle Pacific Northwest Labs., Richland, Wash.
PROCEEDINGS OF THE WORKSHOP ON ELECTRICAL AND BIOLOGICAL EFFECTS RELATED TO HYDC TRANSMISSION
T. D. Bracken, ed (Bonneville Power Administration, Vancouver, Wash.) Aug. 1979 209 p refs Conf. held at Richland, Wash., 19-20 Oct. 1978
(Contract EY-76-C-06-1830)
(PNL-3121) Avail: NTIS HC A10/MF A01

Six papers are presented on various aspects of electrical and biological effects related to high voltage direct current transmission. R.E.S.

N80-23980# California Univ., Los Angeles. Nuclear Medicine and Radiation Biology Lab.
POSITRON EMISSION TOMOGRAPHY OF THE HEART
Heinrich R. Schelbert, Michael E. Phelps, and D. E. Kuhl 1979 34 p refs
(Contracts EY-76-C-03-0012; DE-AM03-76SF-00012)
(UCLA-12-1232) Avail: NTIS HC A03/MF A01

Positron emission computed tomography (PCT) represents an important new tool for the noninvasive evaluation and, more importantly, quantification of myocardial performance. Most currently available techniques permit assessment of only one aspect of cardiac function, i.e., myocardial perfusion by gamma scintillation camera imaging with Thallium-201 or left ventricular function by echocardiography or radionuclide angiocardiography. With PCT it may become possible to study all three major segments of myocardial performance, i.e., regional blood flow, mechanical function, and most importantly, myocardial metabolism. Each of these segments can either be evaluated separately or in combination. The principles and technological advantages of the imaging device are described. Currently available radioactive tracers and how they can be employed for the assessment of flow, function and metabolism are reviewed. Possible applications of PCT for the study of cardiac physiology of its potential role in the diagnosis of cardiac disease are discussed. DOE

N80-23981# IIT Research Inst., Chicago, Ill. Physics Div.
STUDY OF THE POSSIBLE EFFECTS OF 110 kHz ELECTROMAGNETIC FIELDS ON HUMANS
Sep. 1979 71 p refs
(Contract EY-76-C-04-0789)
(SAND-77-7028) Avail: NTIS HC A04/MF A01

The effects of the magnetic field on humans, in particular those wearing pacemakers, was investigated using pacemakers inserted in a simulated (phantom) human being. The tests performed were on a worst case basis. That is, for one set of tests the most sensitive of the several cardiac pacemakers tested was used in the simulated human being (phantom) tests. Furthermore, the largest observed pacemaker lead pickup area was used with the most sensitive pacemaker, and in some of the tests the pacemaker lead was oriented for maximum pickup with the phantom being placed in the strongest magnetic field. A discussion of the types of the tests as well as the electrical pickup mechanism is given. The results are presented and discussed in relation to the development of an electronic, remotely detected credential for personnel identification within security areas. R.E.S.

N80-23982# Max-Planck-Institut fuer Stroemungsforschung, Goettingen (West Germany).
RHYTHMIC VORTEX CURRENTS AND THEIR SIGNIFICANCE IN HUMAN PHYSIOLOGY [RHYTHMISCHE WIRBELSTROEMUNGEN UND IHRE BEDEUTUNG FUER DEN PHYSIOLOGISCHEN HAUSHALT DES MENSCHEN]
Peter E. M. Schneider Mar. 1979 189 p refs In GERMAN
(MPIS-1/1979) Avail: NTIS HC A09/MF A01; Fachinformationszentrum, Karlsruhe, West Germany DM 31.20

The consequences of interactive fluid flows in the human body are discussed. The Marangoni instability is described, along with some cellular and ring vortex currents. A system thoery is presented, and the functional and morphological processes in the human digestive tract examined. Author (ESA)

N80-23983# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Oberpfaffenhofen (West Germany). Inst. fuer Physik der Atmosphaere.
SUMMARIES OF SOME REPORTS OF 1978 CONCERNING RESULTS OF FIELD EXPERIMENTS FOR VISIBILITY
Hans-Eberhard Hoffmann, Ruedigger Buell, and Werner Kuehnemann Sep. 1979 38 p refs
(DFVLR-Mitt-79-11) Avail: NTIS HC A03/MF A01; DFVLR, Cologne DM 6.60

The Results of field tests for determining the visibility ranges, maximum detection range, maximum recognition range, and maximum identification range when observing air-to-land and air-to-sea are presented. The influence of the following parameters on the visibility ranges are emphasized: location, size, manner of illumination, movement and non-movement of ground targets; meteorological visibility; adaptation luminance; flight altitude and observation devices. Author (ESA)

N80-23984 Clemson Univ., S.C.
A DISCRIMINANT ANALYSIS OF PILOT PERFORMANCE PREDICTION AND SELECTION FOR AIR-TO-AIR COMBAT Ph.D. Thesis
Dwight Wilson Polk 1979 108 p
Avail: Univ. Microfilms Order No. 8010554

Data from Southeast Asian conflict were partitioned into five epochs. Four sets of discriminant functions based on training and experience factors were derived. Each set of functions was obtained from the data of a particular epoch and was used to predict the results of a subsequent epoch. Predicted and actual results provided the basis for determining the effectiveness of computed discriminant functions in predicting successes and failures in decisive engagements. For the majority of the cases studied discriminant functions predicted results correctly in approximately the same proportions as a random classification process. However, when air combat maneuvering training of tactical flying experience were used to predict results in an early period of the conflict, the discriminant function predictions exceeded random classifications in accuracy by better than ten percent. In the last period of the conflict, flight position which is actually a pseudo training and experience factor because of the confounding of training and experience information within it was an effective indicator of engagement outcomes. These results are consistent with a tactical analysis of the conflict. Dissert. Abstr.

N80-23985*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
CLARIFICATION PROCESS: RESOLUTION OF DECISION-PROBLEM CONDITIONS
Duncan L. Dieterly May 1980 24 p refs
(NASA-TM-81193; AFHRL-H-80-101; A-8162) Avail: NTIS HC A02/MF A01 CSCL 05J

A model of a general process which occurs in both decisionmaking and problem-solving tasks is presented. It is called the clarification model and is highly dependent on information flow. The model addresses the possible constraints of individual indifferences and experience in achieving success in resolving decision-problem conditions. As indicated, the application of the clarification process model is only necessary for certain classes of the basic decision-problem condition. With less complex decision problem conditions, certain phases of the model may be omitted. The model may be applied across a wide range of decision problem conditions. The model consists of two major components: (1) the five-phase prescriptive sequence (based on previous approaches to both concepts) and (2) the information manipulation function (which draws upon current ideas in the areas of information processing, computer programming, memory, and thinking). The two components are linked together to provide a structure that assists in understanding the process of resolving problems and making decisions. R.E.S.

N80-23986# Oregon Univ., Eugene. Dept. of Psychology.
PREPARATION COST AND DUAL-TASK PERFORMANCE: FURTHER EVIDENCE AGAINST A GENERAL TIME-SHARING FACTOR
Harold L. Hawkins, Elizabeth Ollich-Rodriquez, Thomas O. Halloran, R. Daniel Ketchum, David B. Bachmann, and Gerald M. Reicher Aug. 1979 38 p ref
(Contract N00014-77-C-0643; NR Proj. 150-407)
(AD-A080857; TR-5) Avail: NTIS HC A03/MF A01 CSCL 05/8

The time-sharing performance of 12 pilot trainees and 12 subjects with no pilot training was evaluated on 8 dual-task and 4 single-task conditions. Three task characteristics-input modality (auditory or visual), output modality (vocal or manual), and task difficulty (easy or difficult)--were systematically manipulated across conditions in an effort to vary the nature of the specific time-sharing demands imposed. To assess their generality, time-sharing factors were correlated across task conditions. A factor was considered general if it correlated across conditions imposing dissimilar time-sharing demands. The result suggest that (a) neither an ability to time-share efficiently nor an ability to effectively prepare for multiple tasks is a general factor in dual-task performance, and (b) effective preparation for multiple tasks is a skill that increases with piloting experience. GRA

N80-23987# European Space Agency, Paris (France).
PSYCHOLOGICAL SELECTION OF SPACELAB PAYLOAD SPECIALISTS. THE EVALUATION OF GERMAN APPLICANTS
Klaus-Martin Goeters, E. Schwartz, C. Budczinski, M. Nordhausen, and B. Repp Nov. 1979 26 p refs Transl. into ENGLISH of "Psychologische Auswahl von Spacelab-Nutzlastexperten: Die Eignungsuntersuchung Deutscher Bewerber", Rept. DFVLR-FB-78-29 DFVLR, Godesberg, West Germany, Oct. 1978 Original report in GERMAN previously announced as N79-30936 Original German report available from ZLDI, Munich DM 13,20
(ESA-TT-586; DFVLR-FB-78-29) Avail: NTIS HC A03/MF A01

Criteria and methods used for the psychological selection of scientific astronauts (payload specialists) are described. The evaluation of 103 German Spacelab applicants is reported. Author (ESA)

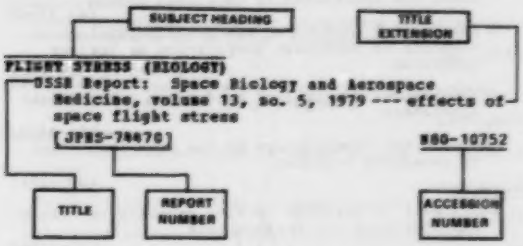
N80-23988*# Essex Corp., Huntsville, Ala.
EVA MANIPULATION AND ASSEMBLY OF SPACE STRUCTURE COLUMNS
Tomas E. Loughead and Edwin C. Pruett May 1980 58 p
(Contract NAS8-32989)
(NASA-CR-3285; M-299) Avail: NTIS HC A04/MF A01 CSCL 05H

Assembly techniques and hardware configurations used in assembly of the basic tetrahedral cell by A7LB pressure-suited subjects in a neutral bouyancy simulator were studied. Eleven subjects participated in assembly procedures which investigated two types of structural members and two configurations of attachment hardware. The assembly was accomplished through extra-vehicular activity (EVA) only, EVA with simulated manned maneuvering unit (MMU), and EVA with simulated MMU and simulated remote manipulator system (RMS). Assembly times as low as 10.20 minutes per tetrahedron were achieved. Task element data, as well as assembly procedures, are included. R.E.S.

SUBJECT INDEX

AEROSPACE MEDICINE AND BIOLOGY /*A Continuing Bibliography (Suppl. 209)* **AUGUST 1980**

Typical Subject Index Listing



FLIGHT STRESS (BIOLOGY)
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979 --- effects of space flight stress
[JPRS-74470] N80-10752

The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABIOGENESIS
Origin of life - Consideration of alternatives to proteins and nucleic acids
A80-32685
Abiogenic synthesis of nucleoside-like compounds under the influence of extremal factors
A80-33311

ACCELERATION STRESSES (PHYSIOLOGY)
Procedure of practical exercise with students on the pathogenic effect of accelerations on the organism
[NASA-TM-76120] N80-23976

ACOUSTIC ATTENUATION
Temperature and frequency dependence of ultrasonic attenuation in selected tissues
A80-32833

ACTIVITY (BIOLOGY)
Completion of the Viking Labeled Release experiment on Mars
A80-36067

ACTIVITY CYCLES (BIOLOGY)
Investigation of circadian rhythms on select psychomotor and neurological functions
N80-22966
Performance in tasks differing in memory load and its relationship with habitual activity phase and body temperature
[FOA-C-52002-H6] N80-22974

ADAPTATION
Adaptation to weightlessness
A80-32996

ADIPOSE TISSUES
Insulin binding and glucose uptake of adipocytes in rats adapted to hypergravitational force
A80-35751
Role of adrenals in the mobilization of carbohydrate and fat resources after overstimulation of rats
[NASA-TM-75974] N80-22956

ADRENAL GLAND
Role of adrenals in the mobilization of carbohydrate and fat resources after overstimulation of rats
[NASA-TM-75974] N80-22956
State of the body in disorders of diurnal physiological rhythms and long-term hypokinesia
[NASA-TM-76051] N80-22969
Catecholamines of the adrenal medula and their morphological changes during adaptation to repeated immobilization stress
[NASA-TM-76068] N80-22970

AERONOMY
Possible oxidant sources in the atmosphere and surface of Mars
A80-36060

AEROSPACE ENGINEERING
Performance characterization of a Bosch CO sub 2 reduction subsystem
[NASA-CR-152342] N80-22987

AEROSPACE ENVIRONMENTS
The possibility of distinguishing between emotional stress levels according to speech indicators in aerospace activities
A80-32988
Abiogenic synthesis of nucleoside-like compounds under the influence of extremal factors
A80-33311

AEROSPACE MEDICINE
Dependence of the activity and behavior of individuals and groups on the characteristics of the individual cognitive styles
A80-32991
Adaptation to weightlessness
A80-32996
Methodological and organizational principles of the psychological preparation of cosmonauts
A80-32997
Acute cardiovascular adaptation to altitude
A80-34475
Insulin binding and glucose uptake of adipocytes in rats adapted to hypergravitational force
A80-35751
Binocular retinal image motion during active head rotation
A80-35778
Grating induction - A new type of aftereffect
A80-35779
Ideas of I. M. Sechenov in aviation and space medicine
[NASA-TM-75976] N80-23973

AFTERIMAGES
Grating induction - A new type of aftereffect
A80-35779

AIR TRAFFIC CONTROLLERS (PERSONNEL)
The psychophysiological characteristics of air traffic controller activity
A80-36225

ALBUMINS
Exercise training-induced hypervolemia - Role of plasma albumin, renin, and vasopressin
A80-32749

ALTITUDE ACCLIMATIZATION
Changes in concentration of 2,3-glycerodiphosphoric acid in rat erythrocytes during adaptation to hypoxia
A80-35860

ALTITUDE SIMULATION
Splenic erythropoiesis in polycythemic response of the rat to high-altitude exposure
A80-35675

ALTITUDE TOLERANCE
Acute cardiovascular adaptation to altitude
A80-34475

AMINO ACIDS
Investigation of the kinetics of pyrolysis of amino acids
A80-35859
The role of metal ions in chemical evolution - Polymerization of alanine and glycine in a cation-exchanged clay environment
A80-36195

ANALYSIS OF VARIANCE
A variance method of objective evaluation of the training process and learning level of operators in flight vehicle control regimes
A80-33003

AORTA
Diagnosis and quantification of aortic stenosis with pulsed Doppler echocardiography
A80-33873

ARTERIES
Excursion of vibrating microelectrodes in tissue
A80-32751
Coronary plexus in man and monkey
N80-23971

ARTERIOSCLEROSIS
Dynamics of change of lipid and monoamine metabolisms and the blood coagulation system during experimental atherosclerosis caused by restriction of movement
[NASA-TM-76033] N80-22968
Possibilities of forecasting hypercholesterinemia in pilots
[NASA-TM-76087] N80-23975

ARTIFICIAL INTELLIGENCE
The feasibility and psychological aspects of verbal interaction of man and automatic systems
A80-33007

ASTRONAUT MANEUVERING EQUIPMENT
The design of maneuvering units for cosmonauts in referenceless space and requirements for engineering psychology
A80-33005

ASTRONAUT PERFORMANCE
Social and psychological problems of extended space missions
[AIAA PAPER 80-0826] A80-32854
Psychological problems of space flight --- Russian book
A80-32976
The role of the human factor in space flights
A80-32978
Several characteristics of crew activity during space flight
A80-32981
The modeling of human activity in space flight
A80-32982
The investigation of the influence of space flight conditions on the statistical characteristics of operator activity
A80-32983
The investigation of operator activity in the performance of standard activities under conditions simulating extended space flight
A80-32984
Possible means for increasing the effectiveness of cosmonaut activity
A80-32985
The evaluation of the effectiveness of crew work under stress --- in spacecraft
A80-32986
Assurance of stable work capacity during prolonged space flight
A80-32989
Possible approaches to the study of cosmonaut cognitive behavioral styles during individual and group activity
A80-32992
The preservation capacity of spacecraft control skills during extended flights
A80-32994
Engineering and psychological aspects of maintenance work in space
A80-33004
Engineering-psychological aspects of optimizing human visual work capacity in space flight
A80-33006
Reflection of the dynamics of the psychophysiological state of the human operator in his speech signals
A80-33008
Construction of a model simulating human-operator activity in manual rendezvous control
A80-33009
Utilization of general psychological principles for solving problems concerning the operation of man/machine systems
A80-33010

ASTRONAUT TRAINING
Psychophysiological selection, crew staffing and preparation for space flight
A80-32995
Methodological and organizational principles of the psychological preparation of cosmonauts
A80-32997
Objectivization of the basic elements of the process of crew preparation for space flight
A80-32998
Psychological training of an astronaut operator under the conditions of emotional stress
A80-32999
Physiological aspects of the psychophysiological security of cosmonaut preparation on trainer apparatus
A80-33000
Psychological training of astronauts using flight simulators
A80-33001
The role and significance of the crew instructor in cosmonaut training
A80-33002

ATHLETES
Assessment of physical working capacity in clinic and athletics --- Russian book
A80-32846

ATMOSPHERIC COMPOSITION
Possible oxidant sources in the atmosphere and surface of Mars
A80-36060

ATTENUATORS
Pulse transducer with artifact signal attenuator --- heart rate sensors
[NASA-CASE-FRC-11012-1] N80-23969

AUDITORY PERCEPTION
Detection and recognition of pure tones in noise
A80-32839
Cochlear anatomy related to cochlear micromechanics - A review
A80-35401

AUDITORY STIMULI
On auditory evoked potentials and heart rate in man during whole-body vibration
A80-36250

AUTOMATA THEORY
Semiautomatic and interactive control systems for manipulator robots
A80-33897

AUTOMATIC CONTROL
Semiautomatic and interactive control systems for manipulator robots
A80-33897

B

BACTERICIDES
Effect of hydrogen chloride on the morphology of Bacillus subtilis spores
N80-23967
Sterilization by means of hydrogen chloride: Influence of process parameters on the biocidal activity
N80-23968

BALLISTIC TRAJECTORIES
Translational motion of anthropomorphic mechanisms in the pulsed excitation mode
A80-33881

BARORECEPTORS
Control of skin blood flow during exercise by thermal reflexes and baroreflexes
A80-32750

BEHAVIOR
Effects of fatigue on human behavior and performance. Citations from the NTIS data base
[PB80-804263] N80-22978
Behavior and physiological effects of noise, volume 3. Citations from the NTIS data base
[PB80-803869] N80-22979

BENTONITE
The effect of clays on the oligomerization of HCN
A80-36198

BIBLIOGRAPHIES
Effects of fatigue on human behavior and performance. Citations from the NTIS data base
[PB80-804263] N80-22978

Behavior and physiological effects of noise, volume 3. Citations from the NTIS data base
[PB80-803869] N80-22979
Biological effects of laser radiation, volume 2. Citations from the NTIS data base
[PB80-803935] N80-22980
Color vision. Citations from the NTIS data base
[PB80-803992] N80-22981

BINOCULAR VISION
Binocular retinal image motion during active head rotation
A80-35778

BIOACOUSTICS
Temperature and frequency dependence of ultrasonic attenuation in selected tissues
A80-32833

BIOASSAY
Wipe-rinse technique for quantitating microbial contamination on large surfaces
A80-32835

BIOASTRONAUTICS
Psychological problems of space flight --- Russian book
A80-32976
Psychological problems of space flight
A80-32977
The role of the human factor in space flights
A80-32978
Space exploration prospects and psychology
A80-32979
The appearence of certain human psychological traits during space flight
A80-32980
The modeling of human activity in space flight
A80-32982
Possible means for increasing the effectiveness of cosmonaut activity
A80-32985
Greenhouses in space --- plant growth in Salyut space station experiments
A80-34499

BIOCHEMISTRY
Biochemical changes in humans upon exposure to ozone and exercise
[PB80-105554] N80-22982

BIODYNAMICS
Cochlear anatomy related to cochlear micromechanics - A review
A80-35401

BIOENGINEERING
Preliminary analysis of wind tunnel test of a 1/2 scale model of an ejecting crewman and ejection seat
[AD-A069229] N80-22990
Calibration and test procedures for three year old child dummy
[PB80-112246] N80-23006

BIOINSTRUMENTATION
Excursion of vibrating microelectrodes in tissue
A80-32751
A microprocessor-controlled echocardiographic tracking system
A80-33183
Sources of variability in echocardiographic measurements
A80-33874
Pulse transducer with artifact signal attenuator --- heart rate sensors
[NASA-CASE-FRC-11012-1] N80-23969
Positron emission tomography of the heart
[UCLA-12-1232] N80-23980

BIOLOGICAL EFFECTS
Biological effects of laser radiation, volume 2. Citations from the NTIS data base
[PB80-803935] N80-22980
Proceedings of the Workshop on Electrical and Biological Effects Related to HVDC Transmission
[PNL-3121] N80-23979
Study of the possible effects of 110 kHz electromagnetic fields on humans
[SAND-77-7028] N80-23981

BIOLOGICAL EVOLUTION
Origin of life - Consideration of alternatives to proteins and nucleic acids
A80-32685
A new estimate of sequence divergence of mitochondrial DNA using restriction endonuclease mappings
A80-36197

BIONICS
The modeling of human activity in space flight
A80-32982
Modeling the human as a controller in a multi-task environment
N80-22986
Preliminary analysis of wind tunnel test of a 1/2 scale model of an ejecting crewman and ejection seat
[AD-A069229] N80-22990
Calibration and test procedures for three year old child dummy
[PB80-112246] N80-23006

BIOPHYSICS
Temperature and frequency dependence of ultrasonic attenuation in selected tissues
A80-32833

BIOSYNTHESIS
Abiogenic synthesis of nucleoside-like compounds under the influence of extremal factors
A80-33311
Suppression of the biosynthesis of sphingomyelin under gamma irradiation and exposure to ubiquinone-9
A80-33363

BLOOD
Biochemical changes in humans upon exposure to ozone and exercise
[PB80-105554] N80-22982

BLOOD CIRCULATION
Noise effects. Effects of noise exposure on blood circulation and respiration of man. Part 1: Results of a two-hour noise exposure on groups of younger and older people
[IG-TNO-B-373-E] N80-22977

BLOOD FLOW
Control of skin blood flow during exercise by thermal reflexes and baroreflexes
A80-32750

BLOOD PLASMA
Role of thermal and exercise factors in the mechanism of hypervolemia
A80-32748
Exercise training-induced hypervolemia - Role of plasma albumin, renin, and vasopressin
A80-32749

BODY COMPOSITION (BIOLOGY)
Relationship between urinary 3-methylhistidine excretion and components of body composition in man
N80-23972

BODY TEMPERATURE
Role of thermal and exercise factors in the mechanism of hypervolemia
A80-32748
Performance in tasks differing in memory load and its relationship with habitual activity phase and body temperature
[FOA-C-52002-H6] N80-22974

C

C-5 AIRCRAFT
USAF bioenvironmental noise data handbook. Volume 120. C-5A aircraft, near and far-field noise
[AD-A079866] N80-22992

C-135 AIRCRAFT
USAF bioenvironmental noise data handbook. Volume 134. KC-135A aircraft in the modified AF32A-52A noise suppressor, far-field noise
[AD-A079872] N80-22998

C-141 AIRCRAFT
USAF bioenvironmental noise data handbook. Volume 75: C-141A aircraft, near and far-field noise
[AD-A079865] N80-22991

CARBOHYDRATES
Role of adrenals in the mobilization of carbohydrate and fat resources after overstimulation of rats
[NASA-TM-75974] N80-22956

CARBON DIOXIDE
Possible oxidant sources in the atmosphere and surface of Mars
A80-36060

CARBON DIOXIDE REMOVAL
Performance characterization of a Bosch CO sub 2 reduction subsystem
[NASA-CR-152342] N80-22987
CARBON SUBOXIDES
A model of Martian surface chemistry
A80-36069
CARBON 14
Incorporation of glycine-2-C-14 in acid-insoluble proteins of rat bones and teeth during hypokinesia and administration of thyrocalcitonine
[NASA-TM-75981] N80-22959
CARDIOLOGY
Sources of variability in echocardiographic measurements
A80-33874
Clinical uses of two dimensional echocardiography
A80-33875
CARDIOVASCULAR SYSTEM
Acute cardiovascular adaptation to altitude
A80-34475
Time for recovery from successive bouts of exercise as measured by changes in the anaerobic threshold: A comparison of recovery intervals of 24 and 48 hours
N80-23970
Possibilities of forecasting hypercholesterinemia in pilots
[NASA-TM-76087] N80-23975
CARTILAGE
Animal experimental research on microstructural behavior on the hyaline arthroidal cartilage after immobilization and remobilization
[NASA-TM-76050] N80-22958
CATALYSIS
Laboratory simulations of the pyrolytic release experiments - An interim report
A80-36070
CATECHOLAMINE
Catecholamines of the adrenal medula and their morphological changes during adaptation to repeated immobilization stress
[NASA-TM-76068] N80-22970
CELLS (BIOLOGY)
Insulin binding and glucose uptake of adipocytes in rats adapted to hypergravitational force
A80-35751
CENTRAL NERVOUS SYSTEM
Procedure of practical exercise with students on the pathogenic effect of accelerations on the organism
[NASA-TM-76120] N80-23976
CHEMICAL ANALYSIS
The implications and limitations of the findings of the Viking organic analysis experiment
A80-36059
CHEMICAL COMPOSITION
The implications and limitations of the findings of the Viking organic analysis experiment
A80-36059
Heterogeneous phase reactions of Martian volatiles with putative regolith minerals
A80-36062
CHEMICAL EVOLUTION
Investigation of the kinetics of pyrolysis of amino acids
A80-35859
The role of metal ions in chemical evolution - Polymerization of alanine and glycine in a cation-exchanged clay environment
A80-36195
The effect of clays on the oligomerization of HCN
A80-36198
CHEMICAL REACTIONS
The effect of clays on the oligomerization of HCN
A80-36198
CHLOROPHYLLS
Studies of photosynthetic membranes using chlorophyll fluorescence lifetimes
[LBL-9795] N80-23966
CHOLESTEROL
Possibilities of forecasting hypercholesterinemia in pilots
[NASA-TM-76087] N80-23975
CIRCADIAN RHYTHMS
Investigation of circadian rhythms on select psychomotor and neurological functions
N80-22966
State of the body in disorders of diurnal physiological rhythms and long-term hypokinesia
[NASA-TM-76051] N80-22969
CLINICAL MEDICINE
Assessment of physical working capacity in clinic and athletics --- Russian book
A80-32846
Diagnosis and quantification of aortic stenosis with pulsed Doppler echocardiography
A80-33873
Clinical uses of two dimensional echocardiography
A80-33875
Automated system for diagnosing craniocerebral injury
[NASA-TM-76097] N80-22972
An experimental evaluation of selected rewarming therapies for the treatment of profound accidental hypothermia, part 2
[AD-A078292] N80-23978
CLOSED ECOLOGICAL SYSTEMS
Greenhouses in space --- plant growth in Salyut space station experiments
A80-34499
Performance characterization of a Bosch CO sub 2 reduction subsystem
[NASA-CR-152342] N80-22987
COCHLEA
Cochlear anatomy related to cochlear micromechanics - A review
A80-35401
COCKPITS
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
[FPRC/REPT-1376] N80-22976
COGNITIVE PSYCHOLOGY
Dependence of the activity and behavior of individuals and groups on the characteristics of the individual cognitive styles
A80-32991
Possible approaches to the study of cosmonaut cognitive behavioral styles during individual and group activity
A80-32992
COLD TOLERANCE
Experimental evaluations of selected immersion hypothermia protection equipment
[AD-A080470] N80-23003
COLOR VISION
Color vision. Citations from the NTIS data base
[PB80-803992] N80-22981
COMBAT
A discriminant analysis of pilot performance prediction and selection for air-to-air combat
N80-23984
COMPENSATORY TRACKING
Investigation of operator work capacity under conditions of continuous activity
A80-32990
COMPUTER NETWORKS
Automated system for diagnosing craniocerebral injury
[NASA-TM-76097] N80-22972
CONFERENCES
Proceedings of the Fifteenth Annual Conference on Manual Control
[AD-A080563] N80-23004
Proceedings of the Workshop on Electrical and Biological Effects Related to HVDC Transmission
[PNL-3121] N80-23979
CONTROL SIMULATION
Mathematical modeling, simulation, and stability of the respiratory control system
N80-22965
CONTROLLERS
Modeling the human as a controller in a multi-task environment
N80-22986
CORTI ORGAN
Cochlear anatomy related to cochlear micromechanics - A review
A80-35401
COSMONAUTS
Possible approaches to the study of cosmonaut cognitive behavioral styles during individual and group activity
A80-32992
Methodological and organizational principles of the psychological preparation of cosmonauts
A80-32997

The role and significance of the crew instructor in cosmonaut training
A80-33002
The design of maneuvering units for cosmonauts in referenceless space and requirements for engineering psychology
A80-33005

CREW PROCEDURES (PREFLIGHT)
Objectivization of the basic elements of the process of crew preparation for space flight
A80-32998

CYANIDES
The effect of clays on the oligomerization of HCN
A80-36198

D

DATA PROCESSING
A discriminant analysis of pilot performance prediction and selection for air-to-air combat
N80-23984

DATA REDUCTION
A discriminant analysis of pilot performance prediction and selection for air-to-air combat
N80-23984

DECISION MAKING
Models of human decision making in multi-task situations: Event detection, attention allocation, and implications for computer aiding
N80-22983
Theory of the decision/problem state
[NASA-TM-81192] N80-22984
Problem solving and decisionmaking: An integration
[NASA-TM-81191] N80-22985
Clarification process: Resolution of decision-problem conditions
[NASA-TM-81193] N80-23985

DEOXYRIBONUCLEIC ACID
A new estimate of sequence divergence of mitochondrial DNA using restriction endonuclease mappings
A80-36197

DETECTION
Summaries of some reports of 1978 concerning results of field experiments for visibility
[DFVLR-MITT-79-11] N80-23983

DIAGNOSIS
Automated system for diagnosing craniocerebral injury
[NASA-TM-76097] N80-22972

DIAMINES
The effect of clays on the oligomerization of HCN
A80-36198

DIRECT CURRENT
Proceedings of the Workshop on Electrical and Biological Effects Related to HVDC Transmission
[PNL-3121] N80-23979

DISPLAY DEVICES
Effects of spatial parameters on the perceptual organization of a bistable motion display
A80-32973

DISTANCE
Summaries of some reports of 1978 concerning results of field experiments for visibility
[DFVLR-MITT-79-11] N80-23983

DOPPLER EFFECT
Diagnosis and quantification of aortic stenosis with pulsed Doppler echocardiography
A80-33873

DRUGS
Procedure of practical exercise with students on the pathogenic effect of accelerations on the organism
[NASA-TM-76120] N80-23976

DUMMIES
Calibration and test procedures for three year old child dummy
[PB80-112246] N80-23006

DYNAMIC CONTROL
Reflection of the dynamics of the psychophysiological state of the human operator in his speech signals
A80-33008
Translational motion of anthropomorphic mechanisms in the pulsed excitation mode
A80-33881

DYNAMIC RESPONSE
Dynamic aspects of detection --- sensory processes in psychophysics
A80-32837

E

ECHOCARDIOGRAPHY
A microprocessor-controlled echocardiographic tracking system
A80-33183
Diagnosis and quantification of aortic stenosis with pulsed Doppler echocardiography
A80-33873
Sources of variability in echocardiographic measurements
A80-33874
Clinical uses of two dimensional echocardiography
A80-33875

EJECTION SEATS
Preliminary analysis of wind tunnel test of a 1/2 scale model of an ejecting crewman and ejection seat
[AD-A069229] N80-22990

ELECTRIC FIELDS
Proceedings of the Workshop on Electrical and Biological Effects Related to HVDC Transmission
[PNL-3121] N80-23979

ELECTROCARDIOGRAPHY
The effect of restraining on the heart rate in guinea pigs
[NASA-TM-76006] N80-22962

ELECTRODES
Excursion of vibrating microelectrodes in tissue
A80-32751

ELECTROMAGNETIC FIELDS
Study of the possible effects of 110 kHz electromagnetic fields on humans
[SAND-77-7028] N80-23981

ELECTROPHORESIS
Electrophoretic cell separation by means of microspheres
A80-34229

ELECTROPHYSIOLOGY
The effect of restraining on the heart rate in guinea pigs
[NASA-TM-76006] N80-22962

EMERGENCIES
Some aspects of space crew member interactions in emergency situations
A80-32987

EMOTIONAL FACTORS
The possibility of distinguishing between emotional stress levels according to speech indicators in aerospace activities
A80-32988
Psychological training of an astronaut operator under the conditions of emotional stress
A80-32999

ENDOCRINE SECRETIONS
Exercise training-induced hypervolemia - Role of plasma albumin, renin, and vasopressin
A80-32749

ENGINE NOISE
USAF bioenvironmental noise data handbook. Volume 136: F-111A aircraft in the AF32A-13 noise suppressor, far-field noise
[AD-A079874] N80-23000

ENVIRONMENTAL TESTS
Multivariate analysis of physiological response to environmental stress
N80-22964

ENZYMES
Origin of life - Consideration of alternatives to proteins and nucleic acids
A80-32685
A new estimate of sequence divergence of mitochondrial DNA using restriction endonuclease mappings
A80-36197

ENZYMOLOGY
Photochemistry and enzymology of photosynthesis
[COO-3326-82] N80-23965

ERYTHROCYTES
Electrophoretic cell separation by means of microspheres
A80-34229

Splenic erythropoiesis in polycythemic response of the rat to high-altitude exposure
A80-35675
Changes in concentration of 2,3-glycerodiphosphoric acid in rat erythrocytes during adaptation to hypoxia
A80-35860

EXCRETION
Relationship between urinary 3-methylhistidine excretion and components of body composition in man
N80-23972

EXOBIOLOGY
Simulation of the Viking biology experiments - An overview
A80-36066
Completion of the Viking Labeled Release experiment on Mars
A80-36067
Laboratory simulations of the Viking Labeled Release experiment - Kinetics following second nutrient injection and the nature of the gaseous end product
A80-36068
The Viking mission - Implications for life on Mars
A80-36071
Aerospace Medicine and Biology: A continuing bibliography with indexes, supplement 205
[NASA-SP-7011(205)] N80-22963

EXTRATERRESTRIAL COMMUNICATION
Uncertainty in estimates of the number of extraterrestrial civilizations
[NASA-CR-162637] N80-23007

EXTRATERRESTRIAL LIFE
Simulation of the Viking biology experiments - An overview
A80-36066
Completion of the Viking Labeled Release experiment on Mars
A80-36067
Laboratory simulations of the Viking Labeled Release experiment - Kinetics following second nutrient injection and the nature of the gaseous end product
A80-36068
The Viking mission - Implications for life on Mars
A80-36071
Uncertainty in estimates of the number of extraterrestrial civilizations
[NASA-CR-162637] N80-23007

EXTRAVEHICULAR ACTIVITY
The design of maneuvering units for cosmonauts in referenceless space and requirements for engineering psychology
A80-33005
EVA manipulation and assembly of space structure columns
[NASA-CR-3285] N80-23988

EYE MOVEMENTS
Binocular retinal image motion during active head rotation
A80-35778

F

F-4 AIRCRAFT
USAF bioenvironmental noise data handbook. Volume 121: F-4C aircraft, near and far-field noise
[AD-A079867] N80-22993
USAF bioenvironmental noise data handbook. Volume 131: F-4 aircraft in the AF32A-14 noise suppressor, near and far-field noise
[AD-A079869] N80-22995

F-5 AIRCRAFT
USAF bioenvironmental noise data handbook. Volume 132: F-5 aircraft in the AF32A-16 noise suppressor, near and far-field noise
[AD-A079870] N80-22996

F-15 AIRCRAFT
USAF bioenvironmental noise data handbook. Volume 133: F-15 aircraft in the AF32A-23 noise suppressor, near and far-field noise
[AD-A079871] N80-22997

F-106 AIRCRAFT
USAF bioenvironmental noise data handbook. Volume 135: F-106 aircraft in the AF32A-17 noise suppressor, near and far-field noise
[AD-A079873] N80-22999

F-111 AIRCRAFT
USAF bioenvironmental noise data handbook. Volume 136: F-111A aircraft in the AF32A-13 noise suppressor, far-field noise
[AD-A079874] N80-23000

FABRICS
Wipe-rinse technique for quantitating microbial contamination on large surfaces
A80-32835

FATIGUE (BIOLOGY)
Effects of fatigue on human behavior and performance. Citations from the NTIS data base
[PB80-804263] N80-22978
Time for recovery from successive bouts of exercise as measured by changes in the anaerobic threshold: A comparison of recovery intervals of 24 and 48 hours
N80-23970

FIGHTER AIRCRAFT
USAF bioenvironmental noise data handbook. Volume 140: F-16 aircraft in the AF32A-25 noise suppressor, near and far-field noise
[AD-A079875] N80-23001

FLIGHT CONTROL
A variance method of objective evaluation of the training process and learning level of operators in flight vehicle control regimes
A80-33003

FLIGHT CREWS
The role and significance of the crew instructor in cosmonaut training
A80-33002
Total aircrew workload study for the AMST. Volume 1: Results
[AD-A076422] N80-22988
Total aircrew workload study for the AMST. Volume 2: Communication navigation description
[AD-A076498] N80-22989

FLIGHT SIMULATION
The investigation of operator activity in the performance of standard activities under conditions simulating extended space flight
A80-32984

FLIGHT SIMULATORS
Psychological training of astronauts using flight simulators
A80-33001

FLIGHT STRESS (BIOLOGY)
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
[FPRC/REPT-1376] N80-22976

FLUID FLOW
Rhythmic vortex currents and their significance in human physiology
[MPIS-1/1979] N80-23982

G

GAMMA RAYS
Suppression of the biosynthesis of sphingomyelin under gamma irradiation and exposure to ubiquinone-9
A80-33363

GAS ANALYSIS
Laboratory simulations of the Viking Labeled Release experiment - Kinetics following second nutrient injection and the nature of the gaseous end product
A80-36068

GAS CHROMATOGRAPHY
Evaluation of thyroid hormones by gas chromatography
[DFVLR-FB-79-07] N80-22975

GASTROINTESTINAL SYSTEM
Influence of experimental hypokinesia on gastric secretory function
[NASA-TM-76034] N80-23974

GERMANY
Psychological selection of Spacelab payload specialists. The evaluation of German applicants
[ESA-TT-586] N80-23987

GLUCOSE
Insulin binding and glucose uptake of adipocytes in rats adapted to hypergravitational force
A80-35751

GLYCEROLS
Suppression of the biosynthesis of sphingomyelin under gamma irradiation and exposure to ubiquinone-9
A80-33363

Changes in concentration of 2,3-glycerodiphosphoric acid in rat erythrocytes during adaptation to hypoxia
A80-35860

GLYCINE
Incorporation of glycine-2-C-14 in acid-insoluble proteins of rat bones and teeth during hypokinesia and administration of thyrocalcitonine
[NASA-TM-75981] N80-22959

GRAVITATIONAL EFFECTS
Insulin binding and glucose uptake of adipocytes in rats adapted to hypergravitational force
A80-35751

GROUP DYNAMICS
Dependence of the activity and behavior of individuals and groups on the characteristics of the individual cognitive styles
A80-32991
Possible approaches to the study of cosmonaut cognitive behavioral styles during individual and group activity
A80-32992

H

HANDBOOKS
USAF bioenvironmental noise data handbook. Volume 140: F-16 aircraft in the AF32A-25 noise suppressor, near and far-field noise
[AD-A079875] N80-23001

HEAD MOVEMENT
Binocular retinal image motion during active head rotation
A80-35778

HEALTH
Assessment of physical working capacity in clinic and athletics --- Russian book
A80-32846

HEALTH PHYSICS
Proceedings of the Workshop on Electrical and Biological Effects Related to HVDC Transmission
[PNL-3121] N80-23979
Study of the possible effects of 110 kHz electromagnetic fields on humans
[SAND-77-7028] N80-23981

HEARING
Low frequency acoustic detection in support of human detection range prediction
[AD-A080579] N80-22973

HEART
Positron emission tomography of the heart
[UCLA-12-1232] N80-23980

HEART DISEASES
Diagnosis and quantification of aortic stenosis with pulsed Doppler echocardiography
A80-33873
Clinical uses of two dimensional echocardiography
A80-33875
Possibilities of forecasting hypercholesterinemia in pilots
[NASA-TM-76087] N80-23975

HEART FUNCTION
A microprocessor-controlled echocardiographic tracking system
A80-33183
Coronary plexus in man and monkey
N80-23971

HEART RATE
On auditory evoked potentials and heart rate in man during whole-body vibration
A80-36250
The effect of restraining on the heart rate in guinea pigs
[NASA-TM-76006] N80-22962
Pulse transducer with artifact signal attenuator --- heart rate sensors
[NASA-CASE-FRC-11012-1] N80-23969

HEART VALVES
State of the mitral valve in rabbits with hypokinesia
[NASA-TM-76003] N80-22957

HEMODYNAMICS
Dynamics of change of lipid and monoamine metabolisms and the blood coagulation system during experimental atherosclerosis caused by restriction of movement
[NASA-TM-76033] N80-22968

HEMOGLOBIN
Changes in concentration of 2,3-glycerodiphosphoric acid in rat erythrocytes during adaptation to hypoxia
A80-35860

HIGH ALTITUDE
Splenic erythropoiesis in polycythemic response of the rat to high-altitude exposure
A80-35675

HIGH GRAVITY ENVIRONMENTS
Insulin binding and glucose uptake of adipocytes in rats adapted to hypergravitational force
A80-35751

HISTIDINE
Relationship between urinary 3-methylhistidine excretion and components of body composition in man
N80-23972

HORMONES
Evaluation of thyroid hormones by gas chromatography
[DFVLR-FB-79-07] N80-22975

HUMAN BEHAVIOR
Dependence of the activity and behavior of individuals and groups on the characteristics of the individual cognitive styles
A80-32991
Possible approaches to the study of cosmonaut cognitive behavioral styles during individual and group activity
A80-32992
Models of human decision making in multi-task situations: Event detection, attention allocation, and implications for computer aiding
N80-22983
Theory of the decision/problem state
[NASA-TM-81192] N80-22984
Problem solving and decisionmaking: An integration
[NASA-TM-81191] N80-22985

HUMAN BODY
On auditory evoked potentials and heart rate in man during whole-body vibration
A80-36250
Rhythmic vortex currents and their significance in human physiology
[RPIS-1/1979] N80-23982

HUMAN FACTORS ENGINEERING
Psychological problems of space flight --- Russian book
A80-32976
The role of the human factor in space flights
A80-32978
The modeling of human activity in space flight
A80-32982
Possible means for increasing the effectiveness of cosmonaut activity
A80-32985
The preservation capacity of spacecraft control skills during extended flights
A80-32994
Engineering and psychological aspects of maintenance work in space
A80-33004
The design of maneuvering units for cosmonauts in referenceless space and requirements for engineering psychology
A80-33005
Engineering-psychological aspects of optimizing human visual work capacity in space flight
A80-33006
Reflection of the dynamics of the psychophysiological state of the human operator in his speech signals
A80-33008
Models of human decision making in multi-task situations: Event detection, attention allocation, and implications for computer aiding
N80-22983
Total aircrew workload study for the AMST. Volume 1: Results
[AD-A076422] N80-22988
Total aircrew workload study for the AMST. Volume 2: Communication navigation description
[AD-A076498] N80-22989
Preliminary analysis of wind tunnel test of a 1/2 scale model of an ejecting crewman and ejection seat
[AD-A069229] N80-22990

Additional studies of chemically treated clothing for personnel protection from biting flies
[AD-A080612] N80-23002
Calibration and test procedures for three year old child dummy
[PB80-112246] N80-23006
Study of the possible effects of 110 kHz electromagnetic fields on humans
[SAND-77-7028] N80-23981
Preparation cost and dual-task performance: Further evidence against a general time-sharing factor
[AD-A080857] N80-23986

HUMAN PERFORMANCE
The psychophysics of sensory systems --- Russian book
A80-32836
Detection and recognition of pure tones in noise
A80-32839
A review of advances in modern psychophysics /Strategies in psychophysical analyses/
A80-32840
Physiological premises of the laws of psychophysics
A80-32841
Investigation of circadian rhythms on select psychomotor and neurological functions
N80-22966
Preparation cost and dual-task performance: Further evidence against a general time-sharing factor
[AD-A080857] N80-23986

HUMAN REACTIONS
Possible sources of false-alarm responses and psychophysiological optimization mechanisms of weak-signal detection
A80-32842
Accuracy of perception in the tracking of continuous signals
A80-32843
On auditory evoked potentials and heart rate in man during whole-body vibration
A80-36250
Multivariate analysis of physiological response to environmental stress
N80-22964
Noise effects. Effects of noise exposure on blood circulation and respiration of man. Part 1: Results of a two-hour noise exposure on groups of younger and older people
[IG-TNO-B-373-E] N80-22977

HYDROGEN CHLORIDES
Effect of hydrogen chloride on the morphology of Bacillus subtilis spores
N80-23967
Sterilization by means of hydrogen chloride: Influence of process parameters on the biocidal activity
N80-23968

HYPERVOLEMIA
Role of thermal and exercise factors in the mechanism of hypervolemia
A80-32748
Exercise training-induced hypervolemia - Role of plasma albumin, renin, and vasopressin
A80-32749

HYPODYNAMIA
Effect of prolonged hypodynamia on certain physiological functions in dogs
[NASA-TM-75979] N80-22961
Reactivity of organism in prolonged space flights
[NASA-TM-75975] N80-22967

HYPOKINESIA
State of the mitral valve in rabbits with hypokinesia
[NASA-TM-76003] N80-22957
Incorporation of glycine-2-C-14 in acid-insoluble proteins of rat bones and teeth during hypokinesia and administration of thyrocalcitonine
[NASA-TM-75981] N80-22959
State of the body in disorders of diurnal physiological rhythms and long-term hypokinesia
[NASA-TM-76051] N80-22969
Influence of experimental hypokinesia on gastric secretory function
[NASA-TM-76034] N80-23974

HYPOTHALAMUS
State of the body in disorders of diurnal physiological rhythms and long-term hypokinesia
[NASA-TM-76051] N80-22969

HYPOTHERMIA
Experimental evaluations of selected immersion hypothermia protection equipment
[AD-A080470] N80-23003
An experimental evaluation of selected rewarming therapies for the treatment of profound accidental hypothermia, part 2
[AD-A078292] N80-23978

HYPOXIA
Splenic erythropoiesis in polycythemic response of the rat to high-altitude exposure
A80-35675
Changes in concentration of 2,3-glycerodiphosphoric acid in rat erythrocytes during adaptation to hypoxia
A80-35860

I

IMAGING TECHNIQUES
Positron emission tomography of the heart
[UCLA-12-1232] N80-23980

IMMOBILIZATION
Effects of audio-visual stimulation on the incidence of restraint ulcers on the Wistar rat
[NASA-TM-75950] N80-22955
Role of adrenals in the mobilization of carbohydrate and fat resources after overstimulation of rats
[NASA-TM-75974] N80-22956
The ulcerogenic effect of bile and bile acid in rats during immobilization stress
[NASA-TM-76054] N80-22960
Effect of prolonged hypodynamia on certain physiological functions in dogs
[NASA-TM-75979] N80-22961
Dynamics of change of lipid and monoamine metabolisms and the blood coagulation system during experimental atherosclerosis caused by restriction of movement
[NASA-TM-76033] N80-22968
Catecholamines of the adrenal medula and their morphological changes during adaptation to repeated immobilization stress
[NASA-TM-76068] N80-22970

IMMUNOLOGY
Electrophoretic cell separation by means of microspheres
A80-34229

INFORMATION THEORY
Clarification process: Resolution of decision-problem conditions
[NASA-TM-81193] N80-23985

INJURIES
Automated system for diagnosing craniocerebral injury
[NASA-TM-76097] N80-22972

INORGANIC CHEMISTRY
A model of Martian surface chemistry
A80-36069

INORGANIC PEROXIDES
A model of Martian surface chemistry
A80-36069

INSECTICIDES
Additional studies of chemically treated clothing for personnel protection from biting flies
[AD-A080612] N80-23002

INSTRUCTORS
The role and significance of the crew instructor in cosmonaut training
A80-33002

INSULIN
Insulin binding and glucose uptake of adipocytes in rats adapted to hypergravitational force
A80-35751

J

JAGUAR AIRCRAFT
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
[FPRC/REPT-1376] N80-22976

JET AIRCRAFT
USAF bioenvironmental noise data handbook. Volume 140: F-16 aircraft in the AF32A-25 noise suppressor, near and far-field noise
[AD-A079875] N80-23001

JET AIRCRAFT NOISE
  USAF bioenvironmental noise data handbook. Volume 75: C-141A aircraft, near and far-field noise [AD-A079865] N80-22991
  USAF bioenvironmental noise data handbook. Volume 120. C-5A aircraft, near and far-field noise [AD-A079866] N80-22992
  USAF bioenvironmental noise data handbook. Volume 121: F-4C aircraft, near and far-field noise [AD-A079867] N80-22993
  USAF bioenvironmental noise data handbook. Volume 128: T-38 aircraft in the AF32A-18 noise suppressor, near and far-field noise [AD-A079868] N80-22994
  USAF bioenvironmental noise data handbook. Volume 131: F-4 aircraft in the AF32A-14 noise suppressor, near and far-field noise [AD-A079869] N80-22995
  USAF bioenvironmental noise data handbook. Volume 132: F-5 aircraft in the AF32A-16 noise suppressor, near and far-field noise [AD-A079870] N80-22996
  USAF bioenvironmental noise data handbook. Volume 133: F-15 aircraft in the AF32A-23 noise suppressor, near and far-field noise [AD-A079871] N80-22997
  USAF bioenvironmental noise data handbook. Volume 134. KC-135A aircraft in the modified AF32A-52A noise suppressor, far-field noise [AD-A079872] N80-22998
  USAF bioenvironmental noise data handbook. Volume 135: F-106 aircraft in the AF32A-17 noise suppressor, near and far-field noise [AD-A079873] N80-22999
  USAF bioenvironmental noise data handbook. Volume 136: F-111A aircraft in the AF32A-13 noise suppressor, far-field noise [AD-A079874] N80-23000

K

KINESTHESIA
  On the preservation of equilibrium in the orthograde and inverted positions of the body [NASA-TM-76141] N80-23977

L

LARGE SPACE STRUCTURES
  EVA manipulation and assembly of space structure columns [NASA-CR-3285] N80-23988
LASER OUTPUTS
  Biological effects of laser radiation, volume 2. Citations from the NTIS data base [PB80-803935] N80-22980
LATCHES
  Manned maneuvering unit latching mechanism N80-23497
LEARNING
  A variance method of objective evaluation of the training process and learning level of operators in flight vehicle control regimes A80-33003
LIFE SCIENCES
  Origin of life - Consideration of alternatives to proteins and nucleic acids A80-32685
LIFE SUPPORT SYSTEMS
  Greenhouses in space --- plant growth in Salyut space station experiments A80-34499
LIVER
  Suppression of the biosynthesis of sphingomyelin under gamma irradiation and exposure to ubiquinone-9 A80-33363
  The ulcerogenic effect of bile and bile acid in rats during immobilization stress [NASA-TM-76054] N80-22960
LONG DURATION SPACE FLIGHT
  Social and psychological problems of extended space missions [AIAA PAPER 80-0826] A80-32854
  Space exploration prospects and psychology A80-32979
  The investigation of operator activity in the performance of standard activities under conditions simulating extended space flight A80-32984
  Assurance of stable work capacity during prolonged space flight A80-32989
  The preservation capacity of spacecraft control skills during extended flights A80-32994

M

MAN MACHINE SYSTEMS
  Psychological problems of space flight A80-32977
  Several characteristics of crew activity during space flight A80-32981
  Possible means for increasing the effectiveness of cosmonaut activity A80-32985
  The evaluation of the effectiveness of crew work under stress --- in spacecraft A80-32986
  Engineering and psychological aspects of maintenance work in space A80-33004
  The feasibility and psychological aspects of verbal interaction of man and automatic systems A80-33007
  Construction of a model simulating human-operator activity in manual rendezvous control A80-33009
  Utilization of general psychological principles for solving problems concerning the operation of man/machine systems A80-33010
  A microprocessor-controlled echocardiographic tracking system A80-33183
  Modeling the human as a controller in a multi-task environment N80-22986
  Preliminary analysis of wind tunnel test of a 1/2 scale model of an ejecting crewman and ejection seat [AD-A069229] N80-22990
  Proceedings of the Fifteenth Annual Conference on Manual Control [AD-A080563] N80-23004
  Manned maneuvering unit latching mechanism N80-23497
  Preparation cost and dual-task performance: Further evidence against a general time-sharing factor [AD-A080857] N80-23986
  EVA manipulation and assembly of space structure columns [NASA-CR-3285] N80-23988
MANEUVERABILITY
  Manned maneuvering unit latching mechanism N80-23497
MANIPULATORS
  Semiautomatic and interactive control systems for manipulator robots A80-33897
MANNED SPACE FLIGHT
  Psychological problems of space flight --- Russian book A80-32976
  Psychological problems of space flight A80-32977
  The role of the human factor in space flights A80-32978
  The appearence of certain human psychological traits during space flight A80-32980
  Several characteristics of crew activity during space flight A80-32981
  The investigation of the influence of space flight conditions on the statistical characteristics of operator activity A80-32983
  Possible means for increasing the effectiveness of cosmonaut activity A80-32985

Some aspects of space crew member interactions in emergency situations
A80-32987

Assurance of stable work capacity during prolonged space flight
A80-32989

Engineering-psychological aspects of optimizing human visual work capacity in space flight
A80-33006

The feasibility and psychological aspects of verbal interaction of man and automatic systems
A80-33007

Reflection of the dynamics of the psychophysiological state of the human operator in his speech signals
A80-33008

MANUAL CONTROL

Investigation of operator work capacity under conditions of continuous activity
A80-32990

Construction of a model simulating human-operator activity in manual rendezvous control
A80-33009

Proceedings of the Fifteenth Annual Conference on Manual Control
[AD-A080563] N80-23004

MARS ATMOSPHERE

Possible oxidant sources in the atmosphere and surface of Mars
A80-36060

Heterogeneous phase reactions of Martian volatiles with putative regolith minerals
A80-36062

MARS ENVIRONMENT

The photolytic degradation and oxidation of organic compounds under simulated Martian conditions
A80-36065

MARS SURFACE

Possible oxidant sources in the atmosphere and surface of Mars
A80-36060

Heterogeneous phase reactions of Martian volatiles with putative regolith minerals
A80-36062

Simulation of the Viking biology experiments - An overview
A80-36066

MARS SURFACE SAMPLES

The implications and limitations of the findings of the Viking organic analysis experiment
A80-36059

The photolytic degradation and oxidation of organic compounds under simulated Martian conditions
A80-36065

Completion of the Viking Labeled Release experiment on Mars
A80-36067

Laboratory simulations of the Viking Labeled Release experiment - Kinetics following second nutrient injection and the nature of the gaseous end product
A80-36068

A model of Martian surface chemistry
A80-36069

Laboratory simulations of the pyrolytic release experiments - An interim report
A80-36070

The Viking mission - Implications for life on Mars
A80-36071

MATHEMATICAL MODELS

Mathematical modeling, simulation, and stability of the respiratory control system
N80-22965

Models of human decision making in multi-task situations: Event detection, attention allocation, and implications for computer aiding
N80-22983

Modeling the human as a controller in a multi-task environment
N80-22986

MECHANICAL DEVICES

Manned maneuvering unit latching mechanism
N80-23497

MENTAL PERFORMANCE

Possible approaches to the study of cosmonaut cognitive behavioral styles during individual and group activity
A80-32992

Performance in tasks differing in memory load and its relationship with habitual activity phase and body temperature
[FOA-C-52002-H6] N80-22974

METAL IONS

The role of metal ions in chemical evolution - Polymerization of alanine and glycine in a cation-exchanged clay environment
A80-36195

METHODOLOGY

Methodological and organizational principles of the psychological preparation of cosmonauts
A80-32997

MICROBIOLOGY

Inactivation of enteroviruses by ozone
N80-22954

MICROELECTRONICS

Excursion of vibrating microelectrodes in tissue
A80-32751

MICROORGANISMS

Wipe-rinse technique for quantitating microbial contamination on large surfaces
A80-32835

MICROPROCESSORS

A microprocessor-controlled echocardiographic tracking system
A80-33183

MICROSTRUCTURE

Animal experimental research on microstructural behavior on the hyaline arthroidal cartilage after immobilization and remobilization
[NASA-TM-76050] N80-22958

MINERAL DEPOSITS

Heterogeneous phase reactions of Martian volatiles with putative regolith minerals
A80-36062

MITOCHONDRIA

A new estimate of sequence divergence of mitochondrial DNA using restriction endonuclease mappings
A80-36197

MOLECULAR BIOLOGY

Origin of life - Consideration of alternatives to proteins and nucleic acids
A80-32685

MONOCULAR VISION

Grating induction - A new type of aftereffect
A80-35779

MONTMORILLONITE

The effect of clays on the oligomerization of HCN
A80-36198

MORPHOLOGY

Cochlear anatomy related to cochlear micromechanics - A review
A80-35401

State of the mitral valve in rabbits with hypokinesia
[NASA-TM-76003] N80-22957

MOTION PERCEPTION

Static and dynamic factors in the perception of rotary motion
A80-32974

MULTIVARIATE STATISTICAL ANALYSIS

Multivariate analysis of physiological response to environmental stress
N80-22964

MUSCULAR FATIGUE

Effect of prolonged hypodynamia on certain physiological functions in dogs
[NASA-TM-75979] N80-22961

MYELIN

Suppression of the biosynthesis of sphingomyelin under gamma irradiation and exposure to ubiquinone-9
A80-33363

N

NERVES

Coronary plexus in man and monkey
N80-23971

NEUROLOGY

Automated system for diagnosing craniocerebral injury [NASA-TM-76097] N80-22972

NEUROPHYSIOLOGY

Investigation of circadian rhythms on select psychomotor and neurological functions N80-22966

Vestibular recruitment [NASA-TM-76088] N80-22971

Coronary plexus in man and monkey N80-23971

NOISE

USAF bioenvironmental noise data handbook. Volume 140: F-16 aircraft in the AF32A-25 noise suppressor, near and far-field noise [AD-A079875] N80-23001

NOISE (SOUND)

Noise effects. Effects of noise exposure on blood circulation and respiration of man. Part 1: Results of a two-hour noise exposure on groups of younger and older people [IG-TNO-B-373-E] N80-22977

Behavior and physiological effects of noise, volume 3. Citations from the NTIS data base [PB80-803869] N80-22979

NOISE MEASUREMENT

USAF bioenvironmental noise data handbook. Volume 75: C-141A aircraft, near and far-field noise [AD-A079865] N80-22991

USAF bioenvironmental noise data handbook. Volume 120. C-5A aircraft, near and far-field noise [AD-A079866] N80-22992

USAF bioenvironmental noise data handbook. Volume 121: F-4C aircraft, near and far-field noise [AD-A079867] N80-22993

USAF bioenvironmental noise data handbook. Volume 128: T-38 aircraft in the AF32A-18 noise suppressor, near and far-field noise [AD-A079868] N80-22994

USAF bioenvironmental noise data handbook. Volume 131: F-4 aircraft in the AF32A-14 noise suppressor, near and far-field noise [AD-A079869] N80-22995

USAF bioenvironmental noise data handbook. Volume 132: F-5 aircraft in the AF32A-16 noise suppressor, near and far-field noise [AD-A079870] N80-22996

USAF bioenvironmental noise data handbook. Volume 133: F-15 aircraft in the AF32A-23 noise suppressor, near and far-field noise [AD-A079871] N80-22997

USAF bioenvironmental noise data handbook. Volume 134. KC-135A aircraft in the modified AF32A-52A noise suppressor, far-field noise [AD-A079872] N80-22998

NOISE POLLUTION

USAF bioenvironmental noise data handbook. Volume 135: F-106 aircraft in the AF32A-17 noise suppressor, near and far-field noise [AD-A079873] N80-22999

USAF bioenvironmental noise data handbook. Volume 136: F-111A aircraft in the AF32A-13 noise suppressor, far-field noise [AD-A079874] N80-23000

NOISE REDUCTION

USAF bioenvironmental noise data handbook. Volume 75: C-141A aircraft, near and far-field noise [AD-A079865] N80-22991

USAF bioenvironmental noise data handbook. Volume 120. C-5A aircraft, near and far-field noise [AD-A079866] N80-22992

USAF bioenvironmental noise data handbook. Volume 121: F-4C aircraft, near and far-field noise [AD-A079867] N80-22993

USAF bioenvironmental noise data handbook. Volume 128: T-38 aircraft in the AF32A-18 noise suppressor, near and far-field noise [AD-A079868] N80-22994

USAF bioenvironmental noise data handbook. Volume 131: F-4 aircraft in the AF32A-14 noise suppressor, near and far-field noise [AD-A079869] N80-22995

USAF bioenvironmental noise data handbook. Volume 132: F-5 aircraft in the AF32A-16 noise suppressor, near and far-field noise [AD-A079870] N80-22996

USAF bioenvironmental noise data handbook. Volume 133: F-15 aircraft in the AF32A-23 noise suppressor, near and far-field noise [AD-A079871] N80-22997

USAF bioenvironmental noise data handbook. Volume 134. KC-135A aircraft in the modified AF32A-52A noise suppressor, far-field noise [AD-A079872] N80-22998

USAF bioenvironmental noise data handbook. Volume 135: F-106 aircraft in the AF32A-17 noise suppressor, near and far-field noise [AD-A079873] N80-22999

USAF bioenvironmental noise data handbook. Volume 136: F-111A aircraft in the AF32A-13 noise suppressor, far-field noise [AD-A079874] N80-23000

USAF bioenvironmental noise data handbook. Volume 140: F-16 aircraft in the AF32A-25 noise suppressor, near and far-field noise [AD-A079875] N80-23001

NUCLEOSIDES

Abiogenic synthesis of nucleoside-like compounds under the influence of extremal factors A80-33311

O

OPERATOR PERFORMANCE

Accuracy of perception in the tracking of continuous signals A80-32843

Dependence of the activity and behavior of individuals and groups on the characteristics of the individual cognitive styles A80-32991

A variance method of objective evaluation of the training process and learning level of operators in flight vehicle control regimes A80-33003

The psychophysiological characteristics of air traffic controller activity A80-36225

OPERATORS (PERSONNEL)

Construction of a model simulating human-operator activity in manual rendezvous control A80-33009

OPTICAL TRACKING

Accuracy of perception in the tracking of continuous signals A80-32843

ORBITAL ASSEMBLY

EVA manipulation and assembly of space structure columns [NASA-CR-3285] N80-23988

ORBITAL WORKERS

The design of maneuvering units for cosmonauts in referenceless space and requirements for engineering psychology A80-33005

ORGANIC COMPOUNDS

The implications and limitations of the findings of the Viking organic analysis experiment A80-36059

The photolytic degradation and oxidation of organic compounds under simulated Martian conditions A80-36065

OSTEOPOROSIS

Incorporation of glycine-2-C-14 in acid-insoluble proteins of rat bones and teeth during hypokinesia and administration of thyrocalcitonine [NASA-TM-75981] N80-22959

OXIDATION

The photolytic degradation and oxidation of organic compounds under simulated Martian conditions A80-36065

OZONE

Inactivation of enteroviruses by ozone N80-22954

Biochemical changes in humans upon exposure to ozone and exercise [PB80-105554] N80-22982

P

PERFORMANCE PREDICTION
A discriminant analysis of pilot performance prediction and selection for air-to-air combat
N80-23984
PERFORMANCE TESTS
Investigation of operator work capacity under conditions of continuous activity
A80-32990
PERSONNEL SELECTION
Psychophysiological selection, crew staffing and preparation for space flight
A80-32995
PHOTOCHEMICAL REACTIONS
Heterogeneous phase reactions of Martian volatiles with putative regolith minerals
A80-36062
Laboratory simulations of the pyrolytic release experiments - An interim report
A80-36070
PHOTOLYSIS
The photolytic degradation and oxidation of organic compounds under simulated Martian conditions
A80-36065
PHOTOOXIDATION
Possible oxidant sources in the atmosphere and surface of Mars
A80-36060
PHOTOSYNTHESIS
Photochemistry and enzymology of photosynthesis
[COO-3326-82] N80-23965
Studies of photosynthetic membranes using chlorophyll fluorescence lifetimes
[LBL-9795] N80-23966
PHYSICAL EXERCISE
Role of thermal and exercise factors in the mechanism of hypervolemia
A80-32748
Exercise training-induced hypervolemia - Role of plasma albumin, renin, and vasopressin
A80-32749
Control of skin blood flow during exercise by thermal reflexes and baroreflexes
A80-32750
Assessment of physical working capacity in clinic and athletics --- Russian book
A80-32846
Multivariate analysis of physiological response to environmental stress
N80-22964
Biochemical changes in humans upon exposure to ozone and exercise
[PB80-105554] N80-22982
Time for recovery from successive bouts of exercise as measured by changes in the anaerobic threshold: A comparison of recovery intervals of 24 and 48 hours
N80-23970
PHYSICAL FITNESS
Time for recovery from successive bouts of exercise as measured by changes in the anaerobic threshold: A comparison of recovery intervals of 24 and 48 hours
N80-23970
PHYSICAL WORK
Assessment of physical working capacity in clinic and athletics --- Russian book
A80-32846
Investigation of operator work capacity under conditions of continuous activity
A80-32990
PHYSIOLOGICAL EFFECTS
Adaptation to weightlessness
A80-32996
Effects of audio-visual stimulation on the incidence of restraint ulcers on the Wistar rat
[NASA-TM-75950] N80-22955
State of the mitral valve in rabbits with hypokinesia
[NASA-TM-76003] N80-22957
The ulcerogenic effect of bile and bile acid in rats during immobilization stress
[NASA-TM-76054] N80-22960
The effect of restraining on the heart rate in guinea pigs
[NASA-TM-76006] N80-22962
Multivariate analysis of physiological response to environmental stress
N80-22964
Dynamics of change of lipid and monoamine metabolisms and the blood coagulation system during experimental atherosclerosis caused by restriction of movement
[NASA-TM-76033] N80-22968
State of the body in disorders of diurnal physiological rhythms and long-term hypokinesia
[NASA-TM-76051] N80-22969
Noise effects. Effects of noise exposure on blood circulation and respiration of man. Part 1: Results of a two-hour noise exposure on groups of younger and older people
[IG-TNO-B-373-E] N80-22977
Effects of fatigue on human behavior and performance. Citations from the NTIS data base
[PB80-804263] N80-22978
Behavior and physiological effects of noise, volume 3. Citations from the NTIS data base
[PB80-803869] N80-22979
Biochemical changes in humans upon exposure to ozone and exercise
[PB80-105554] N80-22982
Influence of experimental hypokinesia on gastric secretory function
[NASA-TM-76034] N80-23974
Procedure of practical exercise with students on the pathogenic effect of accelerations on the organism
[NASA-TM-76120] N80-23976
PHYSIOLOGICAL FACTORS
Physiological premises of the laws of psychophysics
A80-32841
The appearance of certain human psychological traits during space flight
A80-32980
Physiological aspects of the psychophysiological security of cosmonaut preparation on trainer apparatus
A80-33000
PHYSIOLOGICAL RESPONSES
Effect of prolonged hypodynamia on certain physiological functions in dogs
[NASA-TM-75979] N80-22961
PHYSIOLOGICAL TESTS
Assessment of physical working capacity in clinic and athletics --- Russian book
A80-32846
PHYSIOLOGY
Ideas of I. M. Sechenov in aviation and space medicine
[NASA-TM-75976] N80-23973
PILOT PERFORMANCE
A discriminant analysis of pilot performance prediction and selection for air-to-air combat
N80-23984
PILOT SELECTION
A discriminant analysis of pilot performance prediction and selection for air-to-air combat
N80-23984
PILOTS (PERSONNEL)
Possibilities of forecasting hypercholesterinemia in pilots
[NASA-TM-76087] N80-23975
PITUITARY GLAND
State of the body in disorders of diurnal physiological rhythms and long-term hypokinesia
[NASA-TM-76051] N80-22969
PLANTS (BOTANY)
Greenhouses in space --- plant growth in Salyut space station experiments
A80-34499
POLYCYTHEMIA
Splenic erythropoiesis in polycythemic response of the rat to high-altitude exposure
A80-35675
POLYMERIZATION
Origin of life - Consideration of alternatives to proteins and nucleic acids
A80-32685
The role of metal ions in chemical evolution - Polymerization of alanine and glycine in a cation-exchanged clay environment
A80-36195

POLYMERS
Electrophoretic cell separation by means of microspheres
A80-34229
POSITRONS
Positron emission tomography of the heart
[UCLA-12-1232] N80-23980
POSTURE
On the preservation of equilibrium in the orthograde and inverted positions of the body
[NASA-TM-76141] N80-23977
PROBABILITY THEORY
Uncertainty in estimates of the number of extraterrestrial civilizations
[NASA-CR-162637] N80-23007
PROBLEM SOLVING
Theory of the decision/problem state
[NASA-TM-81192] N80-22984
Problem solving and decisionmaking: An integration
[NASA-TM-81191] N80-22985
Clarification process: Resolution of decision-problem conditions
[NASA-TM-81193] N80-23985
PROPRIOCEPTION
On the preservation of equilibrium in the orthograde and inverted positions of the body
[NASA-TM-76141] N80-23977
PROTECTIVE CLOTHING
Additional studies of chemically treated clothing for personnel protection from biting flies
[AD-A080612] N80-23002
Experimental evaluations of selected immersion hypothermia protection equipment
[AD-A080470] N80-23003
PROTEIN METABOLISM
Incorporation of glycine-2-C-14 in acid-insoluble proteins of rat bones and teeth during hypokinesia and administration of thyrocalcitonine
[NASA-TM-75981] N80-22959
Dynamics of change of lipid and monoamine metabolisms and the blood coagulation system during experimental atherosclerosis caused by restriction of movement
[NASA-TM-76033] N80-22968
Relationship between urinary 3-methylhistidine excretion and components of body composition in man
N80-23972
PSYCHOACOUSTICS
Detection and recognition of pure tones in noise
A80-32839
PSYCHOLINGUISTICS
The possibility of distinguishing between emotional stress levels according to speech indicators in aerospace activities
A80-32988
PSYCHOLOGICAL FACTORS
Social and psychological problems of extended space missions
[AIAA PAPER 80-0826] A80-32854
Psychological problems of space flight --- Russian book
A80-32976
Psychological problems of space flight
A80-32977
Space exploration prospects and psychology
A80-32979
The appearence of certain human psychological traits during space flight
A80-32980
The modeling of human activity in space flight
A80-32982
Methodological and organizational principles of the psychological preparation of cosmonauts
A80-32997
Objectivization of the basic elements of the process of crew preparation for space flight
A80-32998
Psychological training of an astronaut operator under the conditions of emotional stress
A80-32999
Physiological aspects of the psychophysiological security of cosmonaut preparation on trainer apparatus
A80-33000
Psychological training of astronauts using flight simulators
A80-33001
Engineering and psychological aspects of maintenance work in space
A80-33004
The design of maneuvering units for cosmonauts in referenceless space and requirements for engineering psychology
A80-33005
Engineering-psychological aspects of optimizing human visual work capacity in space flight
A80-33006
The feasibility and psychological aspects of verbal interaction of man and automatic systems
A80-33007
Utilization of general psychological principles for solving problems concerning the operation of man/machine systems
A80-33010
Psychological selection of Spacelab payload specialists. The evaluation of German applicants
[ESA-TT-586] N80-23987
PSYCHOLOGICAL TESTS
The possibility of distinguishing between emotional stress levels according to speech indicators in aerospace activities
A80-32988
PSYCHOLOGY
Models of human decision making in multi-task situations: Event detection, attention allocation, and implications for computer aiding
N80-22983
Theory of the decision/problem state
[NASA-TM-81192] N80-22984
Problem solving and decisionmaking: An integration
[NASA-TM-81191] N80-22985
Clarification process: Resolution of decision-problem conditions
[NASA-TM-81193] N80-23985
PSYCHOMOTOR PERFORMANCE
Investigation of circadian rhythms on select psychomotor and neurological functions
N80-22966
PSYCHOPHYSICS
The psychophysics of sensory systems --- Russian book
A80-32836
Dynamic aspects of detection --- sensory processes in psychophysics
A80-32837
Detection threshold variance and its causes --- sensory perception in psychophysics
A80-32838
A review of advances in modern psychophysics /Strategies in psychophysical analyses/
A80-32840
Physiological premises of the laws of psychophysics
A80-32841
Possible sources of false-alarm responses and psychophysiological optimization mechanisms of weak-signal detection
A80-32842
PSYCHOPHYSIOLOGY
Possible sources of false-alarm responses and psychophysiological optimization mechanisms of weak-signal detection
A80-32842
Psychophysiological selection, crew staffing and preparation for space flight
A80-32995
Reflection of the dynamics of the psychophysiological state of the human operator in his speech signals
A80-33008
PULSE RATE
Pulse transducer with artifact signal attenuator --- heart rate sensors
[NASA-CASE-FRC-11012-1] N80-23969
PYROLYSIS
Investigation of the kinetics of pyrolysis of amino acids
A80-35859
Laboratory simulations of the pyrolytic release experiments - An interim report
A80-36070

R

RADIATION DAMAGE
Biological effects of laser radiation, volume 2. Citations from the NTIS data base
[PB80-803935] N80-22980
RADIATION EFFECTS
Suppression of the biosynthesis of sphingomyelin under gamma irradiation and exposure to ubiquinone-9
A80-33363
RADIATION MEDICINE
Positron emission tomography of the heart
[UCLA-12-1232] N80-23980
REACTION KINETICS
Investigation of the kinetics of pyrolysis of amino acids
A80-35859
Laboratory simulations of the Viking Labeled Release experiment - Kinetics following second nutrient injection and the nature of the gaseous end product
A80-36068
Photochemistry and enzymology of photosynthesis
[COO-3326-82] N80-23965
Studies of photosynthetic membranes using chlorophyll fluorescence lifetimes
[LBL-9795] N80-23966
REFLEXES
Effect of prolonged hypodynamia on certain physiological functions in dogs
[NASA-TM-75979] N80-22961
REGOLITH
Heterogeneous phase reactions of Martian volatiles with putative regolith minerals
A80-36062
RENDEZVOUS GUIDANCE
Construction of a model simulating human-operator activity in manual rendezvous control
A80-33009
RESEARCH AND DEVELOPMENT
Space exploration prospects and psychology
A80-32979
RESPIRATORY RATE
Noise effects. Effects of noise exposure on blood circulation and respiration of man. Part 1: Results of a two-hour noise exposure on groups of younger and older people
[IG-TNO-B-373-E] N80-22977
RESPIRATORY SYSTEM
Mathematical modeling, simulation, and stability of the respiratory control system
N80-22965
RETENTION (PSYCHOLOGY)
Performance in tasks differing in memory load and its relationship with habitual activity phase and body temperature
[FOA-C-52002-H6] N80-22974
RETINAL IMAGES
Binocular retinal image motion during active head rotation
A80-35778
ROBOTS
Semiautomatic and interactive control systems for manipulator robots
A80-33897
ROTATION
Static and dynamic factors in the perception of rotary motion
A80-32974

S

SECRETIONS
The ulcerogenic effect of bile and bile acid in rats during immobilization stress
[NASA-TM-76054] N80-22960
Influence of experimental hypokinesia on gastric secretory function
[NASA-TM-76034] N80-23974
SEMICIRCULAR CANALS
Vestibular recruitment
[NASA-TM-76088] N80-22971
SENSORIMOTOR PERFORMANCE
Accuracy of perception in the tracking of continuous signals
A80-32843
SENSORY PERCEPTION
The psychophysics of sensory systems --- Russian book
A80-32836
Dynamic aspects of detection --- sensory processes in psychophysics
A80-32837
Detection threshold variance and its causes --- sensory perception in psychophysics
A80-32838
Detection and recognition of pure tones in noise
A80-32839
A review of advances in modern psychophysics /Strategies in psychophysical analyses/
A80-32840
Physiological premises of the laws of psychophysics
A80-32841
Possible sources of false-alarm responses and psychophysiological optimization mechanisms of weak-signal detection
A80-32842
SENSORY STIMULATION
Effects of audio-visual stimulation on the incidence of restraint ulcers on the Wistar rat
[NASA-TM-75950] N80-22955
SEPARATION
Electrophoretic cell separation by means of microspheres
A80-34229
SHORT TAKEOFF AIRCRAFT
Total aircrew workload study for the AMST. Volume 1: Results
[AD-A076422] N80-22988
Total aircrew workload study for the AMST. Volume 2: Communication navigation description
[AD-A076498] N80-22989
SIGNAL DETECTION
Dynamic aspects of detection --- sensory processes in psychophysics
A80-32837
Detection threshold variance and its causes --- sensory perception in psychophysics
A80-32838
Detection and recognition of pure tones in noise
A80-32839
Possible sources of false-alarm responses and psychophysiological optimization mechanisms of weak-signal detection
A80-32842
SIGNAL DETECTORS
Pulse transducer with artifact signal attenuator --- heart rate sensors
[NASA-CASE-FRC-11012-1] N80-23969
SIGNAL MEASUREMENT
Sources of variability in echocardiographic measurements
A80-33874
SIGNAL RECEPTION
The psychophysics of sensory systems --- Russian book
A80-32836
Accuracy of perception in the tracking of continuous signals
A80-32843
SIGNAL TO NOISE RATIOS
Detection and recognition of pure tones in noise
A80-32839
SKIN (ANATOMY)
Control of skin blood flow during exercise by thermal reflexes and baroreflexes
A80-32750
SOCIAL FACTORS
Social and psychological problems of extended space missions
[AIAA PAPER 80-0826] A80-32854
Some aspects of space crew member interactions in emergency situations
A80-32987
SOLID SURFACES
Wipe-rinse technique for quantitating microbial contamination on large surfaces
A80-32835
SOUND TRANSDUCERS
Low frequency acoustic detection in support of human detection range prediction
[AD-A080579] N80-22973
Pulse transducer with artifact signal attenuator --- heart rate sensors
[NASA-CASE-FRC-11012-1] N80-23969

SPACE EXPLORATION
Space exploration prospects and psychology
A80-32979

SPACE FLIGHT
Psychological training of astronauts using flight simulators
A80-33001

SPACE FLIGHT STRESS
Psychological problems of space flight --- Russian book
A80-32976
The appearence of certain human psychological traits during space flight
A80-32980
The investigation of the influence of space flight conditions on the statistical characteristics of operator activity
A80-32983
The evaluation of the effectiveness of crew work under stress --- in spacecraft
A80-32986
The possibility of distinguishing between emotional stress levels according to speech indicators in aerospace activities
A80-32988
Psychological training of an astronaut operator under the conditions of emotional stress
A80-32999
Reactivity of organism in prolonged space flights
[NASA-TM-75975]
N80-22967

SPACE FLIGHT TRAINING
Psychological problems of space flight
A80-32977
Psychophysiological selection, crew staffing and preparation for space flight
A80-32995
Objectivization of the basic elements of the process of crew preparation for space flight
A80-32998
A variance method of objective evaluation of the training process and learning level of operators in flight vehicle control regimes
A80-33003
Utilization of general psychological principles for solving problems concerning the operation of man/machine systems
A80-33010

SPACE MAINTENANCE
Engineering and psychological aspects of maintenance work in space
A80-33004

SPACE MISSIONS
Space exploration prospects and psychology
A80-32979

SPACE PERCEPTION
Effects of spatial parameters on the perceptual organization of a bistable motion display
A80-32973

SPACE SIMULATORS
The modeling of human activity in space flight
A80-32982
The investigation of operator activity in the performance of standard activities under conditions simulating extended space flight
A80-32984

SPACE TRANSPORTATION SYSTEM
EVA manipulation and assembly of space structure columns
[NASA-CR-3285]
N80-23988

SPACEBORNE EXPERIMENTS
Abiogenic synthesis of nucleoside-like compounds under the influence of extremal factors
A80-33311
Greenhouses in space --- plant growth in Salyut space station experiments
A80-34499
Simulation of the Viking biology experiments - An overview
A80-36066

SPACECRAFT CABIN ATMOSPHERES
Performance characterization of a Bosch CO sub 2 reduction subsystem
[NASA-CR-152342]
N80-22987

SPACECRAFT CABIN SIMULATORS
Physiological aspects of the psychophysiological security of cosmonaut preparation on trainer apparatus
A80-33000

SPACECRAFT CONTAMINATION
Wipe-rinse technique for quantitating microbial contamination on large surfaces
A80-32835

SPACECRAFT CONTROL
The preservation capacity of spacecraft control skills during extended flights
A80-32994

SPACECRAFT ENVIRONMENTS
The investigation of the influence of space flight conditions on the statistical characteristics of operator activity
A80-32983
Greenhouses in space --- plant growth in Salyut space station experiments
A80-34499

SPACECRAFT MOTION
Psychological training of astronauts using flight simulators
A80-33001

SPACECRAFT TRACKING
The investigation of the influence of space flight conditions on the statistical characteristics of operator activity
A80-32983

SPACECREWS
Social and psychological problems of extended space missions
[AIAA PAPER 80-0826]
A80-32854
Several characteristics of crew activity during space flight
A80-32981
The evaluation of the effectiveness of crew work under stress --- in spacecraft
A80-32986
Some aspects of space crew member interactions in emergency situations
A80-32987
Psychophysiological selection, crew staffing and preparation for space flight
A80-32995
Objectivization of the basic elements of the process of crew preparation for space flight
A80-32998
Psychological selection of Spacelab payload specialists. The evaluation of German applicants
[ESA-TT-586]
N80-23987

SPACELAB
Psychological selection of Spacelab payload specialists. The evaluation of German applicants
[ESA-TT-586]
N80-23987

SPLEEN
Splenic erythropoiesis in polycythemic response of the rat to high-altitude exposure
A80-35675

STATISTICAL ANALYSIS
The investigation of the influence of space flight conditions on the statistical characteristics of operator activity
A80-32983
Uncertainty in estimates of the number of extraterrestrial civilizations
[NASA-CR-162637]
N80-23007

STERILIZATION
Effect of hydrogen chloride on the morphology of Bacillus subtilis spores
N80-23967
Sterilization by means of hydrogen chloride: Influence of process parameters on the biocidal activity
N80-23968

STRESS (PHYSIOLOGY)
Effects of audio-visual stimulation on the incidence of restraint ulcers on the Wistar rat
[NASA-TM-75950]
N80-22955
State of the mitral valve in rabbits with hypokinesia
[NASA-TM-76003]
N80-22957
Animal experimental research on microstructural behavior on the hyaline arthroidal cartilage after immobilization and remobilization
[NASA-TM-76050]
N80-22958
The ulcerogenic effect of bile and bile acid in rats during immobilization stress
[NASA-TM-76054]
N80-22960
Multivariate analysis of physiological response to environmental stress
N80-22964

Dynamics of change of lipid and monoamine metabolisms and the blood coagulation system during experimental atherosclerosis caused by restriction of movement
[NASA-TM-76033] N80-22968
State of the body in disorders of diurnal physiological rhythms and long-term hypokinesia
[NASA-TM-76051] N80-22969
Catecholamines of the adrenal medula and their morphological changes during adaptation to repeated immobilization stress
[NASA-TM-76068] N80-22970
Effects of fatigue on human behavior and performance. Citations from the NTIS data base
[PB80-804263] N80-22978
Time for recovery from successive bouts of exercise as measured by changes in the anaerobic threshold: A comparison of recovery intervals of 24 and 48 hours
N80-23970
Influence of experimental hypokinesia on gastric secretory function
[NASA-TM-76034] N80-23974
Procedure of practical exercise with students on the pathogenic effect of accelerations on the organism
[NASA-TM-76120] N80-23976

STRESS (PSYCHOLOGY)
The possibility of distinguishing between emotional stress levels according to speech indicators in aerospace activities
A80-32988
Psychological training of an astronaut operator under the conditions of emotional stress
A80-32999
The effect of restraining on the heart rate in guinea pigs
[NASA-TM-76006] N80-22962

SYSTEM EFFECTIVENESS
The evaluation of the effectiveness of crew work under stress --- in spacecraft
A80-32986
Investigation of operator work capacity under conditions of continuous activity
A80-32990

SYSTEMS ENGINEERING
Semiautomatic and interactive control systems for manipulator robots
A80-33897

T

T-38 AIRCRAFT
USAF bioenvironmental noise data handbook. Volume 128: T-38 aircraft in the AF32A-18 noise suppressor, near and far-field noise
[AD-A079868] N80-22994

TARGET RECOGNITION
Summaries of some reports of 1978 concerning results of field experiments for visibility
[DFVLR-MITT-79-11] N80-23983

TEMPERATURE EFFECTS
Role of thermal and exercise factors in the mechanism of hypervolemia
A80-32748
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
[FPRC/REPT-1376] N80-22976

THERAPY
An experimental evaluation of selected rewarming therapies for the treatment of profound accidental hypothermia, part 2
[AD-A078292] N80-23978

THERMOREGULATION
Control of skin blood flow during exercise by thermal reflexes and baroreflexes
A80-32750

THRESHOLDS (PERCEPTION)
Detection threshold variance and its causes --- sensory perception in psychophysics
A80-32838
Possible sources of false-alarm responses and psychophysiological optimization mechanisms of weak-signal detection
A80-32842

THYROID GLAND
Evaluation of thyroid hormones by gas chromatography
[DFVLR-FB-79-07] N80-22975

TIME SHARING
Preparation cost and dual-task performance: Further evidence against a general time-sharing factor
[AD-A080857] N80-23986

TISSUES (BIOLOGY)
Excursion of vibrating microelectrodes in tissue
A80-32751
Temperature and frequency dependence of ultrasonic attenuation in selected tissues
A80-32833
State of the mitral valve in rabbits with hypokinesia
[NASA-TM-76003] N80-22957

TOMOGRAPHY
Positron emission tomography of the heart
[UCLA-12-1232] N80-23980

TRAINING EVALUATION
A variance method of objective evaluation of the training process and learning level of operators in flight vehicle control regimes
A80-33003

TRANSLATIONAL MOTION
Translational motion of anthropomorphic mechanisms in the pulsed excitation mode
A80-33881

TRANSMISSION LINES
Proceedings of the Workshop on Electrical and Biological Effects Related to HYDC Transmission
[PNL-3121] N80-23979

TRANSPORT AIRCRAFT
Total aircrew workload study for the AMST. Volume 1: Results
[AD-A076422] N80-22988
Total aircrew workload study for the AMST. Volume 2: Communication navigation description
[AD-A076498] N80-22989

TUNING
Cochlear anatomy related to cochlear micromechanics - A review
A80-35401

U

U.S.S.R.
Automated system for diagnosing craniocerebral injury
[NASA-TM-76097] N80-22972
Ideas of I. M. Sechenov in aviation and space medicine
[NASA-TM-75976] N80-23973

ULCERS
Effects of audio-visual stimulation on the incidence of restraint ulcers on the Wistar rat
[NASA-TM-75950] N80-22955
The ulcerogenic effect of bile and bile acid in rats during immobilization stress
[NASA-TM-76054] N80-22960

ULTRASONIC RADIATION
Temperature and frequency dependence of ultrasonic attenuation in selected tissues
A80-32833

V

VERBAL COMMUNICATION
The feasibility and psychological aspects of verbal interaction of man and automatic systems
A80-33007

VERY LOW FREQUENCIES
Low frequency acoustic detection in support of human detection range prediction
[AD-A080579] N80-22973

VESTIBULES
Vestibular recruitment
[NASA-TM-76088] N80-22971

VIBRATION EFFECTS
On auditory evoked potentials and heart rate in man during whole-body vibration
A80-36250

VIKING LANDER SPACECRAFT
The implications and limitations of the findings of the Viking organic analysis experiment
A80-36059
Simulation of the Viking biology experiments - An overview
A80-36066

Laboratory simulations of the Viking Labeled Release experiment - Kinetics following second nutrient injection and the nature of the gaseous end product
A80-36068
A model of Martian surface chemistry
A80-36069
Laboratory simulations of the pyrolytic release experiments - An interim report
A80-36070
The Viking mission - Implications for life on Mars
A80-36071

VIKING LANDER 2
Completion of the Viking Labeled Release experiment on Mars
A80-36067

VIRUSES
Inactivation of enteroviruses by ozone
N80-22954

VISIBILITY
Summaries of some reports of 1978 concerning results of field experiments for visibility
[DFVLR-MITT-79-11] N80-23983

VISUAL OBSERVATION
Engineering-psychological aspects of optimizing human visual work capacity in space flight
A80-33006

VISUAL PERCEPTION
Accuracy of perception in the tracking of continuous signals
A80-32843
Static and dynamic factors in the perception of rotary motion
A80-32974
Grating induction - A new type of aftereffect
A80-35779
Color vision. Citations from the NTIS data base
[PB80-803992] N80-22981

VOICE COMMUNICATION
The feasibility and psychological aspects of verbal interaction of man and automatic systems
A80-33007
Reflection of the dynamics of the psychophysiological state of the human operator in his speech signals
A80-33008

VORTICES
Rhythmic vortex currents and their significance in human physiology
[NPIS-1/1979] N80-23982

W

WALKING MACHINES
Translational motion of anthropomorphic mechanisms in the pulsed excitation mode
A80-33881

WEIGHTLESSNESS
Adaptation to weightlessness
A80-32996
Reactivity of organism in prolonged space flights
[NASA-TM-75975] N80-22967

WORK CAPACITY
Assessment of physical working capacity in clinic and athletics --- Russian book
A80-32846
Assurance of stable work capacity during prolonged space flight
A80-32989
Investigation of operator work capacity under conditions of continuous activity
A80-32990
The preservation capacity of spacecraft control skills during extended flights
A80-32994
Engineering-psychological aspects of optimizing human visual work capacity in space flight
A80-33006

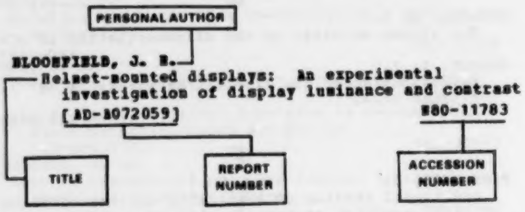
WORKLOADS (PSYCHOPHYSIOLOGY)
The psychophysiological characteristics of air traffic controller activity
A80-36225
Total aircrew workload study for the AMST. Volume 1: Results
[AD-A076422] N80-22988
Total aircrew workload study for the AMST. Volume 2: Communication navigation description
[AD-A076498] N80-22989

blank page

PERSONAL AUTHOR INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 209)* **AUGUST 1980**

Typical Personal Author Index Listing


PERSONAL AUTHOR
BLOOMFIELD, J. R.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059]
N80-11783
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ALEKSEEV, V. N.
Changes in concentration of 2,3-glycerodiphosphoric acid in rat erythrocytes during adaptation to hypoxia
A80-35860

ALIMURUNG, B. N.
Sources of variability in echocardiographic measurements
A80-33874

ALLTON, C. S.
Manned maneuvering unit latching mechanism
N80-23497

ANAKHOV, N. P.
Physiological aspects of the psychophysiological security of cosmonaut preparation on trainer apparatus
A80-33000

ANTHONY, A.
Preliminary analysis of wind tunnel test of a 1/2 scale model of an ejecting crewman and ejection seat
[AD-A069229] N80-22990

ARTIUKHIN, IU. P.
Several characteristics of crew activity during space flight
A80-32981

AULIK, I. V.
Assessment of physical working capacity in clinic and athletics
A80-32846

B

BACHMANN, D. B.
Preparation cost and dual-task performance: Further evidence against a general time-sharing factor
[AD-A080857] N80-23986

BAIRD, A. K.
Heterogeneous phase reactions of Martian volatiles with putative regolith minerals
A80-36062

BAISHUKUROVA, A. K.
Changes in concentration of 2,3-glycerodiphosphoric acid in rat erythrocytes during adaptation to hypoxia
A80-35860

BARGHOORN, E. S.
The Viking mission - Implications for life on Mars
A80-36071

BELOZEROV, A. V.
Psychological training of astronauts using flight simulators
A80-33001

BENSON, J. B.
Calibration and test procedures for three year old child dummy
[PB80-112246] N80-23006

BERDAHL, B. J.
A model of Martian surface chemistry
A80-36069

BEREGOVOI, G. T.
The role of the human factor in space flights
A80-32978

BERNAUER, E. M.
Role of thermal and exercise factors in the mechanism of hypervolemia
A80-32748

Exercise training-induced hypervolemia - Role of plasma albumin, renin, and vasopressin
A80-32749

BIEMANN, K.
The implications and limitations of the findings of the Viking organic analysis experiment
A80-36059

BLOMQUIST, W.
Biochemical changes in humans upon exposure to ozone and exercise
[PB80-105554] N80-22982

BLUMENSTEIN, B. A.
Sources of variability in echocardiographic measurements
A80-33874

BLUTH, B. J.
Social and psychological problems of extended space missions
[AIAA PAPER 80-0826] A80-32854

BOGDASHEVSKII, R. B.
Objectivization of the basic elements of the process of crew preparation for space flight
A80-32998

Psychological training of astronauts using flight simulators
A80-33001

BOVIN, B. G.
Physiological premises of the laws of psychophysics
A80-32841

BRACKEN, T. D.
Proceedings of the Workshop on Electrical and Biological Effects Related to HVDC Transmission
[PNL-3121] N80-23979

BRAUNSTEIN, M. L.
Static and dynamic factors in the perception of rotary motion
A80-32974

BREWINGTON, G. T.
Studies of photosynthetic membranes using chlorophyll fluorescence lifetimes
[LBL-9795] N80-23966

BROCK, P. J.
Exercise training-induced hypervolemia - Role of plasma albumin, renin, and vasopressin
A80-32749

BROIDA, J. M.
Time for recovery from successive bouts of exercise as measured by changes in the anaerobic threshold: A comparison of recovery intervals of 24 and 48 hours
N80-23970

BROSE, A.
Acute cardiovascular adaptation to altitude
A80-34475

BRUCE, R.
Biochemical changes in humans upon exposure to ozone and exercise
[PB80-105554] N80-22982

BUDCZINSKI, C.
Psychological selection of Spacelab payload specialists. The evaluation of German applicants
[ESA-TT-586] N80-23987

BUELL, R.
Summaries of some reports of 1978 concerning results of field experiments for visibility
[DFVLR-MITT-79-11] N80-23983

C

CARTER, A. D.
Sources of variability in echocardiographic measurements
A80-33874

CASH, W. H., JR.
Pulse transducer with artifact signal attenuator
[NASA-CASE-FRC-11012-1] N80-23969

CAUFFIELD, E. J.
A microprocessor-controlled echocardiographic tracking system
A80-33183

CESSION-FOSSION, A. M.
Acute cardiovascular adaptation to altitude
A80-34475

CHANEY, S.
Biochemical changes in humans upon exposure to ozone and exercise
[PB80-105554] N80-22982

CHERNYSHEV, A. P.
Accuracy of perception in the tracking of continuous signals
A80-32843

CHUPRIKOVA, N. I.
Possible sources of false-alarm responses and psychophysiological optimization mechanisms of weak-signal detection
A80-32842

CLARK, B. C.
Heterogeneous phase reactions of Martian volatiles with putative regolith minerals
A80-36062

COCHRANE, L. A.
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
[FPRC/REPT-1376] N80-22976

COLLEWIJN, H.
Binocular retinal image motion during active head rotation
A80-35778

CONVERTINO, V. A.
Role of thermal and exercise factors in the mechanism of hypervolemia
A80-32748
Exercise training-induced hypervolemia - Role of plasma albumin, renin, and vasopressin
A80-32749

CRAWFORD, D. W.
Excursion of vibrating microelectrodes in tissue
A80-32751

CROISSETTE, D. H. L.
Temperature and frequency dependence of ultrasonic attenuation in selected tissues
A80-32833

D

DEWITT, P.
Biochemical changes in humans upon exposure to ozone and exercise
[PB80-105554] N80-22982

DIATLOV, E. G.
The role and significance of the crew instructor in cosmonaut training
A80-33002

DIETERLY, D. L.
Theory of the decision/problem state
[NASA-TM-81192] N80-22984
Problem solving and decisionmaking: An integration
[NASA-TM-81191] N80-22985
Clarification process: Resolution of decision-problem conditions
[NASA-TM-81193] N80-23985

DMITROV, V. A.
The role and significance of the crew instructor in cosmonaut training
A80-33002

DRUCKER, L. W.
Sources of variability in echocardiographic measurements
A80-33874

DUNKAN, D.
Detection and recognition of pure tones in noise
A80-32839

E

EDELSON, E. H.
The effect of clays on the oligomerization of HCN
A80-36198

EGOROV, I. A.
Investigation of the kinetics of pyrolysis of amino acids
A80-35859

F

FARNWORTH, B.
Additional studies of chemically treated clothing for personnel protection from biting flies
[AD-A080612] N80-23002

FELDSTEIN, C.
Excursion of vibrating microelectrodes in tissue
A80-32751

FELNER, J. M.
Sources of variability in echocardiographic measurements
A80-33874

FERRIS, J. P.
The effect of clays on the oligomerization of HCN
A80-36198

FIDELL, S. A.
Low frequency acoustic detection in support of human detection range prediction
[AD-A080579] N80-22973

FIROUZTALE, E.
Mathematical modeling, simulation, and stability of the respiratory control system
N80-22965

FORMALSKII, A. M.
Translational motion of anthropomorphic mechanisms in the pulsed excitation mode
A80-33881

FREIVALDS, A.
Investigation of circadian rhythms on select psychomotor and neurological functions
N80-22966

FRISHMAN, E. Z.
Detection threshold variance and its causes
A80-32838

FROBERG, J. E.
Performance in tasks differing in memory load and its relationship with habitual activity phase and body temperature
[FOA-C-52002-H6] N80-22974

FROLOV, M. I.
The psychophysiological characteristics of air traffic controller activity
A80-36225

G

GAMMELL, P. M.
Temperature and frequency dependence of ultrasonic attenuation in selected tissues
A80-32833

GAZENKO, O. G.
Ideas of I. M. Sechenov in aviation and space medicine
[NASA-TM-75976] N80-23973

GEISSLER, H.-G.
A review of advances in modern psychophysics /Strategies in psychophysical analyses/
A80-32840

GEORGE, F. L.
Proceedings of the Fifteenth Annual Conference on Manual Control
[AD-A080563] N80-23004

GIBSON, T. M.
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
[FPRC/REPT-1376] N80-22976

GLAZKOV, IU. N.
The design of maneuvering units for cosmonauts in referenceless space and requirements for engineering psychology
A80-33005

GOETERS, K. M.
Psychological selection of Spacelab payload specialists. The evaluation of German applicants
[ESA-TT-586] N80-23987

GOLDSTEIN, G.
Biochemical changes in humans upon exposure to ozone and exercise
[PB80-105554] N80-22982

GOVINDARAJ, T.
Modeling the human as a controller in a multi-task environment
N80-22986

GREEN, D. M.
Detection and recognition of pure tones in noise
A80-32839
Low frequency acoustic detection in support of human detection range prediction
[AD-A080579] N80-22973

GREENLEAF, J. E.
Role of thermal and exercise factors in the mechanism of hypervolemia
A80-32748
Exercise training-induced hypervolemia - Role of plasma albumin, renin, and vasopressin
A80-32749

GREENSTEIN, J. S.
Models of human decision making in multi-task situations: Event detection, attention allocation, and implications for computer aiding
N80-22983

GUNNING, D.
Total aircrew workload study for the AMST. Volume 1: Results
[AD-A076422] N80-22988
Total aircrew workload study for the AMST. Volume 2: Communication navigation description
[AD-A076498] N80-22989

GURCHIN, A. F.
Automated system for diagnosing craniocerebral injury
[NASA-TM-76097] N80-22972

GVISHIANI, G. S.
Dynamics of change of lipid and monoamine metabolisms and the blood coagulation system during experimental atherosclerosis caused by restriction of movement
[NASA-TM-76033] N80-22968

H

HALLICK, T. M.
Performance characterization of a Bosch CO sub 2 reduction subsystem
[NASA-CR-152342] N80-22987

HALLORAN, T. O.
Preparation cost and dual-task performance: Further evidence against a general time-sharing factor
[AD-A080857] N80-23986

HALVORSON, H. O.
The Viking mission - Implications for life on Mars
A80-36071

HARNETT, R. M.
Experimental evaluations of selected immersion hypothermia protection equipment
[AD-A080470] N80-23003
An experimental evaluation of selected rewarming therapies for the treatment of profound accidental hypothermia, part 2
[AD-A078292] N80-23978

HARRISON, E. A.
Biological effects of laser radiation, volume 2. Citations from the NTIS data base
[PB80-803935] N80-22980
Color vision. Citations from the NTIS data base
[PB80-803992] N80-22981

HARRISON, M. H.
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
[FPRC/REPT-1376] N80-22976

HAWKINS, H. L.
Preparation cost and dual-task performance: Further evidence against a general time-sharing factor
[AD-A080857] N80-23986

HEPPNER, D. B.
Performance characterization of a Bosch CO sub 2 reduction subsystem
[NASA-CR-152342] N80-22987

HEYSER, R. C.
Temperature and frequency dependence of ultrasonic attenuation in selected tissues
A80-32833

HOCMAN, G.
Catecholamines of the adrenal medula and their morphological changes during adaptation to repeated immobilization stress
[NASA-TM-76068] N80-22970

HOFFMANN, H. E.
Summaries of some reports of 1978 concerning results of field experiments for visibility
[DFVLR-MITT-79-11] N80-23983

HOLZER, G.
The photolytic degradation and oxidation of organic compounds under simulated Martian conditions
A80-36065

HORONJEFF, R. D.
Low frequency acoustic detection in support of human detection range prediction
[AD-A080579] N80-22973

HOSTETLER, M. S.
A microprocessor-controlled echocardiographic tracking system
A80-33183

HUBBARD, J. S.
Laboratory simulations of the pyrolytic release experiments - An interim report
A80-36070

HUNTEN, D. M.
Possible oxidant sources in the atmosphere and surface of Mars
A80-36060

HUSS, G. R.
Heterogeneous phase reactions of Martian volatiles with putative regolith minerals
A80-36062

I

IAKOVLEV, A. J.
The investigation of the influence of space flight conditions on the statistical characteristics of operator activity
A80-32983

IAROPOLOV, V. I.
Objectivization of the basic elements of the process of crew preparation for space flight
A80-32998

IUSHCHENKO, A. S.
Semiautomatic and interactive control systems for manipulator robots
A80-33897

J

JACKSON, A. J.
Coronary plexus in man and monkey
N80-23971

JOHNSON, M. J.
Sources of variability in echocardiographic measurements
A80-33874

JUCHMES, J.
Acute cardiovascular adaptation to altitude
A80-34475

JUKES, T. H.
The Viking mission - Implications for life on Mars
A80-36071

K

KANABUS, E. W.
Excursion of vibrating microelectrodes in tissue
A80-32751

KAPLAN, I. R.
The Viking mission - Implications for life on Mars
A80-36071

KAPLAN, N.
A new estimate of sequence divergence of mitochondrial DNA using restriction endonuclease mappings
A80-36197

KAZACHKOV, V. N.
Engineering-psychological aspects of optimizing human visual work capacity in space flight
A80-33006

KEIL, L. C.
Exercise training-induced hypervolemia - Role of plasma albumin, renin, and vasopressin
A80-32749

KENLEY, S. L.
Heterogeneous phase reactions of Martian volatiles with putative regolith minerals
A80-36062

KETCHUM, R. D.
Preparation cost and dual-task performance: Further evidence against a general time-sharing factor
[AD-A080857] N80-23986

KHECHINASHVILI, G. G.
Role of adrenals in the mobilization of carbohydrate and fat resources after overstimulation of rats
[NASA-TM-75974] N80-22956

KHENOKH, M. A.
Abiogenic synthesis of nucleoside-like compounds under the influence of extremal factors
A80-33311

KHLUDEEV, E. E.
Engineering-psychological aspects of optimizing human visual work capacity in space flight
A80-33006

KHRUNOV, E. V.
Engineering-psychological aspects of optimizing human visual work capacity in space flight
A80-33006

KIM, D.
Splenic erythropoiesis in polycythemic response of the rat to high-altitude exposure
A80-35675

KIRSCHNER, L. E.
Wipe-rinse technique for quantitating microbial contamination on large surfaces
A80-32835

KISELEV, S. A.
The possibility of distinguishing between emotional stress levels according to speech indicators in aerospace activities
A80-32988

KITAEV-SMYK, L. A.
Adaptation to weightlessness
A80-32996

KLEIN, H. P.
Simulation of the Viking biology experiments - An overview
A80-36066

KLICPERA, M. W.
Sources of variability in echocardiographic measurements
A80-33874

KOBAKHIDZE, N. G.
Dynamics of change of lipid and monoamine metabolisms and the blood coagulation system during experimental atherosclerosis caused by restriction of movement
[NASA-TM-76033] N80-22968

KOBAYASHI, M.
Insulin binding and glucose uptake of adipocytes in rats adapted to hypergravitational force
A80-35751

KOLESNIKOV, G. N.
The modeling of human activity in space flight
A80-32982

KOLOMIITSEVA, I. K.
Suppression of the biosynthesis of sphingomyelin under gamma irradiation and exposure to ubiquinone-9
A80-33363

KOLTSOV, A. N.
The psychophysiological characteristics of air traffic controller activity
A80-36225

KONSHIN, N. I.
Abiogenic synthesis of nucleoside-like compounds under the influence of extremal factors
A80-33311

KOTLER, M. N.
Clinical uses of two dimensional echocardiography
A80-33875

KOVALENKO, Y. A.
Ideas of I. M. Sechenov in aviation and space medicine
[NASA-TM-75976] N80-23973

KREMLEVA, E. V.
Automated system for diagnosing craniocerebral injury
[NASA-TM-76097] N80-22972

KRYLOV, V. IU.
Possible means for increasing the effectiveness of cosmonaut activity
A80-32985

KRYLOVA, N. V.
Possible means for increasing the effectiveness of cosmonaut activity
A80-32985
The possibility of distinguishing between emotional stress levels according to speech indicators in aerospace activities
A80-32988

KUEHNEMANN, W.
Summaries of some reports of 1978 concerning results of field experiments for visibility
[DFVLR-MITT-79-11] N80-23983

KUHL, D. E.
Positron emission tomography of the heart
[UCLA-12-1232] N80-23980

KUTNER, M. H.
Sources of variability in echocardiographic measurements
A80-33874

KUZICHEVA, E. A.
Abiogenic synthesis of nucleoside-like compounds under the influence of extremal factors
A80-33311

KUZIN, A. M.
Suppression of the biosynthesis of sphingomyelin under gamma irradiation and exposure to ubiquinone-9
A80-33363

KVETNANSKY, R.
Catecholamines of the adrenal medula and their morphological changes during adaptation to repeated immobilization stress
[NASA-TM-76068] N80-22970

L

LAMBERT, R.
Effects of audio-visual stimulation on the incidence of restraint ulcers on the Wistar rat
[NASA-TM-75950] N80-22955

LANGLEY, C. H.
A new estimate of sequence divergence of mitochondrial DNA using restriction endonuclease mappings
A80-36197

LAVRENTEV, G. A.
Investigation of the kinetics of pyrolysis of amino acids
A80-35859

LAWLESS, J. G.
The role of metal ions in chemical evolution - Polymerization of alanine and glycine in a cation-exchanged clay environment
A80-36195

LAYTON, W. M., JR.
Splenic erythropoiesis in polycythemic response of the rat to high-altitude exposure
A80-35675

LEBEDEV, A. N.
Physiological premises of the laws of psychophysics
A80-32841

LECOMTE, J.
Acute cardiovascular adaptation to altitude
A80-34475

LEE, R. A.
USAF bioenvironmental noise data handbook. Volume 128: T-38 aircraft in the AF32A-18 noise suppressor, near and far-field noise
[AD-A079868] N80-22994
USAF bioenvironmental noise data handbook. Volume 131: F-4 aircraft in the AF32A-14 noise suppressor, near and far-field noise
[AD-A079869] N80-22995

USAF bioenvironmental noise data handbook. Volume 132: F-5 aircraft in the AF32A-16 noise suppressor, near and far-field noise
[AD-A079870] N80-22996
USAF bioenvironmental noise data handbook. Volume 133: F-15 aircraft in the AF32A-23 noise suppressor, near and far-field noise
[AD-A079871] N80-22997
USAF bioenvironmental noise data handbook. Volume 134. KC-135A aircraft in the modified AF32A-52A noise suppressor, far-field noise
[AD-A079872] N80-22998
USAF bioenvironmental noise data handbook. Volume 135: F-106 aircraft in the AF32A-17 noise suppressor, near and far-field noise
[AD-A079873] N80-22999
USAF bioenvironmental noise data handbook. Volume 136: F-111A aircraft in the AF32A-13 noise suppressor, far-field noise
[AD-A079874] N80-23000
USAF bioenvironmental noise data handbook. Volume 140: F-16 aircraft in the AF32A-25 noise suppressor, near and far-field noise
[AD-A079875] N80-23001

LELIEVELD, H. L. M.
Effect of hydrogen chloride on the morphology of Bacillus subtilis spores N80-23967
Sterilization by means of hydrogen chloride: Influence of process parameters on the biocidal activity N80-23968

LEONOV, A. A.
Space exploration prospects and psychology A80-32979

LESKOV, A. G.
Semiautomatic and interactive control systems for manipulator robots A80-33897

LEVI, N.
The role of metal ions in chemical evolution - Polymerization of alanine and glycine in a cation-exchanged clay environment A80-36195

LEVIN, G. V.
Completion of the Viking Labeled Release experiment on Mars A80-36067
Laboratory simulations of the Viking Labeled Release experiment - Kinetics following second nutrient injection and the nature of the gaseous end product A80-36068

LIM, D. J.
Cochlear anatomy related to cochlear micromechanics - A review A80-35401

LINDSAY, I. S.
Additional studies of chemically treated clothing for personnel protection from biting flies
[AD-A080612] N80-23002

LITSOV, A. N.
Assurance of stable work capacity during prolonged space flight A80-32989

LOBANOV, E. F.
A variance method of objective evaluation of the training process and learning level of operators in flight vehicle control regimes A80-33003

LOMOV, B. F.
The psychophysics of sensory systems A80-32836
Psychological problems of space flight A80-32976
Psychological problems of space flight A80-32977

LOUGHEAD, T. E.
EVA manipulation and assembly of space structure columns
[NASA-CR-3285] N80-23988

LUCHKO, G. D.
Automated system for diagnosing craniocerebral injury
[NASA-TM-76097] N80-22972

LUKASKI, H. C.
Relationship between urinary 3-methylhistidine excretion and components of body composition in man N80-23972

M

MACK, R.
Heterogeneous phase reactions of Martian volatiles with putative regolith minerals A80-36062

MADERO, R. P.
Total aircrew workload study for the AMST. Volume 1: Results
[AD-A076422] N80-22988
Total aircrew workload study for the AMST. Volume 2: Communication navigation description
[AD-A076498] N80-22989

MALINDZAK, G. S., JR.
A microprocessor-controlled echocardiographic tracking system A80-33183

MANGEL, S.
Electrophoretic cell separation by means of microspheres A80-34229

MARGULIS, L.
The Viking mission - Implications for life on Mars A80-36071

MARKOVA, O. O.
Influence of experimental hypokinesia on gastric secretory function
[NASA-TM-76034] N80-23974

MARTIN, F.
Effects of audio-visual stimulation on the incidence of restraint ulcers on the Wistar rat
[NASA-TM-75950] N80-22955

MARTIN, R. S.
Effects of audio-visual stimulation on the incidence of restraint ulcers on the Wistar rat
[NASA-TM-75950] N80-22955

MASHINSKII, A. L.
Abiogenic synthesis of nucleoside-like compounds under the influence of extremal factors A80-33311

MAZUR, P.
The Viking mission - Implications for life on Mars A80-36071

MEDVEDEV, V. S.
Semiautomatic and interactive control systems for manipulator robots A80-33897

MELVIN, J. W.
Calibration and test procedures for three year old child dummy
[PB80-112246] N80-23006

MESHCHERIAKOV, I. P.
Construction of a model simulating human-operator activity in manual rendezvous control A80-33009

METLIK, V. I.
Engineering-psychological aspects of optimizing human visual work capacity in space flight A80-33006

MIKISKOVA, H.
The effect of restraining on the heart rate in guinea pigs
[NASA-TM-76006] N80-22962

MIKULAJ, L.
Catecholamines of the adrenal medula and their morphological changes during adaptation to repeated immobilization stress
[NASA-TM-76068] N80-22970

MILLER, R. R.
Diagnosis and quantification of aortic stenosis with pulsed Doppler echocardiography A80-33873

MILOV, M.
Greenhouses in space A80-34499

MINAEV, S. A.
Construction of a model simulating human-operator activity in manual rendezvous control A80-33009

MINTZ, G. S.
Clinical uses of two dimensional echocardiography A80-33875

MITRO, A.
Catecholamines of the adrenal medula and their morphological changes during adaptation to repeated immobilization stress
[NASA-TM-76068] N80-22970

MOISEEVA, O. I.
Changes in concentration of 2,3-glycerodiphosphoric acid in rat erythrocytes during adaptation to hypoxia
A80-35860

MOISEYEVA, N. I.
Automated system for diagnosing craniocerebral injury
[NASA-TM-76097] N80-22972

MONDON, C. E.
Insulin binding and glucose uptake of adipocytes in rats adapted to hypergravitational force
A80-35751

MOROZOV, A. V.
Automated system for diagnosing craniocerebral injury
[NASA-TM-76097] N80-22972

MOSS, R.
Total aircrew workload study for the AMST. Volume 1: Results
[AD-A076422] N80-22988
Total aircrew workload study for the AMST. Volume 2: Communication navigation description
[AD-A076498] N80-22989

MOUNT, N. M.
The effect of clays on the oligomerization of HCN
A80-36198

MULLER, K.
Biochemical changes in humans upon exposure to ozone and exercise
[PB80-105554] N80-22982

N

NAKAYAMA, K.
Grating induction - A new type of aftereffect
A80-35779

NECHITAILO, G. S.
Abiogenic synthesis of nucleoside-like compounds under the influence of extremal factors
A80-33311

NELSESTUEN, G. L.
Origin of life - Consideration of alternatives to proteins and nucleic acids
A80-32685

NERREN, B. H.
Electrophoretic cell separation by means of microspheres
A80-34229

NIKITINA, L. I.
Automated system for diagnosing craniocerebral injury
[NASA-TM-76097] N80-22972

NIKONOV, A. V.
Reflection of the dynamics of the psychophysiological state of the human operator in his speech signals
A80-33008

NORDHAUSEN, R.
Psychological selection of Spacelab payload specialists. The evaluation of German applicants
[ESA-TT-586] N80-23987

NOSULENKO, V. N.
Dynamic aspects of detection
A80-32837

NOVIKOV, M. A.
Psychophysiological selection, crew staffing and preparation for space flight
A80-32995

NOVOSELOVA, E. G.
Suppression of the biosynthesis of sphingomyelin under gamma irradiation and exposure to ubiquinone-9
A80-33363

O

OBOLNIKOVA, E. A.
Suppression of the biosynthesis of sphingomyelin under gamma irradiation and exposure to ubiquinone-9
A80-33363

OBRIEN, D. L.
Heterogeneous phase reactions of Martian volatiles with putative regolith minerals
A80-36062

OBRIEN, E. M.
Experimental evaluations of selected immersion hypothermia protection equipment
[AD-A080470] N80-23003
An experimental evaluation of selected rewarming therapies for the treatment of profound accidental hypothermia, part 2
[AD-A078292] N80-23978

OLLICH-RODRIQUEZ, E.
Preparation cost and dual-task performance: Further evidence against a general time-sharing factor
[AD-A080857] N80-23986

ORO, J.
The photolytic degradation and oxidation of organic compounds under simulated Martian conditions
A80-36065

OSCZENSKI, R. J.
Additional studies of chemically treated clothing for personnel protection from biting flies
[AD-A080612] N80-23002

OU, L. C.
Splenic erythropoiesis in polycythemic response of the rat to high-altitude exposure
A80-35675

OYAMA, J.
Insulin binding and glucose uptake of adipocytes in rats adapted to hypergravitational force
A80-35751

OYAMA, V. I.
A model of Martian surface chemistry
A80-36069

P

PAKHOMOV, A. P.
Dynamic aspects of detection
A80-32837

PANTLE, A. J.
Effects of spatial parameters on the perceptual organization of a bistable motion display
A80-32973

PARRY, W. R.
Clinical uses of two dimensional echocardiography
A80-33875

PASSCHIER-VERMEER, W.
Noise effects. Effects of noise exposure on blood circulation and respiration of man. Part 1: Results of a two-hour noise exposure on groups of younger and older people
[IG-TNO-B-373-E] N80-22977

PASYNKOVA, A. V.
Physiological premises of the laws of psychophysics
A80-32841

PAVLOV, V. L.
Some aspects of space crew member interactions in emergency situations
A80-32987

PETERSIK, J. T.
Effects of spatial parameters on the perceptual organization of a bistable motion display
A80-32973

PETROVICK, M. L.
A microprocessor-controlled echocardiographic tracking system
A80-33183

PHELPS, M. E.
Positron emission tomography of the heart
[UCLA-12-1232] N80-23980

POLHEMUS, J. T.
Pulse transducer with artifact signal attenuator
[NASA-CASE-FRC-11012-1] N80-23969

POLK, D. W.
A discriminant analysis of pilot performance prediction and selection for air-to-air combat
N80-23984

POPOV, A. K.
The preservation capacity of spacecraft control skills during extended flights
A80-32994

POPOV, E. P.
Semiautomatic and interactive control systems for manipulator robots
A80-33897

POPOV, V. A.
The preservation capacity of spacecraft control skills during extended flights
A80-32994

POPOVICH, P. R.
Several characteristics of crew activity during space flight
A80-32981

POTKIN, V. Y.
Incorporation of glycine-2-C-14 in acid-insoluble proteins of rat bones and teeth during hypokinesia and administration of thyrocalcitonine
[NASA-TM-75981] N80-22959

POWELL, R. G.
USAF bioenvironmental noise data handbook. Volume 75: C-141A aircraft, near and far-field noise
[AD-A079865] N80-22991
USAF bioenvironmental noise data handbook. Volume 120. C-5A aircraft, near and far-field noise
[AD-A079866] N80-22992
USAF bioenvironmental noise data handbook. Volume 121: F-4C aircraft, near and far-field noise
[AD-A079867] N80-22993

POZDNIAKOV, V. V.
Investigation of operator work capacity under conditions of continuous activity
A80-32990

PROSHCHERUK, V. A.
Influence of experimental hypokinesia on gastric secretory function
[NASA-TM-76034] N80-23974

PRUETT, E. C.
EVA manipulation and assembly of space structure columns
[NASA-CR-3285] N80-23988

PRUITT, J. R.
Experimental evaluations of selected immersion hypothermia protection equipment
[AD-A080470] N80-23003
An experimental evaluation of selected rewarming therapies for the treatment of profound accidental hypothermia, part 2
[AD-A078292] N80-23978

PULEO, J. R.
Wipe-rinse technique for quantitating microbial contamination on large surfaces
A80-32835

Q

QUINONES, M. A.
Diagnosis and quantification of aortic stenosis with pulsed Doppler echocardiography
A80-33873

R

RAABE, W.
Evaluation of thyroid hormones by gas chromatography
[DFVLR-FB-79-07] N80-22975

RADMER, R.
Photochemistry and enzymology of photosynthesis
[COO-3326-82] N80-23965

RAZIN, S. N.
State of the body in disorders of diurnal physiological rhythms and long-term hypokinesia
[NASA-TM-76051] N80-22969

REBYAKOVA, N. A.
On the preservation of equilibrium in the orthograde and inverted positions of the body
[NASA-TM-76141] N80-23977

REFIOR, H. J.
Animal experimental research on microstructural behavior on the hyaline arthroidal cartilage after immobilization and remobilization
[NASA-TM-76050] N80-22958

REICHER, G. M.
Preparation cost and dual-task performance: Further evidence against a general time-sharing factor
[AD-A080857] N80-23986

REMBAUM, A.
Electrophoretic cell separation by means of microspheres
A80-34229

REPP, B.
Psychological selection of Spacelab payload specialists. The evaluation of German applicants
[ESA-TT-586] N80-23987

RIABININ, L. V.
A variance method of objective evaluation of the training process and learning level of operators in flight vehicle control regimes
A80-33003

RIGDEN, P. W.
Cockpit thermal stress and aircrew thermal strain during routine Jaguar operations
[FPRC/REPT-1376] N80-22976

ROBERTS, M. F.
Control of skin blood flow during exercise by thermal reflexes and baroreflexes
A80-32750

RODCHENKO, V. V.
A variance method of objective evaluation of the training process and learning level of operators in flight vehicle control regimes
A80-33003

RODIONOV, K. K.
Automated system for diagnosing craniocerebral injury
[NASA-TM-76097] N80-22972

ROEMER, L. E.
A microprocessor-controlled echocardiographic tracking system
A80-33183

ROEVEKAMP, A. J. M.
Noise effects. Effects of noise exposure on blood circulation and respiration of man. Part 1: Results of a two-hour noise exposure on groups of younger and older people
[IG-TNO-B-373-E] N80-22977

ROLAND, G.
Acute cardiovascular adaptation to altitude
A80-34475

ROY, D.
Inactivation of enteroviruses by ozone
N80-22954

ROZVODOVSKIY, V. I.
Influence of experimental hypokinesia on gastric secretory function
[NASA-TM-76034] N80-23974

RUSAKOVA, G.
Greenhouses in space
A80-34499

RYCHKO, A. V.
State of the body in disorders of diurnal physiological rhythms and long-term hypokinesia
[NASA-TM-76051] N80-22969

S

SADOV, V. A.
Physiological premises of the laws of psychophysics
A80-32841

SAMOKHVALOV, G. I.
Suppression of the biosynthesis of sphingomyelin under gamma irradiation and exposure to ubiquinone-9
A80-33363

SAMSONOV, N. D.
Psychological problems of space flight
A80-32976

SARAEV, I. F.
Assurance of stable work capacity during prolonged space flight
A80-32989

SCHELBERT, H. R.
Positron emission tomography of the heart
[UCLA-12-1232] N80-23980

SCHLANT, R. C.
Sources of variability in echocardiographic measurements
A80-33874

SCHNEIDER, P. E. M.
Rhythmic vortex currents and their significance in human physiology
[MPIS-1/1979] N80-23982

SCHUBERT, F. H.
Performance characterization of a Bosch CO sub 2 reduction subsystem
[NASA-CR-152342] N80-22987

SCHWARTZ, E.
Psychological selection of Spacelab payload specialists. The evaluation of German applicants
[ESA-TT-586] N80-23987

SEGAL, B. L.
Clinical uses of two dimensional echocardiography
A80-33875

SEIDEL, R.
On auditory evoked potentials and heart rate in man during whole-body vibration
A80-36250

SEMENOV, L. P.
On the preservation of equilibrium in the orthograde and inverted positions of the body
[NASA-TM-76141] N80-23977

SERGEEV, V. A.
The psychophysiological characteristics of air traffic controller activity
A80-36225

SEVASTIANOV, V. I.
The appearence of certain human psychological traits during space flight
A80-32980

SEXTON, G. A.
Total aircrew workload study for the AMST. Volume 1: Results
[AD-A076422] N80-22988
Total aircrew workload study for the AMST. Volume 2: Communication navigation description
[AD-A076498] N80-22989

SHERMAN, S. W.
Sources of variability in echocardiographic measurements
A80-33874

SHIBANOV, G. P.
The evaluation of the effectiveness of crew work under stress
A80-32986
A variance method of objective evaluation of the training process and learning level of operators in flight vehicle control regimes
A80-33003

SHMATOV, E. M.
Automated system for diagnosing craniocerebral injury
[NASA-TM-76097] N80-22972

SHPATENKO, IU. A.
Physiological premises of the laws of psychophysics
A80-32841

SIAS, F. R.
Experimental evaluations of selected immersion hypothermia protection equipment
[AD-A080470] N80-23003
An experimental evaluation of selected rewarming therapies for the treatment of profound accidental hypothermia, part 2
[AD-A078292] N80-23978

SINGATULIN, R. G.
Physiological aspects of the psychophysiological security of cosmonaut preparation on trainer apparatus
A80-33000

SMIRICHEVSKII, L. D.
The investigation of the influence of space flight conditions on the statistical characteristics of operator activity
A80-32983
The investigation of operator activity in the performance of standard activities under conditions simulating extended space flight
A80-32984

SMITH, R. P.
Splenic erythropoiesis in polycythemic response of the rat to high-altitude exposure
A80-35675

SMOLKA, A. J. K.
Electrophoretic cell separation by means of microspheres
A80-34229

SOLOVEVA, I. B.
Psychological training of an astronaut operator under the conditions of emotional stress
A80-32999

STEINMAN, R. M.
Binocular retinal image motion during active head rotation
A80-35778

STEKOLNIKOV, L. I.
Incorporation of glycine-2-C-14 in acid-insoluble proteins of rat bones and teeth during hypokinesia and administration of thyrocalcitonine
[NASA-TM-75981] N80-22959

STEPANOV, R. N.
Engineering and psychological aspects of maintenance work in space
A80-33004

STEPANOV, V. N.
Engineering and psychological aspects of maintenance work in space
A80-33004

STERN, K. R.
Static and dynamic factors in the perception of rotary motion
A80-32974

STRAAT, P. A.
Completion of the Viking Labeled Release experiment on Mars
A80-36067
Laboratory simulations of the Viking Labeled Release experiment - Kinetics following second nutrient injection and the nature of the gaseous end product
A80-36068

STRELKOVSKA, V. I.
State of the mitral valve in rabbits with hypokinesia
[NASA-TM-76003] N80-22957

STRIGUNKOVA, T. F.
Investigation of the kinetics of pyrolysis of amino acids
A80-35859

STUPNITSKII, V. P.
Methodological and organizational principles of the psychological preparation of cosmonauts
A80-32997

STURROCK, P. A.
Uncertainty in estimates of the number of extraterrestrial civilizations
[NASA-CR-162637] N80-23007

SUKHANOV, F. D.
The investigation of the influence of space flight conditions on the statistical characteristics of operator activity
A80-32983

SULLIVAN, A. E.
The effect of clays on the oligomerization of HCN
A80-36198

T

TARASENKO, L. M.
Procedure of practical exercise with students on the pathogenic effect of accelerations on the organism
[NASA-TM-76120] N80-23976

TIMOSHCHENKO, A. S.
Investigation of the kinetics of pyrolysis of amino acids
A80-35859

TRUFANOVA, E. V.
The possibility of distinguishing between emotional stress levels according to speech indicators in aerospace activities
A80-32988

TRUNIN-DONSKOI, V. N.
The feasibility and psychological aspects of verbal interaction of man and automatic systems
A80-33007

TSEMAKHOV, S. G.
Vestibular recruitment
[NASA-TM-76088] N80-22971

TSUPKINA, N. V.
Abiogenic synthesis of nucleoside-like compounds under the influence of extremal factors
A80-33311

TYLER, C. W.
Grating induction - A new type of aftereffect
A80-35779

TYRTYSHNIKOV, I. M.
Procedure of practical exercise with students on the pathogenic effect of accelerations on the organism
[NASA-TM-76120] N80-23976

U

UGLOVA, N. N.
Incorporation of glycine-2-C-14 in acid-insoluble proteins of rat bones and teeth during hypokinesia and administration of thyrocalcitonine
[NASA-TM-75981] N80-22959

ULLSPERGER, P.
On auditory evoked potentials and heart rate in man during whole-body vibration
A80-36250

USOV, V. N.
Objectivization of the basic elements of the process of crew preparation for space flight A80-32998
Psychological training of astronauts using flight simulators A80-33001

V

VANEIJK, H. M. J.
Sterilization by means of hydrogen chloride: Influence of process parameters on the biocidal activity N80-23968

VARENOV, V. P.
A variance method of objective evaluation of the training process and learning level of operators in flight vehicle control regimes A80-33003

VASENIN, V. A.
Translational motion of anthropomorphic mechanisms in the pulsed excitation mode A80-33881

VASILYEV, P. V.
Reactivity of organism in prolonged space flights [NASA-TM-75975] N80-22967

VAVRISHCHUK, V. I.
Influence of experimental hypokinesia on gastric secretory function [NASA-TM-76034] N80-23974

VEBER, D.
Detection and recognition of pure tones in noise A80-32839

VELENSHTEIN, R. A.
Translational motion of anthropomorphic mechanisms in the pulsed excitation mode A80-33881

VIVILOV, P.
Possibilities of forecasting hypercholesterinemia in pilots [NASA-TM-76087] N80-23975

VOLKOV, A. N.
Utilization of general psychological principles for solving problems concerning the operation of man/machine systems A80-33010

VOLOZHIN, A. I.
Incorporation of glycine-2-C-14 in acid-insoluble proteins of rat bones and teeth during hypokinesia and administration of thyrocalcitonine [NASA-TM-75981] N80-22959

VOLYNOV, B. V.
The investigation of the influence of space flight conditions on the statistical characteristics of operator activity A80-32983

VOROBEV, G. I.
Objectivization of the basic elements of the process of crew preparation for space flight A80-32998

W

WAGGONER, A. D.
Diagnosis and quantification of aortic stenosis with pulsed Doppler echocardiography A80-33873

WEISENER, J.
The ulcerogenic effect of bile and bile acid in rats during immobilization stress [NASA-TM-76054] N80-22960

WENGER, C. B.
Control of skin blood flow during exercise by thermal reflexes and baroreflexes A80-32750

Y

YAREMENKO, B. R.
Effect of prolonged hypodynamia on certain physiological functions in dogs [NASA-TM-75979] N80-22961

YOUNG, J. B.
Diagnosis and quantification of aortic stenosis with pulsed Doppler echocardiography A80-33873

YOUNG, S. R.
Effects of fatigue on human behavior and performance. Citations from the NTIS data base [PB80-804263] N80-22978
Behavior and physiological effects of noise, volume 3. Citations from the NTIS data base [PB80-803869] N80-22979

Z

ZABRODIN, IU. M.
The psychophysics of sensory systems A80-32836
Dynamic aspects of detection A80-32837

ZAGALETDINOV, I. S.
The possibility of distinguishing between emotional stress levels according to speech indicators in aerospace activities A80-32988
Dependence of the activity and behavior of individuals and groups on the characteristics of the individual cognitive styles A80-32991

ZANG, E. A.
Multivariate analysis of physiological response to environmental stress N80-22964

ZAVALNIUK, V. P.
Physiological aspects of the psychophysiological security of cosmonaut preparation on trainer apparatus A80-33000

ZAZYKIN, V. G.
Accuracy of perception in the tracking of continuous signals A80-32843

ZHDANOV, O. I.
Dependence of the activity and behavior of individuals and groups on the characteristics of the individual cognitive styles A80-32991
Possible approaches to the study of cosmonaut cognitive behavioral styles during individual and group activity A80-32992

1. Report No. NASA SP-7011 (209)	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle AEROSPACE MEDICINE AND BIOLOGY A continuing Bibliography (Supplement 209)		5. Report Date August 1980
		6. Performing Organization Code
7. Author(s)		8. Performing Organization Report No.
		10. Work Unit No.
9. Performing Organization Name and Address National Aeronautics and Space Administration Washington, D. C. 20546		11. Contract or Grant No.
		13. Type of Report and Period Covered
12. Sponsoring Agency Name and Address		14. Sponsoring Agency Code
15. Supplementary Notes		
16. Abstract This bibliography lists 169 reports, articles, and other documents introduced into the NASA scientific and technical information system in July 1980.		
17. Key Words (Suggested by Author(s)) Aerospace Medicine Bibliographies Biological Effects	18. Distribution Statement Unclassified - Unlimited	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 62
		22. Price* $7.00 HC

*For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1980

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to eleven special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley
COLORADO
University of Colorado, Boulder
DISTRICT OF COLUMBIA
Library of Congress
GEORGIA
Georgia Institute of Technology, Atlanta
ILLINOIS
The John Crerar Library, Chicago
MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge
MISSOURI
Linda Hall Library, Kansas City
NEW YORK
Columbia University, New York
OKLAHOMA
University of Oklahoma, Bizzell Library
PENNSYLVANIA
Carnegie Library of Pittsburgh
WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library
COLORADO
Denver Public Library
CONNECTICUT
Hartford Public Library
MARYLAND
Enoch Pratt Free Library, Baltimore
MASSACHUSETTS
Boston Public Library
MICHIGAN
Detroit Public Library
MINNESOTA
Minneapolis Public Library
MISSOURI
Kansas City Public Library
St. Louis Public Library
NEW JERSEY
Trenton Public Library
NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library
OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library
TENNESSEE
Memphis Public Library
TEXAS
Dallas Public Library
Fort Worth Public Library
WASHINGTON
Seattle Public Library
WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019.

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy of microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESA - Information Retrieval Service, European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

U.S.MAIL

NASA

POSTMASTER: If Undeliverable (Section 158 Postal Manual) Do Not Return

---

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP-7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP-7037	AERONAUTICAL ENGINEERING Engineering, design, and operation of aircraft and aircraft components	Monthly
NASA SP-7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP-7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP-7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP-7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Washington, D.C. 20546

NASA

7011(210)

Aerospace Medicine and Biology
A Continuing Bibliography with Indexes

NASA SP-7011(210)
September 1980

NEWARK PUBLIC LIBRARY
NOV 1 8 1980
U. S. GOVT. PUBS.
DEPOSITORY 376

SHUTTLE LAUNCH
MARCH 1981

National Aeronautics and
Space Administration

Aerospace Medicine & Biolog
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi
ine & Biology Aerospace Medi
ce Medicine & Biology Aerospa
Aerospace Medicine & Biolog
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi

NASA SP-7011(210)
Aerospace Medicine and Biology
A Continuing Bibliography with Indexes
Pages 167–183
September 1980

NAS 1.21:

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series)	N80-24259 – N80-26263
IAA (A-10000 Series)	A80-36307 – A80-40538

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by PRC Data Services Company.

NASA SP-7011(210)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 210)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in August 1980 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*

NASA Scientific and Technical Information Branch 1980
National Aeronautics and Space Administration
Washington, DC

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This supplement is available as NTISUB/123/093 from the National Technical Information Service (NTIS), Springfield, Virginia 22161 at the price of $7.00 domestic; $14.00 foreign.

INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 115 reports, articles and other documents announced during August 1980 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1980 Supplements.

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A80-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies of accessions are available at $7.00 per document up to a maximum of 40 pages. The charge for each additional page is $0.25. Microfiche (1) of documents announced in *IAA* are available at the rate of $3.00 per microfiche on demand, and at the rate of $1.25 per microfiche for standing orders for all *IAA* microfiche. The price for the *IAA* microfiche by category is available at the rate of $1.50 per microfiche plus a $1.00 service charge per category per issue. Microfiche of all the current AIAA Meeting Papers are available on a standing order basis at the rate of $1.50 per microfiche.

Minimum air-mail postage to foreign countries is $1.00 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

STAR ENTRIES (N80-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page vii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the * symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard $3.50 price, for those documents identified by a # symbol.)

---

(1) A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts*. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: Fachinformationszentrum, Karlsruhe. Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM).

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: U.S. Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free.

Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is $65.00 domestic; $130.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics
and Astronautics
Technical Information Service
555 West 57th Street, 12th Floor
New York, New York 10019

British Library Lending Division,
Boston Spa, Wetherby, Yorkshire,
England

Commissioner of Patents and
Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service
ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Scientific and Technical Information
Facility
P.O. Box 8757
B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Branch (NST-41)
Washington, D.C. 20546

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, California 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd
Tylers Green
London, England

U.S. Geological Survey
1033 General Services Administration
Building
Washington, D.C. 20242

U.S. Geological Survey
601 E. Cedar Avenue
Flagstaff, Arizona 86002

U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

U.S. Geological Survey
Bldg. 25, Denver Federal Center
Denver, Colorado 80225

Fachinformationszentrum Energie, Physik,
Mathematik GMBH
7514 Eggenstein Leopoldshafen
Federal Republic of Germany

NTIS PRICE SCHEDULES

Schedule A

STANDARD PAPER COPY PRICE SCHEDULE

(Effective January 1, 1980)

Price Code	Page Range	North American Price	Foreign Price
A01	Microfiche	$ 3.50	$ 5.25
A02	001-025	5.00	10.00
A03	026-050	6.00	12.00
A04	051-075	7.00	14.00
A05	076-100	8.00	16.00
A06	101-125	9.00	18.00
A07	126-150	10.00	20.00
A08	151-175	11.00	22.00
A09	176-200	12.00	24.00
A10	201-225	13.00	26.00
A11	226-250	14.00	28.00
A12	251-275	15.00	30.00
A13	276-300	16.00	32.00
A14	301-325	17.00	34.00
A15	326-350	18.00	36.00
A16	351-375	19.00	38.00
A17	376-400	20.00	40.00
A18	401-425	21.00	42.00
A19	426-450	22.00	44.00
A20	451-475	23.00	46.00
A21	476-500	24.00	48.00
A22	501-525	25.00	50.00
A23	526-550	26.00	52.00
A24	551-575	27.00	54.00
A25	576-600	28.00	56.00
A99	601-up	-- 1/	-- 2/

1/ Add $1.00 for each additional 25 page increment or portion thereof for 601 pages up

2/ Add $2.00 for each additional 25 page increment or portion thereof for 601 pages and more

Schedule E

EXCEPTION PRICE SCHEDULE

Paper Copy & Microfiche

Price Code	North American Price	Foreign Price
E01	$ 5.50	$ 11.50
E02	6.50	13.50
E03	8.50	17.50
E04	10.50	21.50
E05	12.50	25.50
E06	14.50	29.50
E07	16.50	33.50
E08	18.50	37.50
E09	20.50	41.50
E10	22.50	45.50
E11	24.50	49.50
E12	27.50	55.50
E13	30.50	61.50
E14	33.50	67.50
E15	36.50	73.50
E16	39.50	79.50
E17	42.50	85.50
E18	45.50	91.50
E19	50.50	100.50
E20	60.50	121.50
E99 - Write for quote		
N01	28.00	40.00

TABLE OF CONTENTS

Page

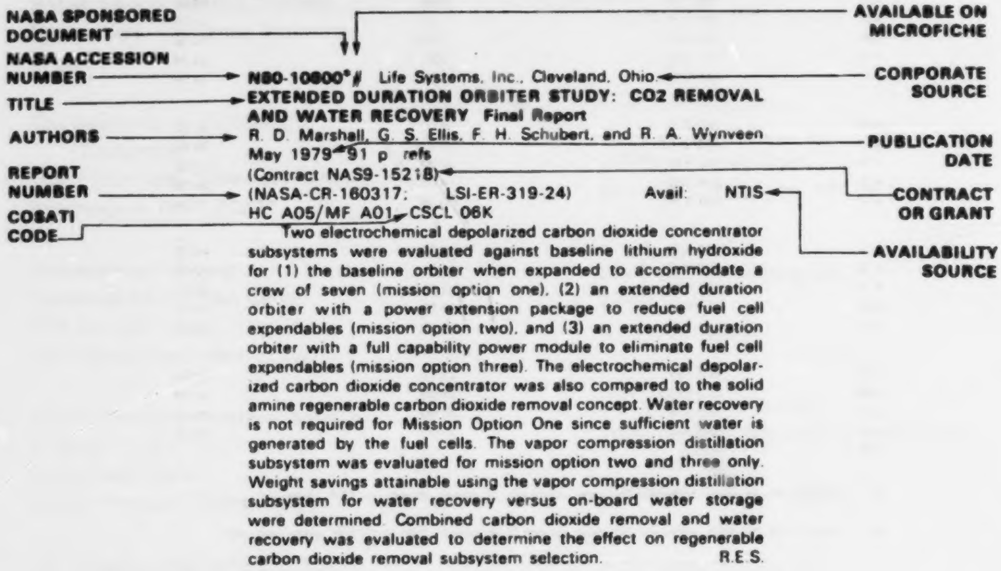
IAA ENTRIES (A80-10000) 167

STAR ENTRIES (N80-10000) 177

Subject Index I-1

Personal Author Index I-15

TYPICAL CITATION AND ABSTRACT FROM *STAR*

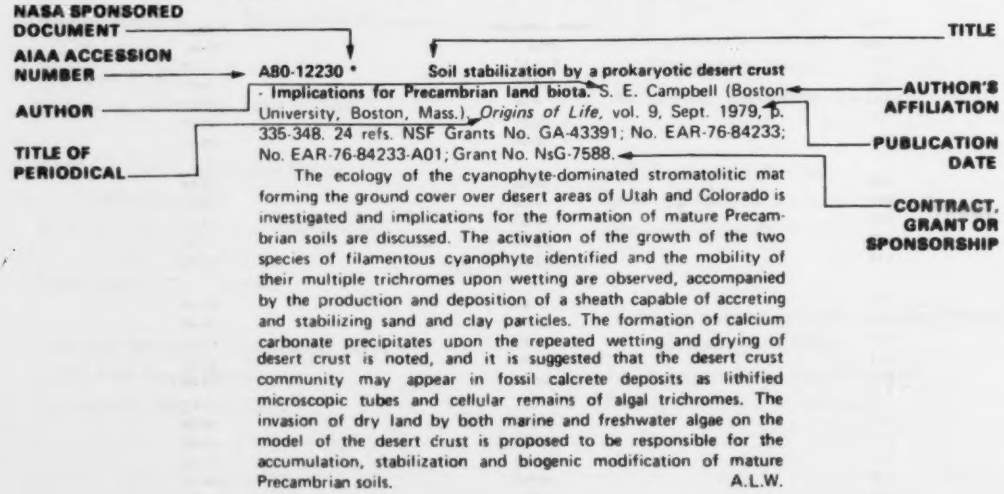


NASA SPONSORED DOCUMENT
AVAILABLE ON MICROFICHE
NASA ACCESSION NUMBER
CORPORATE SOURCE
TITLE
AUTHORS
PUBLICATION DATE
REPORT NUMBER
CONTRACT OR GRANT
COSATI CODE
AVAILABILITY SOURCE

N80-10000*# Life Systems, Inc., Cleveland, Ohio.
EXTENDED DURATION ORBITER STUDY: CO2 REMOVAL AND WATER RECOVERY Final Report
R. D. Marshall, G. S. Ellis, F. H. Schubert, and R. A. Wynveen
May 1979 91 p refs
(Contract NAS9-15218)
(NASA-CR-160317; LSI-ER-319-24) Avail: NTIS
HC A05/MF A01 CSCL 06K

Two electrochemical depolarized carbon dioxide concentrator subsystems were evaluated against baseline lithium hydroxide for (1) the baseline orbiter when expanded to accommodate a crew of seven (mission option one), (2) an extended duration orbiter with a power extension package to reduce fuel cell expendables (mission option two), and (3) an extended duration orbiter with a full capability power module to eliminate fuel cell expendables (mission option three). The electrochemical depolarized carbon dioxide concentrator was also compared to the solid amine regenerable carbon dioxide removal concept. Water recovery is not required for Mission Option One since sufficient water is generated by the fuel cells. The vapor compression distillation subsystem was evaluated for mission option two and three only. Weight savings attainable using the vapor compression distillation subsystem for water recovery versus on-board water storage were determined. Combined carbon dioxide removal and water recovery was evaluated to determine the effect on regenerable carbon dioxide removal subsystem selection. R.E.S.

TYPICAL CITATION AND ABSTRACT FROM *IAA*



NASA SPONSORED DOCUMENT
TITLE
AIAA ACCESSION NUMBER
AUTHOR'S AFFILIATION
AUTHOR
PUBLICATION DATE
TITLE OF PERIODICAL
CONTRACT, GRANT OR SPONSORSHIP

A80-12230 * **Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota.** S. E. Campbell (Boston University, Boston, Mass.), *Origins of Life*, vol. 9, Sept. 1979, p. 335-348. 24 refs. NSF Grants No. GA-43391; No. EAR-76-84233; No. EAR-76-84233-A01; Grant No. NsG-7588.

The ecology of the cyanophyte-dominated stromatolitic mat forming the ground cover over desert areas of Utah and Colorado is investigated and implications for the formation of mature Precambrian soils are discussed. The activation of the growth of the two species of filamentous cyanophyte identified and the mobility of their multiple trichromes upon wetting are observed, accompanied by the production and deposition of a sheath capable of accreting and stabilizing sand and clay particles. The formation of calcium carbonate precipitates upon the repeated wetting and drying of desert crust is noted, and it is suggested that the desert crust community may appear in fossil calcrete deposits as lithified microscopic tubes and cellular remains of algal trichromes. The invasion of dry land by both marine and freshwater algae on the model of the desert crust is proposed to be responsible for the accumulation, stabilization and biogenic modification of mature Precambrian soils. A.L.W.

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 210)

SEPTEMBER 1980

IAA ENTRIES

A80-36373 # **A comparative evaluation of the coagulation properties of lymph and blood at high altitude (Sravnitel'naia otsenka koaguliatsionnykh svoistv limfy i krovi v usloviiakh vysokogor'ia).** S. B. Daniiarov and V. V. Pukhov (Kirgizskii Gosudarstvennyi Meditsinskii Institut, Frunze, Kirgiz SSR). *Fiziologicheskii Zhurnal SSSR*, vol. 66, Mar. 1980, p. 374-379. 19 refs. In Russian.

Changes in lymph and blood coagulation during altitude acclimatization are investigated. The coagulation times and coagulabilities of thoracic duct lymph and arterial blood samples taken from dogs at an altitude of 760 m and on the third, 14th and 30th days following transport to an altitude of 3200 m were determined by a variety of tests. It is found that the coagulabilities of both blood and lymph decrease in response to high altitudes, particularly on the third day of altitude adaptation. On the subsequent days, coagulability increases to levels approaching those of the controls. In addition, more significant changes were observed in blood coagulation than in lymph coagulation. A.L.W.

A80-36374 # **Thermoregulation according to central and peripheral temperatures at high ambient temperatures /Mathematical model investigation/ (O reguliatsii po tsentral'noi i perifericheskoi temperaturam pri teplovykh vozdeistviiakh /Issledovanie na matematicheskoi modeli/).** I. I. Ermakova (Akademiia Nauk Ukrainskoi SSR, Institut Kibernetiki, Kiev, Ukrainian SSR). *Fiziologicheskii Zhurnal SSSR*, vol. 66, Mar. 1980, p. 394-399. 15 refs. In Russian.

A theoretical analysis of the roles of central and peripheral temperatures in the human thermoregulation process at elevated ambient temperatures is presented. Computer simulations were performed using a two-part model of human thermophysical properties (heat transfer) and thermoregulatory processes for the cases of thermoregulation according to brain (hypothalamus) temperature and according to the combined effects of brain and mean blood temperature in response to stepwise increases in ambient temperature from 29 to 40 C. Results of modeling of the transient and steady responses to elevated temperatures indicate that at low values of the amplification coefficient relating the magnitude of the response to that of the stimulus, the role of peripheral regulation is insignificant, while the influence of peripheral thermosensors is evident at high amplification coefficients, with regulation according to central temperature ensuring the accuracy of the regulatory response and regulation according to peripheral indicators ensuring its stability. A.L.W.

A80-36375 # **The effects of cold acclimatization on the activity of acid peptide-hydrolases in lysosome-enriched fractions of rat brain and liver tissues (Vliianie akklimatsii k kholodu na aktivnost' kislykh peptid-gidrolaz v obogashchennykh lizosomami fraktsiiakh tkanei mozga i pecheni krys).** L. V. Lomakina and V. S. Shugalei (Rostovskii-na-Donu Gosudarstvennyi Universitet, Rostov-on-Don, USSR). *Fiziologicheskii Zhurnal SSSR*, vol. 66, Mar. 1980, p. 400-403. 8 refs. In Russian.

A80-36461 **Temporal brightness enhancement studied with a large sample of observers - Evidence for individual differences in brightness perception.** R. W. Bowen and K. A. Markell (Loyola University, Chicago, Ill.). *Perception and Psychophysics*, vol. 27, no. 5, May 1980, p. 465-476. 20 refs. NSF Grant No. BNS-78-17779.

A80-36775 # **Possibilities and limitations of the application of psychological tests (Möglichkeiten und Grenzen der Anwendung psychologischer Tests).** H. Kaspras (Medizinischer Dienst des Verkehrswesens, Berlin, East Germany). *Technisch-ökonomische Information der zivilen Luftfahrt*, vol. 15, no. 6, 1979, p. 319-323. In German.

The problem of improving flight safety by achieving better integration between the pilot and his working environment is examined. Attention is given to the use of psychodiagnostic processes in the appraisal of civil air traffic. Factors which are examined include reaction time, observation reliability, self control, behavior under stress and personal characteristics. Finally, problems in testing are covered which include concerns that a short test can yield unrealistic results due to subject emotions resulting from the special test situation. M.E.P.

A80-37100 # **The ultrastructure of the brain during hypoxia (Ul'trastruktura mozga pri gipoksii).** N. N. Bogolepov. Moscow, Izdatel'stvo Meditsina, 1979. 168 p. 198 refs. In Russian.

An electron microscopic analysis of the changes in brain ultrastructure brought about by exposure to various forms of hypoxia is presented. Micrographs were obtained under conditions of experimental hypoxic hypoxia, ischemia and histotoxic hypoxia as well as from patients suffering from terminal brain circulation disturbances. Changes in general cell morphology, mitochondrial and organelle ultrastructures, microvacuolization, nerve cell membranes, cytoplasmic and nuclear osmium affinity, lipid granules, lysosomes, dendrites, axons, interneuronal contact ultrastructure, glial cells and brain capillary ultrastructure are examined. Consideration is also given to indicators of reversible and irreversible changes of neuron ultrastructure, and results are compared with pathological information obtainable by light microscopy. A.L.W.

A80-37122 # **Adaptive control algorithms and optimization of robot-manipulator motion (Algoritmy adaptivnogo upravleniia i optimizatsiia dvizheniia robota-manipuliatora).** G. D. Penev and V. N. Neokesariiskii. In: Mechanics of controlled motion. (A80-37112 15-13) Leningrad, Izdatel'stvo Leningradskogo Universiteta, 1979, p. 143-159. 10 refs. In Russian.

The adaptive control proposed in the present paper ensures a motion along a programmed trajectory, in the presence of disturbances, in the space of the robot's generalized coordinates, and also a motion along a programmed trajectory, where the control error vanishes at t tending to infinity, in the absence of disturbances. An approach to the construction of an optimal programmed trajectory of motion for a given trajectory in three-dimensional space is proposed. V.P.

A80-37457 **Motion control system development for a mobile robot.** D. E. Okhotsimski (Akademiia Nauk SSSR, Institut Prikladnoi Matematiki, Moscow, USSR). In: Automatic control in space; Proceedings of the Eighth Symposium, Oxford, England, July 2-6, 1979. Oxford, Pergamon Press, Ltd., 1980, p. 251-256.

Problems associated with the development of the motion control system for automatic mobile robots are discussed. The investigations have been performed with the breadboards of six-legged walking robot and automatic robot moving on wheels. Some results are presented. (Author)

A80-37463 **Problems of motion control for mobile robots.** A. K. Platonov (Akademiia Nauk SSSR, Institut Prikladnoi Matematiki, Moscow, USSR). In: Automatic control in space; Proceedings of the Eighth Symposium, Oxford, England, July 2-6, 1979. Oxford, Pergamon Press, Ltd., 1980, p. 303-310.

The problems are considered to develop the multi-purpose system of motion control for a mobile robot. The hierarchic structure of the control system allows to organize the hierarchy of subgoals for every goal of robot's activity and construct the process of dynamic variation of subgoals according of the robot's state and environment conditions. The constructive method is proposed to organize such a control system and the possibility of its implementation is investigated for an example of the integrated walking robot motion control. (Author)

A80-37465 **Motion control of biped walking robots.** V. V. Beletskii (Akademiia Nauk SSSR, Institut Prikladnoi Matematiki, Moscow, USSR). In: Automatic control in space; Proceedings of the Eighth Symposium, Oxford, England, July 2-6, 1979. Oxford, Pergamon Press, Ltd., 1980, p. 317-322. 6 refs.

The problem of planar motion control is considered for a walking robot consisting of a ponderous trunk and a pair of imponderable two-link legs suspended to a point of the trunk. The two-stage control algorithm is constructed to follow the prescribed programmed motion. At the first stage the vertical stabilization is provided through the moments at joints. At the second stage of the control problem solution the longitudinal and angular stabilizations are attained due to the above moments as well as the choice of the sequential step length and duration. The overall control algorithm (synthesis of the joint moments, choice of step length and duration) is described by finite formulae. The report is illustrated by a film taken off the display screen. (Author)

A80-37515 **Nucleotide-amino acid interactions and their relation to the genetic code.** J. Reuben and F. E. Polk (Houston, University, Houston, Tex.). *Journal of Molecular Evolution,* vol. 15, May 1980, p. 103-112. 26 refs.

The apparent dissociation constants of the complexes of AMP with the methyl esters of amino acids in aqueous solution exhibit good correlations with features of the genetic code and with the frequencies of occurrence of amino acid residues in proteins. Thus it is likely that chemically selective nucleotide-amino acid interactions were involved in the processes of chemical evolution that have led to the emergence of the genetic code. Based on these correlations a storage device for the information regarding nucleotide-amino acid interactions is proposed. It involves processes of simultaneous polymerization to polynucleotides and polypeptides. (Author)

A80-37516 * **Synthesis of peptides from amino acids and ATP with lysine-rich proteinoid.** T. Nakashima and S. W. Fox (Miami, University, Coral Gables, Fla.). *Journal of Molecular Evolution,* vol. 15, May 1980, p. 161-168. 29 refs. Grant No. NGR-10-007-008.

The paper examines the synthesis of peptides from aminoacids and ATP with a lysine-rich protenoid. The latter in aqueous solution catalyzes the formation of peptides from free amino acids and ATP; this catalytic activity is not found in acidic protenoids, even though the latter contain a basic aminoacid. The pH optimum for the synthesis is about 11, but it is appreciable below 8 and above 13. Temperature data indicate an optimum at 20 C or above, with little increase in rate up to 60 C. Pyrophosphate can be used instead of ATP, but the yields are lower. The ATP-aided syntheses of peptides in aqueous solution occur with several types of proteinous aminoacids. A.T.

A80-37523 **Limb flail injuries and the effect of extremity restraints in USAF ejections - 1971-1978.** W. F. Belk (USAF, Inspection and Safety Center, Norton AFB, Calif.). *SAFE Journal,* vol. 10, Summer 1980, p. 18-21. 8 refs.

The USAF experience with limb flail injuries in noncombat ejections for 1971-1978 is reported. USAF mishap data files were searched for trauma resulting from windblast/wind flail. Four hundred forty-seven (447) open seat ejections for which airspeed was recorded and evidence was not obliterated by other impacts were identified. Among these ejections, 33 individuals incurred significant wind flail injuries. These cases are reported by aircraft type, knots indicated airspeed on ejection, method of initiation, and injuries incurred. Probability of flail injury by airspeed is calculated. Comparisons of arm flail probabilities show little difference between D-ring and sidearm seats. Seats with active leg restraints had fewer lower extremity injuries. (Author)

A80-37524 * **Residual effects of alcohol on aircrew performance.** L. M. Wise (Heidelberg College, Tiffin, Ohio). *SAFE Journal,* vol. 10, Summer 1980, p. 28-31. 20 refs.

Studies on the significance of alcohol effects on a complex high risk task such as flying a high performance vehicle in a hostile environment are reported. Attention is given to results obtained with experiments to determine the effect of alcohol on a simple flying task. Further, a study performed on residual effects of alcohol is described, which was undertaken because of the discrepancy between the FAA regulation, requiring an elapsed time of 8 hours between drinking and flying, and the reports of residual physiological effects in the literature cited. This study, it is shown, compared a 30 minute post alcohol condition with a 14 hour post ingestion condition and employed oversight errors as a measure of alcohol effects. It was found that responses after 14 hours were much more like those 30 minutes after drinking than they were like those under the no alcohol condition. In conclusion, the relevance of these findings to many industrial man/machine settings is stressed. M.E.P.

A80-37573 * **Sensors, controls, and man-machine interface for advanced teleoperation.** A. K. Bejczy (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.). *Science,* vol. 208, June 20, 1980, p. 1327-1335. Contract No. NAS7-100.

Some advances are reviewed which have been made in teleoperator (i.e., mechanical activities performed by mechanical devices at a remote site under remote control) technology through introduction of sensors, computers, automation, and new man-machine interface devices and techniques for remote manipulator control. The state of the art is summarized and some basic problems and challenging developments are examined. V.P.

A80-37696 **New work force roles resulting from new technology.** V. D. Hopkin (RAF, Institute of Aviation Medicine, Farnborough, Hants., England). In: Air Traffic Control Association, Annual Fall Conference, 24th, Atlantic City, N.J., October 15-19, 1979, Proceedings. Washington, D.C., Air Traffic Control Association, Inc., 1979, p. 68-75.

As technology expands, not only does the list of functions that could be done by the machine lengthen, but also the efficiency with which the machine could do them is enhanced. According to the criteria by which technology is judged, man should do less and the machine should do more. Most technological advances are genuine aids as long as man remains central to the system. In ATC, this stage has been reached some time ago. The present paper deals with the difficulties which may arise in designing satisfactory roles for man as his functions come to depend more on technology. The influence of technological changes on such concepts as professional pride, status, responsibility, interest, challenge, skill, trust, and satisfaction are examined. V.P.

A80-37698 **Pilot reactions to communicating with a talking computer.** E. Shochet (FAA, National Aviation Facilities Experimental Center, Atlantic City, N.J.). In: Air Traffic Control Association, Annual Fall Conference, 24th, Atlantic City, N.J., October 15-19, 1979, Proceedings. Washington, D.C., Air Traffic Control Association, Inc., 1979, p. 92-97.

Some experience obtained with the VRS (Voice Response System), designed to provide pilots with a limited preflight weather briefing, is reviewed. The prototype model provided three weather products: hourly surface observations, terminal forecasts, and grid wind alofts. A survey of pilot responses to the use of the VRS showed that 56 percent of the pilots found the VRS information satisfactory for preflight planning. By using the computer to perform routine briefing tasks, the specialist can concentrate on more demanding and personal communication tasks. V.P.

A80-37901 # **Effects of sustained exposure to hypoxic environment on temporal discrimination behaviour in rats.** I. Sakurai, E. Sakaguchi, H. Osada, T. Sakaguchi, and R. Yurugi (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Tokyo, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports,* vol. 20, Dec. 1979, p. 129-134. 10 refs. In Japanese, with abstract in English.

The effects of sustained hypoxia on the brain function were studied by testing the change in the behavior of rats in a hypoxic environment. The animals were trained on the DRL15'LH5' schedule of food reinforcement under a normoxic environment. After their behavior showed temporal discrimination, the rats were exposed to a simulated altitude of 5500 in a hypobaric chamber for one week; and alteration of the operant behavior was then examined. It was found that (1) the stable performance maintained in a steady state by DRL15'LH5' schedule under normoxic environment was disrupted during the exposure to the altitude, (2) response and reinforcement rates declined during a few days of the initial stage of the exposure and then returned to the control levels, (3) the inter-response time tended to be longer during the exposure, and (4) these results suggest a close relationship between the disrupted temporal discrimination and functional inhibition in the brain cortex during the exposure to hypoxic environment. A.T.

A80-37902 # **Structural difference between stage 1 and REM on sleep EEG.** Y. Kurihara, I. Saito (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Tokyo, Japan), and F. Konjiki (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Tokyo; Nippon Medical College, Kawasaki, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports,* vol. 20, Dec. 1979, p. 135-140. 8 refs. In Japanese, with abstract in English.

The paper analyzes the concept that there is no structural difference between the sleep EEG of stage 1 and REM stage, and that they differ only by the presence or absence of rapid eye movements and muscle activities. The method of factor analysis was applied to differentiate these stages in four subjects. The results of variance analysis showed that the stage 1 scores represented the interindividual differences, and the REM scores depicted the significant differences between the 1st stage EEG and the REM EEG. The stage 1 loading is more pronounced in a mean amplitude, the number of peaks, and the distribution index of peaks; the REM stage has a lower amplitude, it is slower, and has more fast wave components indicating the desynchronized activities in the REM stage. A.T.

A80-37903 # **Statistical studies on blood pressure of JASDF pilots - Comparison with Japanese adult males.** Y. Kurihara, Y. Matsuba, and I. Saito (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Tokyo, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports,* vol. 20, Dec. 1979, p. 141-151. 35 refs. In Japanese, with abstract in English.

A comparison of the blood pressure level of the JASDF pilots with Japanese males in general was made. The blood pressure of pilots from their periodic health examinations and those of adult males were calculated from the blood pressure distribution tables of the Japanese nutrition survey. The age of both groups ranged from 20 to 49 in 1975-1976. The results showed that: (1) systolic and diastolic blood pressure distribution curves of the pilots were lower by about 10 mm of Hg synthetically than those of adult males; (2) each dispersion of systolic and diastolic blood pressure curves of the pilots was smaller than those of adult males; (3) the lower blood pressure of the pilots was recognized in each group with systolic and diastolic pressures; (4) the correlation between the age and the diastolic blood pressure was statistically significant for both groups, but that of the systolic blood pressure was only significant for adult males. It was concluded that pilots' blood pressures correspond to those of younger men; specifically, the blood pressures of men in the 40-49 age group are almost equivalent to those of men under 30 years old. A.T.

A80-37904 # **Study on the changes of electroencephalogram, heart rate and respiratory rate during all night sleep.** M. Goto, I. Saito, and M. Ono (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Tokyo, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports,* vol. 20, Dec. 1979, p. 153-161. 9 refs. In Japanese, with abstract in English.

A study of the changes of brain waves (EEG) and respiratory circulating responses during all-night sleep is presented. The sleep stage Rechtschaffen method (hypnogram) was also compared with a new method which extracted a specific slow component of brain waves by a rectified integration system. The measurements of EEG from the central to the occipital sphere, the electronystagmogram, the electromyogram from M. mentalis, the heart rate, plethysmograph (pulse wave), the respiratory rate, blood pressure and rectal temperature were recorded by a polygraph and a magnetic tape recorder. It was found that: (1) EEG during sleep changed to a high voltage slow pattern in accordance with the depth of the sleep stage; (2) respiratory and heart rate decreased in accordance with the depth of the sleep stage, and increased during the REM stage; (3) the amplitudes of the plethysmogram increased in accordance with the sleep stage, and decreased during the REM stage; and (4) the synchronized fluctuations of the hypnogram, respiratory, and the heart rate were observed during the sleep stage, but this symptom disappeared during the deep sleep stage. A.T.

A80-37905 # **Application of LED on-off control system to centrifuge acceleration load.** M. Ono (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Tokyo, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports,* vol. 20, Dec. 1979, p. 163-167. 6 refs. In Japanese, with abstract in English.

An application of an automatically continuous LED control system with a digital IC is described. The system consists of the pulse oscillation circuit, a 4 bit counter, a BCD decoder, perception signal circuits and a power supply. The basic clock pulse is generated by pulse oscillation circuit using 2 transistors, and then changed into a BCD code by the 4 bit counter circuit. Two LED's are connected to each of the decoder terminals, and 30 LED's are arranged at the same space on a circular arc and are switched-on sequentially one by one from the periphery to the center. The system is capable of selecting two methods: (1) the light of the LED directed toward the center is off at the position where the perception switch is pressed, and then the light starts to run again from the periphery without time lag when the button is released, and (2) the running light of LED is locked at the position when the perception swich button is pressed, and then the light begins to run again from that position when the button is released. It is concluded that this system can use an ac battery as a power supply, and can be applied to each axis of X, Y, and Z. A.T.

A80-38451 **Delineating acute neuroendocrine responses in microwave-exposed rats.** S.-T. Lu, N. Lebda, S. Pettit, and S. M. Michaelson (Rochester, University, Rochester, N.Y.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 48, June 1980, p. 927-932. 30 refs.

A80-38452 **Thermoregulation during rest and exercise in different postures in a hot humid environment.** K. Kobayashi, S. M. Horvath, F. J. Diaz, D. R. Bransford, and B. L. Drinkwater (California, University, Santa Barbara, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 48, June 1980, p. 999-1007. 34 refs. Grants No. AF-AFOSR-78-3534; No. NIH-AG-00021.

A80-38453 **Muscular work as thermal behavior in humans.** M. Caputa and M. Cabanac (Lyon I, Université, Oullins, Rhône, France). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 48, June 1980, p. 1020-1023. 20 refs. Research supported by the Institut National de la Santé et de la Recherche Médicale; Centre National de la Recherche Scientifique Grant No. LA-181.

Muscular work performed by human subjects placed on a bicycle ergometer and left to pedal ad lib. for 43 min to warm themselves to attain thermal comfort at an ambient temperature of 10 C is discussed. Esophageal, tympanic, forehead and the hand skin temperatures were recorded, along with noting the pedaling work for each 2 min period. Two experiments were performed: the first with face fanning, and the second with thermal insulation of the head. Face fanning resulted in the decreased tympanic temperature, but in an increased esophageal temperature. In experiments with the head covering, a mild increase in these temperatures was observed; simultaneously, the pedaling intensity decreased and the rate of sweating increased. In general, pedaling work was inversely proportional to the intracranial temperature and independent of the trunk temperature. Therefore, the muscular activity in humans exposed to cold temperatures appears to be governed chiefly by the brain temperature. A.T.

A80-38454 **Chemical and nonchemical components of ventilation during hypercapnic exercise in man.** J. M. Clark, R. D. Sinclair, and J. B. Lenox (Pennsylvania, University, Philadelphia, Pa.; USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 48, June 1980, p. 1065-1076. 41 refs. Grant No. NIH-HL-08899; Contract No. N00014-76-C-0248.

A80-38455 **End-tidal CO2 response to low levels of inspired CO2 in awake beagle dogs.** P. Reischl, D. M. Stavert, S. M. Lewis, L. C. Murdock, and B. J. O'Loughlin (California, University, Irvine; Southern California, University, Los Angeles, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 48, June 1980, p. 1077-1082. 31 refs. Research supported by the Electric Power Research Institute; Contract No. F33615-76-C-5005.

A80-38456 **Alteration by hyperoxia of ventilatory dynamics during sinusoidal work.** R. Casaburi, R. W. Stremel, B. J. Whipp, W. L. Beaver, and K. Wasserman (Harbor General Hospital; California, University, Torrance, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 48, June 1980, p. 1083-1091. 30 refs. Grants No. NIH-HL-19410; No. NIH-HL-11907.

A80-38464 **Effects of aircraft noise on an intelligibility task.** M. D. Arnoult and J. W. Voorhees (Texas Christian University, Fort Worth, Tex.). *Human Factors*, vol. 22, Apr. 1980, p. 183-188. 5 refs. Research supported by the Bell Helicopter Textron Corp.

The recorded sounds of three aircraft (T28 propeller airplane, Bell 204B helicopter, and Bell 206 helicopter) flying directly overhead at 300 ft and 900 ft (91.4 m and 274.3m) were played while subjects engaged in an audiovisual task. The subjects viewed a series of 35-mm color slides of everyday scenes and heard them described by one-word labels. Each label was to be identified as 'Right,' 'Wrong,' or 'Unheard.' The results were in close agreement with previous field studies on the rated 'annoyingness' of aircraft sounds and provided no support for the contention that impulsive helicopter noise ('blade-slap') is disruptive in ways not accounted for by simple measures of loudness level. (Author)

A80-38465 **The event-related brain potential as an index of display-monitoring workload.** J. B. Isreal, C. D. Wickens, G. L. Chesney, and E. Donchin (Illinois, University, Champaign, Ill.). *Human Factors*, vol. 22, Apr. 1980, p. 211-224. 53 refs. Contract No. N00014-76-C-0002.

As an index of task workload, the possible advantages of the event-related brain potential (ERP) over traditional secondary task and physiological measures are described and previous efforts to validate the use of ERPs in this contex are discussed. An experiment is then reported in which perceptual load, incurred by monitoring a simulated air-traffic-control display for discrete events, is assessed using (1) measures of the P300 component of ERPs elicited by auditory probe stimuli and (2) a reaction time secondary task. The ERP measures were found to reflect systematically differences in task workload and to covary closely with the reaction time measure. The results are discussed within the framework of a multidimensional conception of human processing resources and task workload. (Author)

A80-38466 **A test of Fitts' law with moving targets.** R. J. Jagacinski (Ohio State University, Columbus, Ohio), D. W. Repperger (USAF, Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio), S. L. Ward, and M. S. Moran (Systems Research Laboratories, Inc., Dayton, Ohio). *Human Factors*, vol. 22, Apr. 1980, p. 225-233. 7 refs. Contract No. F33615-C-76-5001. AF Project 2312V601.

Subjects used either a position or a velocity control system to capture stationary and moving targets. Fitts' Index of Difficulty was found to be a good predictor of capture time for the rate system. However, for the position control system, the Fitts measure failed to predict accurately the capture time for moving targets. An alternate Index of Difficulty measure is proposed which explicitly incorporates a velocity factor and which predicts the overall pattern of capture times for both systems with greater accuracy than Fitts' Index of Difficulty. (Author)

A80-38468 **Instrumented animal systems for toxic assessment of materials.** J. G. Gaume (Douglas Aircraft Co., Long Beach, Calif.). *Journal of Combustion Toxicology*, vol. 7, May 1980, p. 124-133.

The paper deals with two systems developed in an attempt to obtain an endpoint that is more sensitive than Time to Death, Time to Incapacitation, or Time of Useful Function. One is a monitoring system for rats, which displays and records ECGs, respiration, and cage temperature. The rationale for use of the ECGs is that when the hypoxia resulting from exposure to fire gases becomes sufficiently severe, the ECG will show cardiac arrhythmias of progressively more serious nature. The other instrument exposure system utilizes the principle developed by Spugeon, but is of different design. In this system, the animal steps on a contact bar, whose deflection produces a characteristic pattern in the recording, depending on whether the subject is walking in the motor-driven wheel, sitting on the shaft, or has collapsed. The systems have the advantage of providing more information than visual systems. V.P.

A80-38679 **Separation of motions in the problem of stabilization of bipedal locomotion.** Iu. V. Bolotin. *(Akademiia Nauk SSSR, Izvestiia, Mekhanika Tverdogo Tela*, July-Aug. 1979, p. 48-53.) *Mechanics of Solids*, vol. 14, no. 4, 1979, p. 41-45. Translation.

A80-38705 # **The circadian rhythms of biological processes and their adaptive significance in vertebrate onto- and phylogenesis (Sutochnye ritmy biologicheskikh protsessov i ikh adaptivnoe znachenie v onto- i filogeneze pozvonochnykh).** G. D. Gubin and E. Sh. Gerlovin. Novosibirsk, Izdatel'stvo Nauka, 1980. 280 p. 800 refs. In Russian.

The circadian rhythms of biological processes from the cellular to the organismic levels are examined in order to determine variations of these rhythms with development and evolution. The fundamental stages in the development of an understanding of the daily rhythmicity of biological processes are reviewed, and the characteristics of circadian rhythms at various organizational levels in animals are discussed. Attention is then given to the dynamics of the daily rhythms of biological processes in vertebrate liver cells during vertebrate phylogenesis and ontogenesis, and their interactions. Finally, the significance of circadian biological rhythms in the adaptation of organisms to different living conditions and in their response to toxic and pharmocological substances is discussed. A.L.W.

A80-39143 # **Some characteristics of binocular fixation in the discrimination and recognition of objects (Nekotorye osobennosti binokuliarnoi fiksatsii v protsesse razlicheniia i opoznaniia ob'ektov).** E. F. Polezhaev, A. M. Kotliarskii, and V. A. Epikhin. *Fiziologiia Cheloveka,* vol. 6, May-June 1980, p. 447-450. 7 refs. In Russian.

The characteristics of micro- and macroscale eye movements in the binocular fixation of a point object, the recognition of a geometrical shape, and the evaluation of the position of a moving point are investigated. Eye movements were monitored by electromagnetic position transducers mounted on contact lenses worn by the subjects during fixation on a fixed point object, one point of a three-point triangle, and a moving point. The eye motion trajectories recorded indicate that in fixation on a fixed point object, the process of merging precedes the separation of the segments of the retinal projection, implying the splitting of the point on the cortical level. The recognition of a geometrical shape by fixation on one of its points is found to be accompanied by a search mechanism in which left and right eye movements are not symmetrical. Finally, it is found that under conditions when additional searching eye movements are necessary due to target motion, visual position determination is less accurate than in the case of a fixed point. A.L.W.

A80-39144 # **The sensation of vibration (Ob oshchushchenii vibratsii).** E. M. Tsirul'nikov (Akademiia Nauk SSSR, Institut Evoliutsionnoi Fiziologii i Biokhimii, Leningrad, USSR) and V. I. Pudov (Ministerstvo Zdravookhraneniia RSFSR, Nauchno-Issledovatel'skii Institut po Bolezniam Ukha, Gorla, Nosa i Rechi, Leningrad, USSR). *Fiziologiia Cheloveka,* vol. 6, May-June 1980, p. 459-463. 19 refs. In Russian.

The sensations produced by ultrasonic and mechanical vibratory stimuli to the human finger are evaluated and compared in order to investigate the existence of a separate sensation of vibration. Focused square-wave ultrasonic pulses, sinusoidally amplitude modulated ultrasound, and vibrator oscillations were applied to the skin of the index fingers of two subjects, and the perception thresholds were determined at frequencies between 60 and 8000 Hz. Single pulses of ultrasound are reported to elicit sensations of slight contact, changing to drilling, buzzing, or itching as the frequency of pulses increases. The same boring sensation was experienced at the perception thresholds of sinusoidal ultrasonic waves and mechanical vibrations, which were both found to reach minima at frequencies of 250 Hz; the auditory sensations provoked by ultrasound and mechanical vibration were found to differ. Results do not support the idea of separate tactile receptors for low-frequency oscillations but instead indicate the role of the vestibular receptors in vibration perception. A.L.W.

A80-39145 # **The dependence of organism responses on physical load doses under conditions of restricted muscular activity (Zavisimost' reaktsii organizma ot dozirovannykh fizicheskikh nagruzok pri ogranichenii myshechnoi deiatel'nosti).** N. E. Panferova. *Fiziologiia Cheloveka,* vol. 6, May-June 1980, p. 474-477. 5 refs. In Russian.

The applicability of various tests employing physical loads in assessing cardiovascular functions is evaluated as a function of training levels with these loads in a pressure chamber. Two series of experiments were performed in which changes in pulse rate were monitored for the performance of a customary activity (walking on a treadmill) and specialized task (pulling crossbars suspended from rubber shock absorbers) over the course of 30-40 days, and for the performance of a training activity (bicycle ergometer work) and a test activity (step test) over the course of 3-120 days. Results indicate that the usefulness of cardiovascular functional tests with physical loads over long periods of time depends on the type and extent of subject muscular activity during the experiment, with work capacity for unaccustomed tasks decreasing and that for daily activities remaining constant or even increasing with time. It is thus concluded that the muscular activity involved in the physical tests used for assessing human work capacity during extended experiments or space flights must differ from the muscular loads sustained during physical training. A.L.W.

A80-39271 **General characterization of the rheological properties of human soft tissues based on measurements made by the local cyclic loading method and a simple phenomenological model of these properties.** E. V. Belaia (Akademiia Meditsinskikh Nauk SSSR, Moscow, USSR). *(Mekhanika Kompozitnykh Materialov,* July-Aug. 1979, p. 737-741.) *Mechanics of Composite Materials,* vol. 15, no. 4, Jan. 1980, p. 479-482. Translation.

A80-39272 **Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford University, Oxford, England, July 30-August 3, 1979.** Symposium supported by the U.S. Navy, Beecham Pharmaceuticals, Institut de Recherches Servier, et al.; Contract No. N00014-78-G-0062. Edited by B. Cox (Manchester, Victoria University, Manchester, England), P. Lomax (California, University, Los Angeles, Calif.), A. S. Milton (Aberdeen, University, Aberdeen, Scotland), and E. Schönbaum (Organon International, Oss, Netherlands). Basel, S. Karger AG, 1980. 319 p. $39.

Papers are presented on current research on the pharmacology of thermoregulation and its implications for clinical treatment. Specific topics include the roles of the various neurotransmitters in central thermoregulation, the role of dopamine in temperature regulation during exercise, the effects of marijuana on human thermoregulation in a hot environment, historical views of the role of fever in disease, malignant hyperthermia and its treatment with dantrolene sodium, the comparative thermoregulatory effects of narcotic analgesics, hypothermic responses to neurotensin, and the effects of thyrotropin releasing hormone on body temperature. Attention is also given to the effects of calcium injection into the caudal hypothalamus on body temperature and metabolic rate, behavioral thermoregulation in the capsaicin-desensitized rat, temperature perception and regulation in high-pressure heliox environments, and medical research in the Arctic. A.L.W.

A80-39273 **Neurotransmitter mapping in central thermoregulation.** J. Frens (Utrecht, Rijksuniversiteit, Utrecht, Netherlands). In: Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford, England, July 30-August 3, 1979. Basel, S. Karger AG, 1980, p. 1-5. 12 refs.

The sites of activity of neurotransmitters in the neuronal network of the central thermoregulatory system are investigated. Competitive antagonists to the neurotransmitters (serotonin), dopamine and acetylcholine were injected intraventricularly into goats at different ambient temperatures, and changes in body temperature and peripheral vasomotor tone were monitored. Results are interpreted in terms of a thermoregulatory model in which dopamine acts in the heat loss pathway and in vasodilation and gives rise to noradrenaline, which acts to inhibit heat production. Heat loss but not vasodilation is antagonized by 5-hydroxytryptamine and dopamine inhibitors, while acetylcholine acts to stimulate heat production. It is suggested that behavioral thermoregulation might also be regulated by the same neurotransmitters. A.L.W.

A80-39274 The role of dopamine in temperature regulation during exercise stress. C. V. Gisolfi, F. Mora, M. Beattie, P. T. Wall, S. Brown, and S. Magnes (Iowa, University, Iowa City, Iowa). In: Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford, England, July 30-August 3, 1979. Basel, S. Karger AG, 1980, p. 31, 32. 10 refs. Contract No. N00014-75-C-0597.

The role of dopamine in thermoregulation under conditions of exercise-induced thermal loads is investigated. Injections of the specific dopamine receptor blocker pimozide and apomorphine were given to rats before the start of 30 min of treadmill exercise in a cool (24 C) environment, and core and skin temperatures and oxygen consumption were monitored. Pimozide is found to produce a significant hyperthermic response to work, while apomorphine microinjected into the preoptic/anterior hypothalamic nuclei produced dose-dependent attenuations in core temperature and elevations in skin temperature without affecting the ability of the animal to exercise. Results are interpreted as evidence of the role of the hypothalamic dopaminergic system in heat dissipation under thermal loads. A.L.W.

A80-39275 Marijuana and human thermoregulation in a hot environment. R. T. Jones, R. Maddock, T. R. Farrell, and R. Herning (California, University, San Francisco, Calif.). In: Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford, England, July 30-August 3, 1979. Basel, S. Karger AG, 1980, p. 62-64. Grants No. PHS-HSM-42-73-181; No. PHS-DA-4RG012; No. PHS-DA-01696.

The effects of marijuana (tetrahydrocannabinol) on human thermoregulation at normal and high ambient temperatures are investigated. Subjects smoked either a marijuana cigarette containing 18 mg of tetrahydrocannabinol or a placebo cigarette in a room maintained at 40 C and their body temperatures, skin conductances, heart rates and subjective intoxication over a two-hour period were compared with those of a control group smoking both a marijuana and a placebo cigarette in random order at an ambient temperature of 23 C. Core and finger temperatures are found to increase from 0.6 to 1.3 C after smoking marijuana in a hot room, while core temperature initially decreased and then increased 0.3 C and finger temperature decreased 3.8 C at 23 C, with the placebo having no effect on body temperature. Observations of the cessation or sharp decrease in sweating for 20 min after smoking in the hot room suggest that the increased body temperature observed is at least partially due to decreased sweating. Results are consistent with tetrahydrocannabinol-induced hyperthermia found in animals at high ambient temperatures, which may be due to the anticholinergic and adrenergic effects of cannabis. A.L.W.

A80-39276 Human malignant hyperthermia - Treatment with dantrolene sodium. C. A. Taylor, Jr. and B. H. Hoff (Wisconsin, University, Madison, Wis.). In: Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford, England, July 30-August 3, 1979. Basel, S. Karger AG, 1980, p. 145-147. 19 refs.

A case history of the treatment of human anesthesia-induced malignant hyperthermia, a pharmacogenetic muscle disorder characterized by fever, muscle rigidity and cardiovascular collapse, by the administration of dantrolene sodium, is presented. The patient had undergone uneventful surgery with vestibular Meniere's syndrome using anesthesia including thiopental, succinylcholine, nitrous oxide and enflurane, following which she was slow to awaken and exhibited a temperature of 40 C. Treatment included surface cooling, with no effect, and two doses of intravenous dantrolene sodium following the appearance of shivering, muscle rigor, a deterioration of the blood gas buffer base and tachycardia. An hour following the second dose of dantroline, body temperature, acid-base status and prothrombin time had returned to normal without additional treatment, and remained so. Dantrolene is considered to act within the muscle cell by preventing the release of calcium ions from the sarcoplasmic reticulum, although the relation between the elevated levels of myoplasmic calcium ions observed in malignant hyperthermia and heat production is not clear, and is concluded to be efficacious in the treatment of the syndrome in humans. A.L.W.

A80-39277 Hypothermic responses to neurotensin in vertebrates. C. B. Nemeroff, G. Bissette, P. J. Manberg, S. I. Moore, G. N. Ervin, A. J. Osbahr, and A. J. Prange (North Carolina, University, Chapel Hill, N.C.). In: Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford, England, July 30-August 3, 1979. Basel, S. Karger AG, 1980, p. 180-185. 21 refs. Grants No. PHS-MH-32316; No. PHS-HD-03110; No. PHS-MH-22536.

The thermoregulatory responses of several vertebrate species to the injection of the possible neurotransmitter peptide neurotensin are investigated. Intracranial injections of neurotensin were administered to pigeons, ground squirrels, woodchucks, golden hamsters, rabbits, guinea pigs, gerbils, Swiss-Webster mice, Sprague-Dawley rats and rhesus monkeys at ambient temperatures of 4 and 25 C, and colonic temperatures were monitored for a period of two hours. In addition, the effects of pretreatments with the neurotransmitter modifiers atropine, naloxone, haloperidol, phenoxybenzamine, propanolol, L-triiodothyronine, apomorphine and thyrotropin releasing hormone in rats were evaluated. Hypothermia was observed following neurotensin treatment in all mammals except the rabbit and the obligatory hibernators, which was not altered by pretreatment with agents which block cholinergic, alpha and beta adrenergic and opiate receptors or by the electrolytic destruction of brain sites rich in neurotensin. Hypothermia was also observed to be potentiated by the dopamine antagonist halperidol and antagonized by thyrotropin releasing hormone. It is concluded that neurotensin may play a physiological role in thermoregulation, possibly by the inhibition of metabolic heat production. A.L.W.

A80-39278 Effect of intrahippocampal TRH on body temperature in hibernating and awake ground squirrels. T. L. Stanton, A. L. Beckman, and A. Winokur (Pennsylvania, University, Philadelphia, Pa.). In: Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford, England, July 30-August 3, 1979. Basel, S. Karger AG, 1980, p. 195-197. 6 refs.

A80-39279 Implications of changes in temperature perception and temperature regulation in high pressure heliox oxygen environments. M. E. Sheehan and R. W. Brauer (North Carolina, University, Wilmington, N.C.). In: Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford, England, July 30-August 3, 1979. Basel, S. Karger AG, 1980, p. 232-237. 13 refs. Contract No. N00014-75-C-0468.

Experimental data on changes in internal temperature perception and thermal regulation in animals in high-pressure environments is discussed. Results showing the narrowing of the euthermal interval, defined as the temperature region outside of which metabolic rate increases linearly with decreasing temperature or vasodilation is evident, in squirrel monkeys upon exposure to high-pressure heliox environments are presented. Concurrent increases in the responsiveness of the hypothalamus to thermal displacements are interpreted as indicating the presence of differences in euthermal internal temperature distribution at high pressures and low temperature environments and the role of central thermal perception in changes in the euthermal interval. Changes in oxygen consumption indicating increased metabolic rates at low to medium pressures in the mouse, monkey and man are also pointed out as evidence of a direct effect of pressure on metabolic rate. It is suggested that this effect may act through an increased influx of an ion such as sodium, which would lead to a compensatory increase in transport ATP-ase activity. A.L.W.

A80-39280 **Arctic medical research in the Nordic countries.** H. K. Akerblom (Nordic Council for Arctic Medical Research, Oulu, Finland) and J. Hirvonen (Oulu, University, Oulu, Finland). In: Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford, England, July 30-August 3, 1979. Basel, S. Karger AG, 1980, p. 260-270. 66 refs.

Medical research in the Nordic countries dealing with human responses to the cold and otherwise harsh conditions of Arctic and sub-Arctic regions is summarized. Current research areas include hormonal, diuretic and pathological responses to cold and cold acclimatization, and the effects of ethanol in the cold, which can be applied to the improvement of working conditions and capacity. The genetic and cultural adaptations enabling the survival of native populations in harsh conditions, and the nutrition, growth and development, and hereditary diseases of Arctic residents are also under investigation. Epidemiologic studies of some common diseases including coronary heart disease, juvenile diabetes mellitus, chronic otitis media, respiratory tract infections, zoonoses and psychiatric disorders, are also performed in support of efforts in improving health care in the region. A.L.W.

A80-39401 # **Bio-electromagnetic research - Review of some important aspects.** P. Bernardi (Roma, Università, Rome, Italy) and G. D'Ambrosio (Napoli, Università, Naples, Italy). *Alta Frequenza,* vol. 49, Mar.-Apr. 1980, p. 47-54. 65 refs.

Biological effects produced by the interaction of electromagnetic waves with humans are discussed. Attention is given to the cumulative nature of the effects, as well as teratogenic effects resulting from various power levels and exposure durations. The influence of radiation on organisms at the embrionic level, on reproductive organs, and on the lens of the eye is considered. The interaction of electromagnetic energy and biological systems is analyzed as a three-stage process: internal field distribution, local elementary effects, and physiopathological responses. Theoretical and experimental dosimetry is considered, with emphasis on the mutual interactions between sources, environment, and the biological specimen. Also discussed is bioelectromagnetic research in Italy, including such studies as research on whole body exposure and dosimetry techniques, and microwave spectroscopy of biological substances. J.P.B.

A80-39402 # **Quantifying the hazard of field-man interaction in electrically shielded enclosures.** P. Bernardi, G. D'Inzeo, F. Giannini, and R. Sorrentino (Roma, Università, Rome, Italy). *Alta Frequenza,* vol. 49, Mar.-Apr. 1980, p. 55-60. 10 refs. Research supported by the Consiglio Nazionale delle Ricerche.

The average value and the distribution of the specific absorption rate are considered for biological tissue irradiated in an electrically shielded enclosure. Since the exposure-rate concept cannot be used to quantify the hazard, a new method is proposed, which refers the power absorbed by the body to that absorbed in a reference structure. Calculations have been made in the 100 MHz frequency range, in which maximum power absorption occurs for humans. The examples presented stress the dependence of power absorption on the position of the man and of the source within the enclosure. J.P.B.

A80-39403 # **Temperature distribution in simulated living tissues irradiated electromagnetically.** F. Bardati, G. Gerosa, and P. Lampariello (Roma, Università, Rome, Italy). *Alta Frequenza,* vol. 49, Mar.-Apr. 1980, p. 61-67. 11 refs. Research supported by the Consiglio Nazionale delle Ricerche and Università di Roma.

The problem of the temperature distribution in electromagnetically irradiated bodies which simulate living tissues is studied. A suitable model of a living tissue, taking into account metabolic heat generation and thermal convection due to blood flow, is assumed. Methods for the determination of the final and transient temperature distributions are given. The particular cases of a slab and of a cylinder irradiated by a plane wave are considered and some numerical results are presented. (Author)

A80-39405 # **Some problems on evaluation of RF radiation hazards caused by ISM equipment in Poland.** A. Koperski and T. Smialkowski. *Alta Frequenza,* vol. 49, Mar.-Apr. 1980, p. 85-88.

Measurement methods and instruments used in Poland in investigations of hazardous electric and magnetic fields in frequency range from 0.1 to 300 MHz are described. On the basis of comparison of National Regulation with results of field intensity measurements radiated by some kinds of industrial, scientific and medical (ISM) sources, evaluation of radiation hazards is presented. Safety recommendations relating to the ISM equipment operational conditions are also included. (Author)

A80-39406 # **Multimode time-varying enclosures for exposure and dosimetry in bioelectromagnetic experiments.** G. D'Ambrosio, F. Di Meglio, and G. Ferrara (Napoli, Università, Naples, Italy). *Alta Frequenza,* vol. 49, Mar.-Apr. 1980, p. 89-94. 6 refs. Research supported by the Consiglio Nazionale delle Ricerche.

A new, simple and reliable electrical dosimetric technique in field-stirred enclosures is described, and electrical and calorimetric tests are compared. Using the above dosimetric method, field uniformity was carefully checked. It is shown that a frequency modulation stirring is generally less effective than a 'mechanical' one. Three large rotating stirrers gave satisfactory uniformity in cubic enclosures as small as 4 wavelengths. (Author)

A80-39407 # **Physical measurements on dielectric properties of biological substances.** B. Bianco, G. Drago, M. Marchesi, C. Martini, M. Morando, G. Morgavi, S. Ridella (CNR, Laboratorio per i Circuiti Elettronici, Genoa, Italy), and G. S. Mela (Genova, Università, Genoa, Italy). *Alta Frequenza,* vol. 49, Mar.-Apr. 1980, p. 95-100. 20 refs.

The microwave spectroscopy of biological substances is discussed, whereby the complex dielectric constant of a material is measured in a noninvasive way in the 100-2000 MHz frequency range. The method is characterized by great rapidity and the need for only about 0.5 cu cm of the sample to be tested, and measurements on human erythrocytes are considered. To investigate the possible existence of differences in the dielectric properties of hematological samples due to pathologies, human sera was examined. In particular, the equivalent normality, relaxation frequency, and volume percentage of bound water were determined using a modified Hooke-Jeeves procedure as an optimization technique; perceptible differences were found between normal and sick individuals. J.P.B.

A80-39408 # **Electromagnetic control of cell functions.** F. Beltrame, A. Chiabrera, M. Grattarola, P. Guerrini, G. Parodi, D. Ponta, G. Vernazza, and R. Viviani (Genova, Università, Genoa, Italy). *Alta Frequenza,* vol. 49, Mar.-Apr. 1980, p. 101-114. 14 refs. Research supported by the Consiglio Nazionale delle Ricerche.

The biological effects of low-frequency electromagnetic exposure on the electrochemical cell microenvironment are considered, along with the resulting variations in the concentrations of cell macromolecules and ions. Attention is given to studying cell response to EM exposure via the chromatin spatial momenta. Two automated cytometry techniques, automated laser flow microfluorometric and absorption image analyses, are reviewed, which are sensitive enough to measure in situ chromatin conformational changes inside single cells, and to distinguish the effects due to different field waveforms. Experimental results of electromagnetically controlled dedifferentiation of nucleated frog erythrocytes are presented, as well as in vivo results of EM field waveforms used in the osteogenesis field. It is found that EM control of cell functions is feasible. J.P.B.

A80-39410 # **Electromagnetic compatibility /EMC/ to-day - A review /1979-80/.** C. Egidi (Istituto Elettrotecnico Nazionale; CNR, Centro di Studio per la Televisione; Torino, Politecnico, Turin, Italy). *Alta Frequenza,* vol. 49, Mar.-Apr. 1980, p. 124-129.

Various aspects of electromagnetic compatibility are presented and the activities of several international bodies, particularly the Comité International Spécial des Perturbations Radioélectriques, in this field are surveyed. Attention is given to industrial, scientific and medical apparatuses, power lines, ignition noise, radio and television receivers, domestic appliances, data processing equipment and electric office machines with regard to their contribution to the problem of unintentional noise generation. J.P.B.

A80-39589 **The qualifications of flight personnel, a safety factor in air transport (Les aptitudes du personnel navigant, facteur de sécurité dans le transport aérien).** P. Bulté (Direction Générale de l'aviation Civile Paris, France). *Voies-Aviation Civile,* no. 7, Supplement, Spring 1980, p. 43, 44. In French.

The abilities of airline flight personnel are discussed as a factor determining the safety of air transportation. Consideration is given to the training and testing each crew member must undergo before undertaking to fly in complex, high-performance modern aircraft, the knowledge of aircraft systems required, and the selection and training of persons with abilities to deal with emergency situations. The necessity of periodic retraining of flight personnel to deal correctly and instinctively with infrequent emergencies is pointed out. A.L.W.

A80-39598 **The council and commissions for disciplining pilots - Infractions and sanctions (Le conseil et les commissions de discipline du personnel navigant - Infractions et sanctions).** C. Meunier (Direction Générale de l'Aviation Civile, Paris, France). *Voies-Aviation Civile,* no. 7, Supplement, Spring 1980, p. 74, 75. In French.

The activities of the French council for disciplining pilots (Conseil de Discipline du Personnel navigant professionnel) are described. Attention is given to the nature of pilot infractions and to the appropriate sanctions. The various stages of the disciplining process are reviewed. B.J.

A80-39974 **Blunted hypoxic vasoconstriction in lungs from short-term high-altitude rats.** I. F. McMurtry, K. G. Morris, and M. D. Petrun (Colorado, University, Denver, Colo.). *American Journal of Physiology,* vol. 238, June 1980, p. H849-H857. 30 refs. Grant No. NIH-HL-14985.

The effects of a short-term exposure to high altitude on hypoxic pulmonary vasoconstriction are investigated. Perfusion pressures from blood-perfused lungs taken from rats kept at low altitude (1520 m) or exposed for 40 h to a simulated altitude of 4270 m were determined in normoxic and hypoxic environments, and under the influence of perfused KCN, 2,4-dinitrophenol, angiotensin II, KCl, chlorpheniramine, histamine, meclofenamate and 2-deoxy-D-glucose. Smaller pressor responses to both airway and histotoxic hypoxia were observed in high-altitude lungs than in the controls, which were not eliminated by the prevention of hypocapnia in high-altitude rats. The observed blunting of the pressure response is found to be partially duplicated in anorexic rats, and not to be reversed by the blockade of histamine-induced vasodilation, by metabolic inhibitors or by increased calcium. A blunted pressor response to angiotensin II and KCl was also observed in both entire lungs and main pulmonary arteries. Results indicate that the blunted hypoxic pressor response is associated with a nonspecific decrease in the reactivity of the vascular smooth muscle, possibly related to a change in its calcium metabolism. A.L.W.

A80-40070 # **The impact deformation of the human skull /Experimental investigation and some problems of modeling/. I - A technique for the investigation of the biomechanics of the human skull upon impact (Deformatsii cherepa cheloveka pri udare /Eksperimental'noe izuchenie i nekotorye problemy modelirovaniia/. I - Metodika izucheniia biomekhaniki cherepa cheloveka pri udare).** A. S. Barer, Iu. G. Konakhevich, L. N. Sholpo, V. Kh. Petliuk, and N. A. Uglanova. *(Vsesoiuznaia Konferentsiia po Problemam Biomekhaniki, 2nd, Riga, Latvian SSR, Apr. 1979.) Mekhanika Kompozitnykh Materialov,* Mar.-Apr. 1980, p. 319-324. 11 refs. In Russian.

An experimental apparatus for the investigation of the biomechanical properties of the human skull upon impact, for the determination of the characteristics of local deformation produced in the impact region and the relation between impact characteristics and the reaction of the base of the skull and the acquisition of initial data for a computational model of skull response to impact is presented. The apparatus consists of a pendulum device used to impact different regions of a human skull filled with water against various vertical surfaces, while measuring loads on the base of the skull and the region opposite the impact zone. Results of experiments performed on the device using a range of impact momentum parameters corresponding to that of previous model experiments are found to agree with predictions of the semiempirical impact theory derived by Batuyev et al. (1969). A regression equation relating impact parameters to collision velocity is also obtained, which, along with the semiempirical theory, can be used for the evaluation of the effects of calculated impact parameters for such applications as helmet design. A.L.W.

A80-40071 # **A mathematical model of a myogenically active blood vessel (Matematicheskaia model' miogenno aktivnogo krovenosnogo sosuda).** V. T. Begiashvili, V. G. Meladze, and N. P. Mitagvariia (Akademiia Nauk Gruzinskoi SSR, Institut Fiziologii, Tiflis, Georgian SSR). *Mekhanika Kompozitnykh Materialov,* Mar.-Apr. 1980, p. 331-338. 14 refs. In Russian.

A mathematical model of the autoregulatory responses of the blood vessels of the brain to changes in systemic arterial pressure is developed on the basis of experimental data. Analysis of measurements of the local blood flow in the somatosensory cortex of anesthetized cats following sudden changes in systemic arterial pressure reveals five types of response to elevations and decreases, all of which are dependent on the characteristics of the pressure perturbation. In order to explain the results, a model is proposed in which blood vessel reactions are determined by the passive (elastic) and active stresses acting on vessel walls, with active stresses up to a limiting value proportional to blood pressure above a threshold level and vessel walls acting as a viscoelastic body with lumped parameters. The model is observed to describe a pressure-radius hysteresis, in agreement with that observed in living systems, indicating the myogenic, as opposed to neurogenic or metabolic, nature of the response. Analysis of an analog computer simulation of the proposed model equations indicates the correlation of model responses with those observed in living systems. A.L.W.

A80-40340 * # **Analysis of eighty-four commercial aviation incidents - Implications for a resource management approach to crew training.** M. R. Murphy (NASA, Ames Research Center, Moffett Field, Calif.). In: Annual Reliability and Maintainability Symposium, San Francisco, Calif., January 22-24, 1980, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1980, p. 298-306. 9 refs.

A resource management approach to aircrew performance is defined and utilized in structuring an analysis of 84 exemplary incidents from the NASA Aviation Safety Reporting System. The distribution of enabling and associated (evolutionary) and recovery factors between and within five analytic categories suggests that resource management training be concentrated on: (1) interpersonal communications, with air traffic control information of major concern; (2) task management, mainly setting priorities and appropriately allocating tasks under varying workload levels; and (3) planning, coordination, and decisionmaking concerned with preventing and recovering from potentially unsafe situations in certain aircraft maneuvers. (Author)

A80-40376 College Park Colloquium on Chemical Evolution: Limits of Life, 4th, University of Maryland, College Park, Md., October 18-20, 1978, Proceedings. *Origins of Life,* vol. 10, June 1980. 101 p.

Papers are presented concerning the various environmental and fossil constraints on the origin, evolution and adaptive radiation of life on earth. Specific topics include atmospheric constraints on the evolution of metabolism, variations in the solar constant, the possible role of early prokaryote gas vacuoles in motility, the morphologies of present manganese-depositing bacteria, implications of sulfur isotope ratios for the emergence of sulfur-reducing bacteria, the limits to life at low temperatures and water contents, the physical chemistry and evolution of salt tolerance in halobacteria, halophily and halotolerance in cyanophytes, and the properties of malate dehydrogenase from the extreme thermophile Bacillus caldolyticus. A.L.W.

A80-40377 Atmospheric constraints on the evolution of metabolism. J. C. G. Walker (Arecibo Observatory, Arecibo, P.R.). *(College Park Colloquium on Chemical Evolution: Limits of Life, 4th, College Park, Md., Oct. 18-20, 1978.) Origins of Life,* vol. 10, June 1980, p. 93-104. 36 refs.

The effects of early organisms on the composition of the primitive atmosphere are discussed in terms of the interactions of evolving metabolisms with their environment. Biosynthetic pathways in primitive organisms are discussed as arising from the need to supply essential compounds no longer available as a result of abiotic synthesis, and the eventual depletion of energy supplied by abiotic synthesis is seen as the stimulus for the evolution of pathways deriving energy from reactions between atmospheric carbon dioxide and hydrogen, as do modern methane bacteria. Photosynthesis is then considered to have arisen when chemoautotrophs had modified the atmosphere to the extent that a necessary constituent, presumably hydrogen, was in insufficient supply, resulting in the use of the unfermentable waste products of heterotrophs as electron donors in bacterial photosynthesis and thus the first biological cycles. Algal photosynthesis would then have developed as a solution to the further decrease in atmospheric hydrogen, although evidence suggests that a period of 2 billion years was required for oxygen released by algal photosynthesis to produce an aerobic atmosphere, permitting aerobic metabolism. A.L.W.

A80-40379 The gas vacuole - An early organelle of prokaryote motility. J. T. Staley (Washington, University, Seattle, Wash.). *(College Park Colloquium on Chemical Evolution: Limits of Life, 4th, College Park, Md., Oct. 18-20, 1978.) Origins of Life,* vol. 10, June 1980, p. 111-116. 27 refs.

Evidence for the possible role of gas vacuoles as early organelles of prokaryote motility is considered. The simplicity of the organelle, which is comprised of a set of gas vesicles impermeable to water and the presence of which serves to regulate cell buoyancy, is pointed out and its presence in organisms derived from primitive organisms, such as Clostridium, Methanosarcina and Halobacterium bacteria, as well as in some of the photosynthetic green sulfur bacteria, purple sulfur bacteria, cyanobacteria, obligate and facultative anaerobic heterotrophic bacteria and aerobic heterotrophic bacteria is noted. It is suggested that structural and compositional similarities between the gas vacuoles of different species may be due to the need to conserve a necessary structure rather than the rapid plasmid dispersal of a recent structure. Variations in the development of gas vacuoles among species are also presented as evidence for its ancient origin. A.L.W.

A80-40380 Structural features of manganese precipitating bacteria. K. H. Nealson and B. Tebo (California, University, La Jolla, Calif.). *(College Park Colloquium on Chemical Evolution: Limits of Life, 4th, College Park, Md., Oct. 18-20, 1978.) Origins of Life,* vol. 10, June 1980, p. 117-126. 28 refs. NSF Grant No. OCE-78-27383.

Studies of biological communities of the past (and their associated activities) are usually dependent upon preservation of fossil material. With bacteria this rarely occurs because of the absence of sufficient fossilizable cellular material. However, some bacteria deposit metabolic products that can, conditions allowing, be preserved indefinitely. In particular, manganese and iron depositing bacteria have the capacity to form preservable microfossils. In order to better understand these microfossils of the past, we have examined present day morphologies of manganese oxidizing bacteria. These bacteria are highly pleomorphic, depending on the growth medium, the age of the culture, and the extent of manganese oxidation. Transmission electron microscopy indicates that manganese may be deposited either intra- or extra-cellularly. The prognosis of the use of morphological information for the interpretation of ancient and modern manganese deposits is discussed. (Author)

A80-40381 Sulphur isotope ratios in late and early precambrian sediments and their implications regarding early environments and early life. H. G. Thode (McMaster University, Hamilton, Ontario, Canada). *(College Park Colloquium on Chemical Evolution: Limits of Life, 4th, College Park, Md., Oct. 18-20, 1978.) Origins of Life,* vol. 10, June 1980, p. 127-136. 33 refs.

The fractionation of sulfur isotopes by biological processes, specifically the bacterial dissimilatory reduction of sulphate to sulphide, is discussed as an indicator of biological activity in ancient sediments. Simple depletion of the heavy sulfur isotope S-34 by 0 to 50 per mil in the production of hydrogen sulfide in reducing sediments and batch process isotope fractionation in residual sulfate production in restricted basins are considered, and the environment during the formation of Archaen sediments is indicated. Results of studies of the S-34 distribution patterns in the Archean banded iron formations of the Michipicoten and Woman River areas of Ontario are presented which exhibit highly variable sulfur isotope distributions indicating the bacterial reduction of sea water sulphate to H2S in a restricted late Archean basin. Analysis of the sulfur isotope patterns in the early Archean Isua banded iron formations, however, reveals only slight variations and displacements from zero in the S-34 enhancement, indicating the probable absence of bacterial sulfate reducers and their probable origin between 3.7 and 2.7 billion years ago. A.L.W.

A80-40382 Limits to life at low temperatures and at reduced water contents and water activities. P. Mazur (Oak Ridge National Laboratory, Oak Ridge, Tenn.). *(College Park Colloquium on Chemical Evolution: Limits of Life, 4th, College Park, Md., Oct. 18-20, 1978.) Origins of Life,* vol. 10, June 1980, p. 137-159. 64 refs. Contract No. W-7405-eng-26.

Liquid water is generally considered an absolute requisite for functional life; consequently, life is expected to function only over the range of temperatures that permit its existence. These limits, however, do not apply to cell survival. Some cells can survive the closest attainable approach to 0 K, and some can survive the loss of over 99% of their water. (Author)

A80-40383 * Physical chemistry and evolution of salt tolerance in halobacteria. J. K. Lanyi (NASA, Ames Research Center, Moffett Field, Calif.). *(College Park Colloquium on Chemical Evolution: Limits of Life, 4th, College Park, Md., Oct. 18-20, 1978.) Origins of Life,* vol. 10, June 1980, p. 161-167. 35 refs.

The cellular constituents of extremely halophilic bacteria not only tolerate high salt concentration, but in many cases require it for optical functioning. The characteristics affected by salt include enzyme activity, stability, allosteric regulation, conformation and subunit association. The salt effects are of two major kinds: electrostatic shielding of negative charges by cations at low salt concentration, and hydrophobic stabilization by salting-out type salts at high salt concentration. The composition of halobacterial proteins shows an excess of acidic amino acids and a deficiency of nonpolar amino acids, which accounts for these effects. Since the cohesive forces are weaker and the repulsing forces are stronger in these proteins, preventing aggregation in salt, these structures are no longer suited for functioning in the absence of high salt concentrations. Unlike these nonspecific effects, ribosomes in halobacteria show marked preference for potassium over sodium ions. To ensure the proper intracellular ionic composition, powerful ion transport systems have evolved in the halobacteria, resulting in the extrusion of sodium ions and their replacement by potassium. It is likely that such membrane transport system for ionic movements is a necessary requisite for salt tolerance. (Author)

A80-40384 **Halophily and halotolerance in cyanophytes.** S. Golubic (Boston University, Boston, Mass.). *(College Park Colloquium on Chemical Evolution: Limits of Life, 4th, College Park, Md., Oct. 18-20, 1978.) Origins of Life,* vol. 10, June 1980, p. 169-183. 40 refs. NSF Grants No. DEB-76-21542-A01; No. OCE-12999-A02; No. EAR-76-84233-A01.

The survival, growth and distribution of organisms in hypersaline environments is discussed using cyanophytes as examples. Definitions of halophily (salt requiring) and halotolerance are reviewed, and it is proposed that the classical divisions of stenohaline (narrow range) and euryhaline (wide range) types be used together with the salt optima indicators of poly- (high salt), meso- (moderate salt) and oligohalines (lower salt) to better reflect organismal adaptations and the environmental conditions to which they are adapted. The presence of separate and distinct microbial populations in regions of constant salinity such as the open ocean and regions of fluctuating salinity such as marine intertidal zones and seasonal salt works is discussed in terms of the selective advantages offered by halophily and stenohaline specialization and halotolerance and euryhaline specialization. Results of field studies of the hypersaline ponds at Yallahs, south Jamaica and Solar Lake, Sinai demonstrating the existence of three separate groups of cyanophytes at different pond locations are presented. It is concluded that cyanophytes speciate along the salinity gradient and that separate halophilic taxa occupy environments with relatively constant salinities. A.L.W.

A80-40385 **Purification and properties of malate dehydrogenase from the extreme thermophile Bacillus caidolyticus.** H. Kristjansson and C. Ponnamperuma (Maryland, University, College Park, Md.). *(College Park Colloquium on Chemical Evolution: Limits of Life, 4th, College Park, Md., Oct. 18-20, 1978.) Origins of Life,* vol. 10, June 1980, p. 185-192. 5 refs.

The enzyme malate dehydrogenase from an extreme thermophile B. caldolyticus was purified to about 91% homogeneity. The molar mass of the enzyme was determined as 73,000 daltons and it is composed of two subunits, each with a molar mass of 37,000. Initial velocity studies with oxaloacetic acid and NADH as substrates as pH 8.1, over a range of temperatures, indicate that the enzyme operates via a sequential-type mechanism. Van't Hoff plots of the kinetic parameters displayed sharp changes in slope at characteristic temperatures, whereas the Arrhenius plot exhibited no such breaks over the temperature interval investigated. The enzyme was found to be stable at 41 C and lower temperatures. At 51 C and 59 C an almost immediate 20% reduction in activity was obtained, but no further inactivation occurred during the 60 min of incubation. At 59 C the enzyme lost 50% of its initial activity in about 38 s. High concentration of NADH was observed to greatly stabilize the enzyme at that temperature. It is suggested that the slope changes in the Van't Hoff plots and the stability profiles at 51 C and 59 C are representative of a temperature-induced conformational change in the enzyme. (Author)

STAR ENTRIES

N80-24685*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.

THE TERRESTRIAL RADIATION ENVIRONMENT AND EVA'S: PREDICTION REQUIREMENTS, MODEL IMPROVEMENTS, AND WARNING SYSTEMS

E. G. Stassinopoulos *In* NASA. Marshall Space Flight Center Solar-Terrest. Predictions Proc., Vol. 2 Dec. 1979 p 119-120

Avail: NTIS HC A99/MF A01 CSCL 05H

The total medical-biological impact of the Earth's space radiation environment on humans is a function of combined EVA and non-EVA exposure. In either case, the correct assessment of the eventual health risk to crew members is crucial to the success and viability of a project or mission. Aside from the medical-biological aspect itself, the validity of any assessment depends entirely on the existence of good and reliable models providing the high quality data that is needed for such evaluations, which should contain time histories of storm and substorm events, their intensities, their frequency of occurrence, and their duration. Prediction requirements, advantageous and desirable model developments and improvements, and systems that need to be designed and tested, which would alert space crews and maintenance personnel about impending radiation danger are outlined. A.R.H.

N80-24978*# National Aeronautics and Space Administration, Washington, D. C.

GROWTH AND FORMATION OF THE FORELEG SKELETON IN INBRED MICE AND RATS UNDER CONDITIONS OF HYPO-, NORMO- AND HYPERDYNAMIA

B. I. Kogan and Yu. S. Antipov Jan. 1980 10 p refs Transl. into ENGLISH from Vestn. Zool. (USSR), no. 4, 1976 p 67-71 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by USSR Acad. of Pedagogical Sci.
(Contract NASw-3198)
(NASA-TM-75977) Avail: NTIS HC A02/MF A01 CSCL 06C

Inbred 1 month old males of C57B 1/6, CBA, CC57Br/Mw interlinear hybrid mice of the first generation and rats of the August and Wistar lines were subjected to conditions of hypo-, normo- and hyperdynamia for 2 months. The statistically reliable dependence is shown between mechanical underloadings and overloadings and macro microscopic changes in the hind limb skeleton of animals. Genetic determination of growth and formation of the forelimb skeleton is established. Hereditary susceptibility and the phenomenon of heterosis are preserved under all motor conditions. Author

N80-24979*# National Aeronautics and Space Administration, Washington, D. C.

PLANTS AND WEIGHTLESSNESS

V. Karminskiy and V. Tarkhanovskiy Jan. 1980 4 p Transl. into ENGLISH from Tekhn. i Nauka (Moscow), no. 11, 1978 p 10 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76025) Avail: NTIS HC A02/MF A01 CSCL 06C

The growth of two plants, wall cress and short-day red goosefoot, was traced for their entire lifetime in weightlessness. In the beginning both plants grew normally: the seeds sprouted in the normal periods, and the shoots did not differ in any way from the control plants. It is true that certain roots lost their normal orientation and did not go deeper into the nutrient medium, but rather crept over its surface. But then both the wall cress and the goosefoot slowed down their normal rate of growth, which became noticeable from the rate of formation of new leaves in the wall cress and stem development in the goosefoot. Although no disorders were successfully found in the morphology of the two plants, almost half of the experimental cress and goosefoot plants ceased growth completely, yellowed and died. The other part continued to develop normally and by the end of vegetation, differed from the control plants only in a lower height. Not all were fertile since certain experimental plants, after losing spatial orientation, became twisted and produced sterile flowers. R.E.S.

N80-24980*# National Aeronautics and Space Administration, Washington, D. C.

CHANGE IN RADIO SENSITIVITY OF MICE UNDER EFFECT OF ROTATION

N. I. Arlashchenko, V. M. Seraya, and G. P. Rodina Jan. 1980 12 p refs Transl. into ENGLISH from Radiobiol. (USSR), no. 2, 1979 p 251-256 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by Inst. of Med. and Biol. Probl. of the USSR Min. of Public Health
(Contract NASw-3198)
(NASA-TM-76026) Avail: NTIS HC A02/MF A01 CSCL 06C

Radiosensitivity of animals placed in slowly rotating chambers was investigated and was found to vary under the influence of the functional load on the vestibular analyzer. An increased radioresistance was registered in populations of the most radiosensitive mice. In populations of more radioresistant animals the gravitational load decreases the radioresistance. R.E.S.

N80-24981*# National Aeronautics and Space Administration, Washington, D. C.

CONTENT OF TOTAL IRON, COPPER AND MANGANESE IN LIVER OF ANIMALS DURING HYPOKINESIA, MUSCLE ACTIVITY AND PROCESS OF RECOVERY

G. M. Potapovich, G. V. Taneyeva, and A. B. Uteshev 30 May 1980 8 p refs Transl. into ENGLISH from Izv. Akad. Nauk Kaz. SSR, Ser. Biol. (USSR), no. 4, Jul. - Aug. 1978 p 63-66 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by the Kazakh SSR Min. of Public Health, Alma-Ata
(Contract NASw-3198)
(NASA-TM-76130) Avail: NTIS HC A02/MF A01 CSCL 06C

It is shown that the content of total iron, copper and manganese in the liver of animals is altered depending on the intensity and duration of their swimming. Hypodynamia for 7 days does not alter the concentration of iron, but sufficiently increases the content of copper and manganese. The barometric factor effectively influences the maintenance of constancy in the content of microelements accumulated in the liver after intensive muscle activity. Author

N80-24982*# Hampton Inst., Va. Dept. of Physics.

A RADIATIVE TRANSFER MODEL FOR REMOTE SENSING OF LASER INDUCED FLUORESCENCE OF PHYTOPLANKTON IN NON-HOMOGENEOUS TURBID WATER Annual Report

D. D. Venable May 1980 57 p refs
(NASA-CR-163155) Avail: NTIS HC A04/MF A01 CSCL 06C

A radiative transfer computer model was developed to characterize the total flux of chlorophyll a fluoresced or backscattered photons when laser radiation is incident on turbid water that contains a non-homogeneous suspension of inorganic sediments and phytoplankton. The radiative transfer model is based on the Monte Carlo technique and assumes that: (1) the aquatic medium can be represented by a stratified concentration profile; and (2) that appropriate optical parameters can be defined for each layer. The model was designed to minimize the required computer resources and run time. Results are presented for an anacystis marinus culture. R.E.S.

N80-24983*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

PRELIMINARY RESULTS OF FAST NEUTRON TREATMENTS IN CARCINOMA OF THE PANCREAS

Reinhard Gahbauer, Kyee Y. Koh, Antonio Rodriguez-Antunez, Gwynn L. Jelden, Robert F. Turco, John Horton, Ronald Bukowski, Ronald Reimer, James Blue, William Roberts et al 1980 4 p Presented at the National Pancreatic Proj., New Orleans, 18 Apr. 1980 Prepared in cooperation with Cleveland Clinic Foundation, Ohio
(NASA-TM-81516; E-460) Avail: NTIS HC A02/MF A01 CSCL 06E

A group of 30 patients with adenocarcinoma of the pancreas including some patients with very advanced disease, were treated with the so-called mixed beam modality employing photon treatments three times per week and neutron treatments twice a week. Two hundred Rads or equivalent Rads (RBE 3.3) were given in daily fractions aiming at a total dose of 6000 Rads in 6 to 8 weeks. The treatments were well tolerated and significant palliation was achieved in 26 to 30 cases. Twelve months survival was 33 percent with a median survival of 7 months or 210 days. Treatment techniques and localization procedures are discussed. R.E.S.

N80-24984# Rancho Los Amigos Hospital, Inc., Downey, Calif.
STUDIES ON OXYGEN TOXICITY IN THE LUNGS Final Technical Report, 1 May 1970 - 29 Feb. 1980
Jack D. Hackney 29 Feb. 1980 51 p refs
(Contract N00014-78-C-0290)
(AD-A082546) Avail: NTIS HC A04/MF A01 CSCL 06/20

Work on two animal species has shown that during the first day of exposure to high concentrations of oxygen (O2), the normal rate of cell division in the lung is decreased. In animals that survive the initial exposure to O2 or in those exposed to a lower concentration, cell division resumes after about five days. In animals exposed to O2, it has been noted that they eat less and lose weight. Air-breathing mice deprived of food had weight loss and depression in DNA synthesis similar to that observed in mice exposed to 95 percent O2. These results indicate that indirect factors are associated with the depression of DNA synthesis observed in mice exposed to high O2. Lack of food or 40 percent O2 did not inhibit type 2 division associated with repair of ozone damaged alveolar epithelium. Oxygen concentrations of 61 percent or higher did inhibit reparative cell division in ozone damaged alveoli of mice. GRA

N80-24985# Rochester Univ., N. Y. School of Medicine and Dentistry.
BIOLOGICAL EFFECTS OF IONIZING RADIATION AT THE MOLECULAR, CELLULAR AND ORGANISMAL LEVELS Annual Progress Report, 15 Oct. 1978 - 14 Oct. 1979
C. S. Lange 1979 13 p refs
(Contract EY-76-S-02-3501)
(COO-3501-13) Avail: NTIS HC A02/MF A01

The Zimm theory of rotor speed dependent DNA sedimentation has been tested quantitatively and found to be correct as predicted by the equation of Zimm and Schumaker. The quantitative validity of the theory means that the size of a DNA sedimenting under speed-dependent conditions is not undefinable but rather can be uniquely obtained by the application of that theory to the data. The viscoelastic recoil or more accurately, the zero shear rate reduced recoil was shown to be a quantitative direct function of the number of intact DNA molecules present in solution. This demonstration made possible the measurement of a direct survival curve for intact DNA molecules after exposure to ionizing radiation. A D37 of 49.5 krads was obtained for the DNA of T4c coliphage irradiated as a solution of phage particles. It is noteworthy that this survival curve measures the number of intact DNA molecules, not the average number of breaks/molecule. DOE

N80-24986# National Academy of Sciences - National Research Council, Washington, D. C. Board on Science and Technology for International Development.
MICROBIAL PROCESSES: PROMISING TECHNOLOGIES FOR DEVELOPING COUNTRIES Final Report
Feb. 1980 215 p refs
(Contract AID/csd-2584)
(PB80-144686; CIR/BOSTID-80/28) Avail: NTIS HC A10/MF A01 CSCL 06K

Ten subpanels selected a number of microbial processes that met either of the following criteria: the process can be beneficially employed in developing countries, or the process has sufficient potential for developing countries to merit research and development for future use. Microbes can be marshaled to aid in solving many important global problems including food storages, resource recovery and reuse, energy shortages, and pollution. Microbiology is particularly suited to make important contributions to human needs in developing countries, yet it has received comparatively little attention. The range of possible applications covers uses by individuals and industries in rural settings, villages and cities. The ten subject areas covered include raw materials for microbial processes, food and animal feed, soil microbes in plant health and nutrition, nitrogen fixation, microbial insect control agents, fuel and energy, waste treatment and utilization, cellulose conversion, antibiotic and vaccines, and pure cultures for microbial processes. GRA

N80-24988*# National Aeronautics and Space Administration, Washington, D. C.
FREE AMINO ACIDS OF THE BLOOD AND SOME ORGANS IN HYPOKINESIA
B. M. Kurtser, L. N. Kobylyanskiy, S. A. Lysenko, and L. I. Tkachenko Jan. 1980 6 p refs Transl. into ENGLISH from Zdravookhraneniye (USSR), v. 18, no. 4, 1975 p 26-27 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by the Kishinev Med. Inst., USSR
(Contract NASw-3198)
(NASA-TM-75945) Avail: NTIS HC A02/MF A01 CSCL 06P

The metabolic fund of amino acids of the blood and tissues of rats under hypokinesia was investigated. The content of free amino acids was determined for the liver, kidney, brain, and the skeletal and cardiac muscles after established periods of hypokinesia. It was found that the total content of free amino acids in the experimental animals was, on the average 19 percent lower than in the controls. The results of the quantity of individual compounds indicate that the level of some were reduced while others were increased. It was also found that there was an unequal content of individual amino acids in the different tissues. R.E.S.

N80-24989*# National Aeronautics and Space Administration, Washington, D. C.
HYPODYNAMIC AND HYPOKINETIC CONDITION OF SKELETAL MUSCLES
G. S. Katinas, V. S. Oganov, and A. N. Potapov Feb. 1980 7 p refs Transl. into ENGLISH from Fiz. Zh. SSSR (USSR), v. 60, no. 10, 1974 p 1606-1608 Original language document was announced as A75-14852 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Min. Inst. for Medicobiol. Probl., Moscow, USSR
(Contract NASw-3199)
(NASA-TM-76009) Avail: NTIS HC A02/MF A01 CSCL 06P

Data are presented in regard to the effect of unilateral brachial amputation on the physiological characteristics of two functionally different muscles, the brachial muscle (flexor of the brachium) and the medial head of the brachial triceps muscle (extensor of the brachium), which in rats represents a separate muscle. Hypokinesia and hypodynamia were studied. Author

N80-24990*# National Aeronautics and Space Administration, Washington, D. C.
EFFECT OF PRODUCTION MICROCLIMATE ON FEMALE THERMAL STATE WITH INCREASED TEMPERATURE AND AIR HUMIDITY
O. G. Machablishvili Mar. 1980 5 p refs Transl. into ENGLISH from Vrachebnoye Delo (Kiev), no. 6, Jun. 1979 p 96-98 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by the Georgian SSR Min. of Public Health, USSR
(Contract NASw-3198)
(NASA-TM-76082) Avail: NTIS HC A02/MF A01 CSCL 06S

The thermal state of women during the effect of high air temperature and relative humidity with a varying degree of physical loads was studied. Parameters for air temperature, relative humidity, and air movement were established. It was established that in women the thermo-regulatory stress occurs at lower air temperatures and with lower physical loads than in men. The accumulation of heat in women was revealed with lower air temperature than in men. It is concluded that to preserve the normal physiological state of the female organism it is necessary to create more favorable microclimate conditions and decrease the physical loads. R.E.S.

N80-24991*# National Aeronautics and Space Administration, Washington, D. C.
CARDIOLEADER USE IN ACYCLIC TYPES OF SPORTS
V. I. Bondin Mar. 1980 11 p refs Transl. into ENGLISH from Teor. Prakt. Fiz. Kultury (USSR), no. 6, June 1969 p 34-37 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Bostov State Pedagogical Inst., USSR
(Contract NASw-3199)
(NASA-TM-76085) Avail: NTIS HC A02/MF A01 CSCL 06A

The use of the cardioleader method in regulating training loads and tests for athletes in acyclic sports was investigated. It was found that the use of this method increases the effectiveness of the training process. R.E.S.

N80-24992*# Stanford Univ., Calif. School of Medicine.
NEURON ANALYSIS OF VISUAL PERCEPTION Final Report
Kao Liang Chow May 1980 13 p
(Grant NGR-05-020-435)
(NASA-CR-163137) Avail: NTIS HC A02/MF A01 CSCL 06P

The receptive fields of single cells in the visual system of cat and squirrel monkey were studied investigating the vestibular input affecting the cells, and the cell's responses during visual discrimination learning process. The receptive field characteristics of the rabbit visual system, its normal development, its abnormal development following visual deprivation, and on the structural and functional re-organization of the visual system following neo-natal and prenatal surgery were also studied. The results of each individual part of each investigation are detailed. R.E.S.

N80-24993*# Clarkson Coll. of Technology, Potsdam, N.Y.
LIGHT FLASH PHENOMENA INDUCED BY HzE PARTICLES Final Report
P. J. McNulty and V. P. Pease 31 Mar. 1980 51 p refs
(Grant NsG-9059; Contract F30602-78-C-0102)
(NASA-CR-163011) Avail: NTIS HC A04/MF A01 CSCL 06P

Astronauts and Apollo and Skylab missions have reported observing a variety of visual phenomena when their eyes are closed and adapted to darkness. These phenomena have been collectively labelled as light flashes. Visual phenomena which are similar in appearance to those observed in space have been demonstrated at the number of accelerator facilities by expressing the eyes of human subjects to beams of various types of radiation. In some laboratory experiments Cerenkov radiation was found to be the basis for the flashes observed while in other experiments Cerenkov radiation could apparently be ruled out. Experiments that differentiate between Cerenkov radiation and other possible mechanisms for inducing visual phenomena was then compared. The phenomena obtained in the presence and absence of Cerenkov radiation were designed and conducted. A new mechanism proposed to explain the visual phenomena observed by Skylab astronauts as they passed through the South Atlantic Anomaly, namely nuclear interactions in and near the sensitive layer of the retina, is covered. Also some studies to search for similar transient effects of space radiation on sensors and microcomputer memories are described. R.E.S.

N80-24994# Clemson Univ., S.C. Coll. of Engineering.
AN EVALUATION OF HUMAN THERMAL MODELS FOR THE STUDY OF IMMERSION HYPOTHERMIA PROTECTION EQUIPMENT Final Report, 17 Jan. 1978 - 21 Aug. 1979
R. Michael Harnett, IV Baker E. R., and Jeffrey L. Ringuest 12 Oct. 1979 107 p refs
(Contract DOT-CG-72074-A)
(AD-A081100; USCG-D-80-79) Avail: NTIS HC A06/MF A01 CSCL 06/19

This report presents an evaluation of mathematical models of a man in a cold environment. The models are evaluated for their ability to predict the effectiveness of anti-exposure equipment use during cold water immersion. The evaluation is done by comparison of model results to those observed during in vivo cold immersions with a wide range of anti-exposure equipment. The models evaluated are those, available in the literature, which employ a metabolic rate control submodel. Model results obtained with modified and experimental submodels are discussed. GRA

N80-24995# Army Research Inst. of Environmental Medicine, Natick, Mass.
PHYSIOLOGICAL RESPONSES OF MEN AND WOMEN TO HUMID AND DRY HEAT
Yair Shapiro, Kent B. Pandolf, Barbara A. Avellini, Nancy A. Pimental, and Ralph F. Goldman Nov. 1979 30 p refs
(DA Proj. 3E1-62777-A-845)
(AD-A079573) Avail: NTIS HC A03/MF A01 CSCL 06/19

The major objective of this study was to determine whether sex-related differences in thermoregulation exist; and if so, whether there was any method to define these differences. A major methodological problem of the study was the inability to find groups of males and females matched in all their physical characteristics, namely: body weight, skin surface area, percentage of body fat and cardiorespiratory physical fitness. This problem was partially solved by dividing each sex into two subgroups and matching the subgroups as 'small' males vs. 'big' females, or more fit females vs. less fit males. The sex-related differences concluded from this investigation are summarized in Table 4. In comfortable climatic conditions (20 C, 40% rh) men and women reacted in a physiologically similar fashion. Under wet conditions, whether mild or hot, females tolerated the heat better than males. They displayed lower deep body and skin temperatures, and therefore lower heat storage, while demonstrating lower sweat rates and subsequently less dehydration than males. In contrast, under hot-dry conditions, males seemed to be at a physiological advantage. Compared to females, they showed lower deep body and skin temperatures, lower HR, lower heat storage, and similar sweat rates. GRA

N80-24996# Undersea Medical Society, Bethesda, Md.
MONITORING VITAL SIGNS IN THE DIVER Special Report
Claes E. G. Lundgren 1979 121 p refs
(Contract N00014-74-C-0319)
(AD-A071920; WS-78-2) Avail: NTIS HC A06/MF A01 CSCL 06/5

Various aspects of monitoring vital signs in the diver are discussed. Special consideration is given to monitoring heat loss, temperature, and eye movement. Performance measures and voice monitoring were considered extremely important. It is concluded that monitoring is highly desirable and is within the capability of present equipment. It was recognized however that monitoring in-sea divers is difficult and complicated because of unwillingness on the part of divers and tenders to cooperate. R.E.S.

N80-24997# Saint Louis Univ., Mo. Dept. of Physiology.
HEMATOLOGICAL ASPECTS OF HEAT STRESS IN TRAINED AND UNTRAINED MEN WITH SPECIAL EMPHASIS ON ERYTHROCYTE VOLUME, ACID-BASE BALANCE AND FLUID-ELECTROLYTE SHIFTS Final Report, 1 May 1976 - 31 Aug. 1978
W. vanBeaumont, S. Underkofler, and S. vanBeaumont 15 Jun. 1979 46 p refs
(Contract N00014-76-C-0795)
(AD-A071757) Avail: NTIS HC A03/MF A01 CSCL 06/19

The results of the present study indicate that with 30 min of continuous sub-maximal exercise in a cool environment (24 C) or a warm environment (40 C), the plasma volume rates of decrease and restoration are virtually identical. At all levels of sub-maximal performance, restoration of plasma volume was 80-90% complete in 30 min post-excercise and 100% complete in 60 min. The regression equation for calculating proportional changes in plasma volume, using changes in hematocrit and hemoglobin indicate that the changes in mean erythrocyte volume (MCV) were small. However, based on statistical analyses it is apparent that significant changes in the MCV do occur during sub-maximal exercise. Physical training decreased plasma complexity and increased the size of the human erythrocyte. Proportionally, the shift of plasma water during maximal exercise was similar before and after training. Acclimatization to heat induced increments in MCV which, however, were not statistically significant. In most acclimatized subjects there was a tendency for quicker restoration of plasma volume than in nonheat acclimatized subjects after exercise in the heat. These changes are discussed with reference to concomittant changes in plasma complexity and plasma protein. R.E.S.

N80-24998# Army Research Inst. of Environmental Medicine, Natick, Mass.
RESPIRATORY ADAPTATIONS IN ACID-BASE DISTURBANCES: ROLE OF CEREBRAL FLUIDS
V. Fencl and R. A. Gabel 19 Jun. 1979 14 p refs
(DA Proj. 3A1-61101-A-91C)
(AD-A073202) Avail: NTIS HC A02/MF A01 CSCL 06/16

The respiratory and metabolic components of acid-base homeostasis are defined. A quantitative empirical description of the (incomplete) mutal compensations in steady acid-base disturbances primarily occuring in either of the two components is presented, based upon data compiled from the literature. Respiratory adaptations in steady acid-base disturbances of metabolic origin (hyperventilation with hypocapnia in primary metabolic acidosis, and hypoventilation with hypercapnia in metabolic alkalosis) are analyzed as a function of the acidity of the cerebral fluids (cerebrospinal and cerebral interstitial fluid). R.E.S.

N80-24999# Technische Hogeschool, Eindhoven (Netherlands). Dept. of Electrical Engineering.
TREND PREDICTION AS A BASIS FOR OPTIMAL THERAPY: A SURVEY REPORT
J. E. Beneken, J. A. Blom, F. F. Jorritsma, A. Nandorff (Leiden Univ., Netherlands), and J. Spierdijk (Leiden Univ., Netherlands) Aug 1978 71 p refs
(TH-78-E-86; ISBN-90-6144-086-6) Avail: NTIS HC A04/MF A01

A state-of-the-art survey in clinical trend prediction as a basis for optimizing therapy, with emphasis on research being done in the countries of the European Community, was conducted. Special areas of interest are quantitative prognosis (prognostic indices), the detection and use of trends in the patient's state, the use of models in prediction and their possible use for deciding which therapy is optimal for a specific patient. An extensive list of centers working in these fields as well as an extensive reference list is included. Author (ESA)

N80-25000# Istituto Superiore di Sanita, Rome (Italy). Lab. delle Radiazioni.
BIOLOGICAL EFFECTS OF ULTRAVIOLET RADIATION [EFFETTI BIOLOGICI DELLA RADIAZIONE ULTRAVIOLETTA]
M. Cremonese and M. Matzeu 9 Jul. 1979 54 p refs In ITALIAN
(ISS-R-79/5; ISSN-0390-6477) Avail: NTIS HC A04/MF A01

A review is presented of the most important effects produced by ultraviolet radiation with particular regard to the possible pathologic effects on man. A molecular interpretation of DNA alterations by the action of UV radiation is discussed, presenting experimental evidence of the effect upon cellular cultures and damages inflicted to human skin and eyes. The carcenogenic effects are related to this interpretation. Some statuory problems are discussed in connection with health protection against ultraviolet radiation. Author (ESA)

N80-25001# National Asthma Center, Denver, Colo. Dept. of Physiology
LOW-LEVEL CARBON MONOXIDE EXPOSURE AND WORK CAPACITY AT 1600 METERS
Philip C. Weiser, Gerd J. A. Cropp, Callis G. Morrill, Thomas L. Kurt, and David W. Dickey Sep. 1979 35 p refs
(Contract EPA-68-02-2244)
(PB80-129083; EPA-600/1-79-037) Avail: NTIS HC A03/MF A01 CSCL 06T

At sea level low-level carbon monoxide (CO) exposure impairs exercise performance. To determine if altitude residence at 1600 m augments this CO effect, two studies of graded treadmill work capacity were done. In both studies, maximal cardiopulmonary responses were not different, but submaximal exercise changes were elevated breathing CO. Thus, in healthy young men residing near 1600 m, an increase in low-level CO exposure produced a linear decrement in maximal aerobic performance similar to that reported at sea level. GRA

N80-25002*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
DECISION-PROBLEM STATE ANALYSIS METHODOLOGY
Duncan L. Dieterly May 1980 21 p refs Prepared in cooperation with AFHRL, Moffett Field, Calif.
(NASA-TM-81194; AFHRL/H/80-102) Avail: NTIS HC A02/MF A01 CSCL 05J

A methodology for analyzing a decision-problem state is presented. The methodology is based on the analysis of an incident in terms of the set of decision-problem conditions encountered. By decomposing the events that preceded an unwanted outcome, such as an accident, into the set of decision-problem conditions that were resolved, a more comprehensive understanding is possible. All human-error accidents are not caused by faulty decision-problem resolutions, but it appears to be one of the major areas of accidents cited in the literature. A three-phase methodology is presented which accommodates a wide spectrum of events. It allows for a systems content analysis of the available data to establish: (1) the resolutions made, (2) alternatives not considered, (3) resolutions missed, and (4) possible conditions not considered. The product is a map of the decision-problem conditions that were encountered as well as a projected, assumed set of conditions that should have been considered. The application of this methodology introduces a systematic approach to decomposing the events that transpired prior to the accident. The initial emphasis is on decision and problem resolution. The technique allows for a standardized method of accident into a scenario which may used for review or the development of a training simulation. R.E.S.

N80-25003*# SRI International Corp., Menlo Park, Calif. Artificial Intelligence Center.
RESEARCH IN INTERACTIVE SCENE ANALYSIS Final Report
Jay M. Tenenbaum 30 May 1980 49 p refs
(Contract NASw-2865)
(NASA-CR-163196) Avail: NTIS HC A03/MF A01 CSCL 05J

The recovery of information about the three dimensional structure and physical characteristics of surfaces depicted in an image was studied focusing on two complementary problems: (1) basic techniques for inferring three dimensional surface shape from two dimensional images and (2) means for integrating the results of different techniques to obtain a globally consistent surface description. A technique was developed for constraining surface orientation along image contours that correspond to surface boundaries. A means for interpolating surface orientation estimates from a variety of sources into smooth surfaces--a major integration problem--was also developed. A computational model, based on these techniques, was proposed for inferring the three dimensional surface structure depicted in a line drawing. R.E.S.

N80-25004# Grumman Aerospace Corp., Bethpage, N.Y.
INVESTIGATION OF MINIMUM SIZED LOW-PROFILE COCKPITS (MSLPC) AND CREW ESCAPE SYSTEM INTEGRATION Final Report, 15 Sep. 1978 - 17 Jul. 1979
William C. Tauby Wright-Patterson AFB, Ohio AFFDL 17 Sep. 1979 239 p refs

(Contract F33615-78-C-3427; AF Proj. 2402)
(AD-A081055; AFFDL-TR-79-3104) Avail: NTIS
HC A11/MF A01 CSCL 01/3

Assessed are the potential benefits derived from the application to advanced fighter aircraft configurations and the integration of an effective crew escape capability. Alternate approaches and escape concepts were identified and subjected to analysis and tradeoff to permit the recommendation of preferred concepts. The computer simulation of escape system aerodynamic performance facilitated the evaluation leading to the selection of the supine concept as that preferred for further development as a preliminary design. GRA

N80-26005# Defence and Civil Inst. of Environmental Medicine, Downsview (Ontario). MLSD Div.

EVALUATION OF UK PQ OXYGEN MASK FOR USE IN CF AIRCRAFT

D. F. Leben Sep. 1979 27 p refs
(AD-A079476; DCIEM-79-R-39) Avail: NTIS
HC A03/MF A01 CSCL 06/11

As part of a project to develop adequate life support equipment for the New Fighter Aircraft (NFA), evaluation of the Royal Air Force (RAF) P/Q oxygen mask by DCIEM indicated that the RAF P/Q mask is the only mask capable of holding the necessary 70-80 mm of pressure of the 'get-me-down' requirement of the life support ensemble. Subsequently, DCIEM was asked to evaluate the suitability of the P/Q mask as a direct replacement for the A13A mask (also known as the MS22001) for general use with the present series of aircrew helmets (i.e., the DH 41-2 jet aircrew helmet). The A13A oxygen mask currently in use in the CAF Air Operations has a number of deficiencies (e.g., slippage under G). Additionally, the A13A is not suited for use in the NFA (i.e., it cannot seal against the requisite positive breathing pressures for high altitude). This report documents the result of this evaluation. The P/Q is superior to all other oxyen masks available in that it is the only mask which can hold the 70-80 mm of pressure deemed necessary for the 'get-me-down' capability of the New Fighter Aircraft. In comparison, the A13A mask with Pate suspension can hold only 30 mm. GRA

N80-26006# Naval Postgraduate School, Monterey, Calif.

A SIMULATOR EVALUATION OF PILOT RESPONSE TO AN AIRCRAFT COCKPIT SPIN INDICATOR SYSTEM M.S. Thesis

James Hunter Aldrich, Jr. Dec. 1979 112 p refs
(AD-A081536) Avail: NTIS HC A06/MF A01 CSCL 01/3

A high-performance aircraft simulator facility employing a two-axis combat maneuvering simulation was used to investigate pilot response to an aircraft cockpit spin indicator system. The time required to correctly respond to departed flight, spin and engine stall indications was measured using F-14 NATOPS procedures. Incorrect and inadequate responses were also recorded. Quantitative and qualitative analysis of sixteen data items was performed for eighteen test subjects during twenty-seven test runs and compiled using eight category classifications. Favorable performance and opinion were obtained. Detailed conclusions and recommendations are presented. GRA

N80-26007# National Research Council of Canada, Ottawa (Ontario). Div. of Mechanical Engineering.

DYNAMICS OF MULTI-BODY SYSTEMS

I. H. Mufti Nov. 1979 31 p refs
(AD-A082436; DME-MK-29; NRC-18017) Avail: NTIS
HC A03/MF A01 CSCL 20/11

The dynamic equations of multi-body systems in the form of open chains are derived by applying the principles of linear and angular momentum to each individual member in the chain. This results in the appearance of constraint forces and torques in the dynamic equations. Using more or less classical approach these unknown forces and torques can be eliminated. Another approach is to approximate these forces by elastic and viscous forces by allowing small violations of the constraints. The well-known elimination procedure leads to a small densely coupled system of equations while the lesser-known procedure of approximating the constraint forces and torques yields a large but less densely coupled system. Both these procedures are first explained in the context of a single rigid body and then applied to a system of rigid bodies in an open chain where each body is coupled directly to at most two neighbors. GRA

N80-26008# Naval Air Development Center, Warminster, Pa. Aircraft and Crew Systems Technology Directorate.

LIVE SUBJECT EJECTION TOWER TESTING TO DETERMINE HUMAN TOLERANCE TO AN INCREASED ONSET RATE OF ACCELERATION Final Report, Jun. 1970 - Oct. 1972

W. C. Ward, Jr. 31 Oct. 1979 24 p
(WF41451402)
(AD-A082993; NADC-79244-60) Avail: NTIS
HC A02/MF A01 CSCL 01/3

The U.S. Navy development of an advanced Minimal Envelope/Weight (MEW) ejection seat under the auspices of AIR-340, Naval Air System Command (NASC), had as one of its design goals the development of a pure rocket motor as the propulsion system. The finalized propulsion unit produced an acceleration onset of 500 G/sec. which exceeded the specification maximum onset rate of 250 G/sec. As a consequence, this study was generated to determine whether the higher onset in combination with ≤ 10 to 12 G acceleration was physiologically acceptable. This report describes the tests conducted in exploration of physiological acceptability of this particular acceleration envelope. The results indicate successful tolerance based on limited exposure of four volunteer subjects. GRA

N80-26027 Oregon State Univ., Corvallis.

VARIATIONS IN PHYTOPLANKTON PHYSIOLOGICAL PARAMETERS DURING TRANSIENT NITROGEN ENVIRONMENTS Ph.D. Thesis

John Michael Demanche 1980 121 p
Avail: Univ. Microfilms Order No. 8013666

The relationship among nitrogen uptake, assimilation and phytoplankton growth during changing or transient nitrogen environments was investigated. A new culture system, diffusion culture, was developed to provide realistic low nitrogen environments. Physiological parameters for two species of diatom, Skeletonema costatum and Thalassiosira aestivalis were determined for a variety of nitrogen regimes, progressing from non-nitrogen limited, two nitrogen adapted, and to nitrogen starved cultures. Additions of nitrate, or nitrate and ammonium, were made to each regime; uptake rate, assimilation rate, and changes in cell physiological parameters were measured. Internal pools of nitrate, ammonium, and total free amino acids were measured and related to both conditioning regime and nitrogen perturbation. Two mechanisms for nitrate reduction were found, one that is coupled to nitrate uptake and another independent of uptake. The rate of nitrate reduction was not solely a function of internal concentration. Ammonium inhibited nitrate uptake, but the inhibition could not be explained by changes in intracellular ammonium or free amino acids. A conceptual model of nitrate uptake for transient environments was developed. Dissert. Abstr.

N80-26028 Washington Univ., Seattle.

PHYTOPLANKTON PRIMARY PRODUCTION BELOW ARCTIC OCEAN PACK ICE: AN ECOSYSTEMS ANALYSIS Ph.D. Thesis

Clarence Greer Pautzke 1979 191 p
Avail: Univ. Microfilms Order No. 8013580

Chlorophyll, primary production, zooplankton, water temperature, salinity, nutrients, solar radiation, surface melt, air temperature, wind speed, and island movement were observed in the Canada Basin at T-3 from 1969 to 1973 and in the Beaufort Sea at AIDJEX in 1975. Primary production in the Arctic Ocean was then quantitatively related to the physical, chemical and biological components of the ecosystem. Submarine light and primary production were modelled using observed incident radiation, surface conditions, a theoretical photosynthesis-light relation and chlorophyll a distribution. Production was highest in July and August. Annual production was 2 to 6 g C/sq m. Calanus hyperboreus and glacialis, Microcalanus pygmaeus, and Oithona similis dominated the zooplankton. Each developed one brood in summer at AIDJEX. Zooplankton dry weight above 100 m was highest in summer and lowest in spring. Herbivores required 25 to 30% of the primary production in July and August for respiration, brood development, and food storage for overwintering. Dissert. Abstr.

N80-26029# Royal Aircraft Establishment, Farnborough (England).
CHANCES OF DETECTING AND DIFFERENTIATING CENTRAL SYSTEM EFFECTS OF DRUGS IN ANIMAL EXPERIMENTS WITH SPECIAL CONSIDERATION OF BEHAVIOURAL PHARMACOLOGICAL METHODS
F. Hoffmeister and W. Wuttke Nov. 1979 44 p refs Transl. into ENGLISH from Arzneim. Forsch. (West Germany), v. 25, no. 7A, 1975 p 1162-1178
(RAE-Lib-Trans-2034; BR73312) Avail: NTIS HC A03/MF A01

Animal experimental methods suitable for the assessment of actions of drugs of the central nervous system are described with special reference to behavioral actions. The value of those methods for the prediction of central nervous actions of drugs in man are discussed. R.C.T.

N80-26030 Tennessee Univ., Knoxville.
THE RELATIONSHIP OF EXERCISE PERFORMANCE TO VARIATIONS IN BLOOD ACID-BASE STATUS INDUCED BY CHANGES IN THE INSPIRED OXYGEN FRACTION Ph.D. Thesis
Richard Paul Adams 1979 135 p
Avail: Univ. Microfilms Order No. 8012441

Possible limiting factors in human exercise performance were investigated. Six subjects rode a bicycle ergometer on three different occasions breathing either a 17 percent, 21 percent, or 60 percent oxygen mixture. In addition to rest and recovery periods, each subject worked for 10 minutes at 55 percent of maximal oxygen uptake and then to exhaustion at about 91 percent of maximal oxygen uptake. The values measured included performance time, inspired and expired gas fractions, minute ventilation heart rate, and 'arterialized' venous PO2, PCO2, and pH Oxygen uptake, carbon dioxide output, respiratory exchange ratio, [H (+)], and [HCO3 (-)] were calculated. The results indicated that performance times were longer in hyperoxia than in normoxia or hypoxia. However, contrary to other published literature, oxygen uptake was not different at exhaustion in normoxia as compared to hypoxia (p greater than .1) or hyperoxia (p = .09). Also, during exercise the higher inspired oxygen fractions were generally associated with decreased HLa and increased [H (+)], PCO2, and [HCO3 (-)]. However, at exhaustion [H (+)] was not different under any inspired oxygen fraction (p = .8). Dissert. Abstr.

N80-26031 Louisiana State Univ. and A&M Coll., Baton Rouge.
MEASUREMENT OF THE MECHANICAL IMPEDANCE OF HUMAN SOFT TISSUE IN VIVO Ph.D. Thesis
Hany Mohamed Gamal-Eldin Hussein 1979 111 p
Avail: Univ. Microfilms Order No. 8013122

A test system was developed for the measurement of point impedance of human soft tissue in vivo at various frequencies and static preloads. Impedance data were analyzed utilizing a viscoelastic solid model. Phase angle measurements were utilized to separate the resistive and reactive components of the complex impedance. The tissue was excited by a swept sinusoidal forcing function at a constant RMS velocity. The relative contribution of the energy storage and dissipation functions to the tissue impedance is shown to be frequency dependent. Within the range of preloads employed in this study, it is shown that the dynamic stiffness of the tissue continues to rise with increasing preloads while the viscous damping coefficient increases with increasing preloads only up to an intermediate preload beyond which the damping coefficient is almost independent of preload. Dissert. Abstr.

N80-26033# Instituto de Pesquisas Espaciais, Sao Paulo (Brazil).
USING REPRESENTATIVE KNOWLEDGE TO GUIDE DECISION MAKING IN AUTOMATIC DIAGNOSTIC SYSTEMS [EXTENSOES DA REPRESENTACAO DE CONHECIMENTO ATRAVES DE REGRAS DE DECISAO EM SISTEMAS DE DIAGNOSTICO AUTOMATICO]
Alfonso deLigorio Faria and Paulo Ouvera Simoni Mar. 1980 19 p refs In PORTUGUESE; ENGLISH summary Presented at the 6th Congr. Brasileiro de Engenharia Biomedica, 24-27 Oct. 1979 Revised
(INPE-1686-RPE/117-Rev) Avail: NTIS HC A02/MF A01

Many automatic medical diagnostic systems use artificial intelligence techniques for the representation and application of knowledge in order to get an approximation for the medical reasoning in the diagnostic process. It was observed that one limitation of these systems is the lack of flexibility in the representation of knowledge. A new representation for knowledge is proposed in the form of decision rules by conditional fuzzy propositions. Through this method the truth values of an attribute can be represented as well as possibility distributions over the universes. A uniform rule evaluation and evidence combinations are also attained. A set of rules for the diagnostic of the urinary tract infection of children was written, for which the proposed technique was applied. Author

N80-26034# SRI International Corp., Menlo Park, Calif.
MAMMALIAN TOXICOLOGICAL EVALUATION OF TNT WASTEWATERS. VOLUME 2: ACUTE AND SUBACUTE MAMMALIAN TOXICITY OF TNT AND LAP MIXTURE Final Report, Apr. 1976 - Sep. 1978
James V. Dilley, Charles A. Tyson, and Gordon W. Newell Jun. 1979 519 p refs
(Contract DAMD17-76-C-6050; DA Proj. 3E1-62720-A-835)
(AD-A080957; LSU-5028) Avail: NTIS HC A22/MF A01 CSCL 06/20

The acute toxicity of TNT, RDX, LAP (1.6 TNT/1.0 RDX), and/or LAP(I) (photolyzed LAP: 0.032 TNT/1.0 RDX, 10% undegraded RDX) was determined in mammalian species. In male and female rats, respectively, the acute oral LD50s were: TNT, 1320 and 794 mg/kg; RDX, 71 and about 70 mg/kg; and LAP, 574 and 594 mg/kg or lower, depending on particle size. In male and female mice, respectively, the LD50s were: TNT, 660 mg/kg (both sexes); RDX, 75 and 86 mg/kg; and LAP947 and 1131 mg/kg. LAP(I) was examined in mice only; the acute oral LD50s in males and females were 585 and 684 mg/kg, respectively. LAP and LAP(I) produced conjunctivitis, iritis, and/or corneal opacity in rabbit eyes; the irritation was not totally reversed in unwashed eyes after 7 days and longer. In in vitro microbial assays using microsomal activation (Ames Test), TNT was mutagenic. LAP was also mutagenic, and photolysis increased its mutagenicity. In contrast, in vivo cytogenetics studies on rat bone marrow extracts failed to detect an effect of either TNT or LAP on somatic cells. The effects of repeated oral administration of TNT and of LAP were determined in 90 day studies in dogs, rats, and mice. Observations common to the three species treated with either test material were depressed body weight and/or weight gain and food intake, mild to moderate hemolytic anemia, enlarged spleens and (usually) livers, hemosiderosis of the spleen and colored urine. GRA

N80-26035# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio. Aerospace Medical Div.
VARIOUS TECHNIQUES FOR EVALUATING CARDIODYNAMIC FUNCTION USING CHRONICALLY INSTRUMENTED CANINE MODELS
Kenneth C. Back and E. W. VanStee (National Inst. of Environmental Health Sciences, Research Triangle Park, N.C.) 1979 13 p refs Repr. from pharmac. Ther., V. 5, 1979 p 103-113 presented at Intern. Workshop on Pharmacol. Methods in Preclinical Safety Evaluation of New Drugs
(AF Proj. 6302)
(AD-A071264; AMRL-TR-78-119) Avail: NTIS HC A02/MF A01 CSCL 06/16

The pharmacological consequences of the initiation of low-molecular weight hydrocarbonated alkanes used in fire extinguishers were studied. A novel method for the determination of the maximum rate of ventricular pressure change or peak divided by the developed pressure. An application of the method to the evaluation of the isotropic effect of CBrF3 is described. R.E.S.

N80-26036# Lovelace Foundation for Medical Education and Research, Albuquerque, N. Mex. Clinical Research Div.
DEVELOPMENT OF AN AUTOMATED STRESS/DURESS DETECTION SYSTEM, PHASE 1 AND PHASE 2 Summary Report
Waneta C. Tuttle, Jerry G. Davis, E. R. Greene, and Jack A. Loeppky Sandia Labs. Dec. 1979 13 p refs
(Contracts EY-76-C-04-0789; DE-AC04-76DP-00789)
(SAND-79-7038) Avail: NTIS HC A02/MF A01

Remote analysis of heart rate was investigated and was found to have potential as an effective means of automatic detection of stress in guards. The analysis of the data suggests that a heart rate greater than either CHR (criterion heart rate) + 20% (as established in the exercise test) or 150 beats per minute is the best criterion for initial establishment of alarm criteria. DOE

N80-26037# Analytic Sciences Corp., Reading, Mass.
USER'S MANUAL FOR BIOSPHERE AND DOSE SIMULATION PROGRAM (BIODOSE)
John J. Duffy and Gary P. Bogar 4 Jan. 1980 72 p refs
(Contract W-7405-eng-26)
(UCRL-15188) Avail: NTIS HC A04/MF A01

The BIOsphere Transport and DOSE program (BIODOSE) is described. BIODOSE simulates the transport of radionuclides in surface systems and the resulting concentration of nuclides in the food chain. It includes the prediction of human dosage risks for individuals and for populations resulting from release of radionuclides into surface water or well water. The BIODOSE program was designed for easy use, including standard defaults and a flexible input scheme. DOE

N80-26038# Argonne National Lab., Ill.
INNATE AND GENETIC NATURE OF CIRCADIAN RHYTHMS
Charles F. Ehret 1979 19 p refs Sponsored in part by NATO
(Contract W-31-109-eng-38)
(DOE/TIC-11132) Avail: NTIS HC A02/MF A01

Circadian cybernetics which deal with biological time constants in the temporal range from minutes to days is discussed. The mode rules, the period rules, and the phase rules are examined. The innate and phylogenetically ubiquitous nature of circadian oscillations is comprehended, along with responses to a wide variety of environmental stimuli. DOE

N80-26039*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
HEAD-UP TRANSITION BEHAVIOR OF PILOTS DURING SIMULATED LOW-VISIBILITY APPROACHES
Richard F. Haines Jun. 1980 35 p refs
(NASA-TP-1618; A-8057) Avail: NTIS HC A03/MF A01 CSCL 05H

Each of 13 commercial pilots from four airlines flew a total of 108 manual flight director approaches in a moving base simulation of a medium-sized turbojet (95,000 lb gross weight) which had a day and night Redifon external scene. Three levels of runway visual range (RVR) (1,600; 2,400; and greater than 8,000 ft), three wind-shear profiles, nine ceiling heights, and continuous and intermittent visibility after initial breakout were tested. The results indicated that: (1) mean decision time ranged from 2 to 4.6 sec for ceilings under 380 ft across the three RVR conditions; (2) mean vertical distance traveled during the visual-cue assessment period was a relatively constant proportion below the existing ceiling; (3) a significant three way interaction in mean decision time between wind shear, day-night, and ceiling RVR variables occurred; (4) mean number of head-up transitions to VFR conditions after breakout ranged from 4.6 to 13.4 and increased as a function of ceiling and severity of wind shear; the typical duration of fixation out the window was 1.5 sec; and (5) subjective pilot ratings of controllability and precision of control as well as amount of skill, attention, or effort required to make the landing were influenced significantly by the wind shear, night conditions, and low breakout ceiling conditions. R.E.S.

N80-26040*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
FLIGHT-DECK AUTOMATION: PROMISES AND PROBLEMS
Earl L. Wiener (Miami Univ., Coral Gables, Fla.) and Renwick E. Curry Jun. 1980 27 p refs
(NASA-TM-81206; A-8210) Avail: NTIS HC A03/MF A01 CSCL 05H

The state of the art in human factors in flight-deck automation is presented. A number of critical problem areas are identified and broad design guidelines are offered. Automation-related aircraft accidents and incidents are discussed as examples of human factors problems in automated flight. R.E.S.

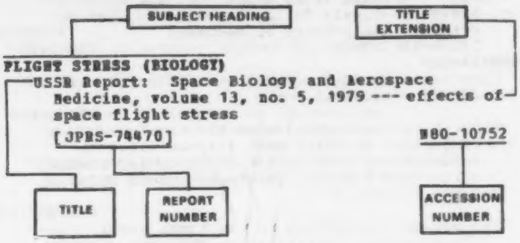
N80-26041# Eikonix Corp., Burlington, Mass.
TECHNOLOGY ASSESSMENT: THE IMPACT OF ROBOTS Final Report
Sep. 1979 261 p refs
(Grant NSF ESR-76-00637)
(PB80-142268; EC/2405801-FR-1; NSF/PRA-7600637) Avail: NTIS HC A12/MF A01 CSCL 06D

Intended to provide a data base for the development of policy options regarding the diffusion of robotics, the study is divided into four phases: surveying and forecasting relevant technology for the development of robots through 1990; examining possible application areas for technological feasibility and significance of impact resulting in the selection of major areas of application; investigating potential socio-economic ramifications of each of the selected application areas; and elucidating policy alternatives influencing robotics development. The study concluded that diffusion of robotics in the application areas selected at a rapid rate is highly unlikely. The technical constraints against a vast change in the scope of robotic capabilities is one reason for the slow diffusion rate. GRA

SUBJECT INDEX

AEROSPACE MEDICINE AND BIOLOGY */A Continuing Bibliography (Suppl. 210)* SEPTEMBER 1980

Typical Subject Index Listing


SUBJECT HEADING
TITLE EXTENSION
FLIGHT STRESS (BIOLOGY)
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979 --- effects of space flight stress
[JPRS-74470]
N80-10752
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ACCELERATION STRESSES (PHYSIOLOGY)
Change in radio sensitivity of mice under effect of rotation
[NASA-TM-76026] N80-24980

ACCELERATION TOLERANCE
Application of LED on-off control system to centrifuge acceleration load A80-37905
Live subject ejection tower testing to determine human tolerance to an increased onset rate of acceleration
[AD-A082993] N80-25008

ACCIDENT PREVENTION
Decision-problem state analysis methodology
[NASA-TM-81194] N80-25002

ACID BASE EQUILIBRIUM
Respiratory adaptations in acid-base disturbances: Role of cerebral fluids
[AD-A073202] N80-24998
The relationship of exercise performance to variaitons in blood acid-base status induced by changes in the inspired oxygen fraction N80-26030

ACIDOSIS
Chemical and nonchemical components of ventilation during hypercapnic exercise in man A80-38454

ACTIVITY (BIOLOGY)
The circadian rhythms of biological processes and their adaptive significance in vertebrate onto- and phylogenesis --- Russian book A80-38705
Structural features of manganese precipitating bacteria A80-40380

ACTIVITY CYCLES (BIOLOGY)
Innate and genetic nature of circadian rhythms
[DOE/TIC-11132] N80-26038

ADAPTATION
The circadian rhythms of biological processes and their adaptive significance in vertebrate onto- and phylogenesis --- Russian book A80-38705

ADAPTIVE CONTROL
Adaptive control algorithms and optimization of robot-manipulator motion A80-37122

ADENOSINE TRIPHOSPHATE
Synthesis of peptides from amino acids and ATP with lysine-rich proteinoid A80-37516

ADRENERGICS
Neurotransmitter mapping in central thermoregulation A80-39273
The role of dopamine in temperature regulation during exercise stress A80-39274

AEROSPACE MEDICINE
Temporal brightness enhancement studied with a large sample of observers - Evidence for individual differences in brightness perception A80-36461
Limb flail injuries and the effect of extremity restraints in USAF ejections - 1971-1978 A80-37523
Statistical studies on blood pressure of JASDF pilots - Comparison with Japanese adult males A80-37903
Effects of aircraft noise on an intelligibility task A80-38464
Light flash phenomena induced by HzE particles
[NASA-CR-163011] N80-24993
Live-subject ejection tower testing to determine human tolerance to an increased onset rate of acceleration
[AD-A082993] N80-25008

AIR TRAFFIC CONTROL
New work force roles resulting from new technology A80-37696

AIR TRAFFIC CONTROLLERS (PERSONNEL)
The event-related brain potential as an index of display-monitoring workload A80-38465

AIR TRANSPORTATION
The qualifications of flight personnel, a safety factor in air transport A80-39589

AIRCRAFT ACCIDENT INVESTIGATION
Analysis of eighty-four commercial aviation incidents - Implications for a resource management approach to crew training A80-40340

AIRCRAFT NOISE
Effects of aircraft noise on an intelligibility task A80-38464

AIRCRAFT PILOTS
Possibilities and limitations of the application of psychological tests --- for flight safety improvement A80-36775
The qualifications of flight personnel, a safety factor in air transport A80-39589
The council and commissions for disciplining pilots - Infractions and sanctions A80-39598

ALKANES
Various techniques for evaluating cardiodynamic function using chronically instrumented canine models
[AD-A071264] N80-26035

ALTITUDE ACCLIMATIZATION
A comparative evaluation of the coagulation properties of lymph and blood at high altitude A80-36373

ALTITUDE TOLERANCE
Effects of sustained exposure to hypoxic environment on temporal discrimination behaviour in rats A80-37901

AMBIENT TEMPERATURE
Thermoregulation according to central and peripheral temperatures at high ambient temperatures /Mathematical model investigation/ A80-36374

Effect of production microclimate on female thermal state with increased temperature and air humidity
[NASA-TM-76082] N80-24990

AMINO ACIDS
Nucleotide-amino acid interactions and their relation to the genetic code
A80-37515
Synthesis of peptides from amino acids and ATP with lysine-rich proteinoid
A80-37516
Free amino acids of the blood and some organs in hypokinesia
[NASA-TM-75945] N80-24988

ANESTHESIA
Human malignant hyperthermia - Treatment with dantrolene sodium
A80-39276

ANTIADRENERGICS
Neurotransmitter mapping in central thermoregulation
A80-39273

APPROACH CONTROL
Head-up transition behavior of pilots during simulated low-visibility approaches
[NASA-TP-1618] N80-26039

ARCTIC OCEAN
Phytoplankton primary production below Arctic Ocean pack ice: An ecosystems analysis
N80-26028

ARCTIC REGIONS
Arctic medical research in the Nordic countries
A80-39290

ARTIFICIAL INTELLIGENCE
Using representative knowledge to guide decision making in automatic diagnostic systems
[INPE-1686-RPE/117-REV] N80-26033

ATMOSPHERIC CHEMISTRY
Atmospheric constraints on the evolution of metabolism
A80-40377

ATMOSPHERIC COMPOSITION
Atmospheric constraints on the evolution of metabolism
A80-40377

ATMOSPHERIC EFFECTS
Atmospheric constraints on the evolution of metabolism
A80-40377

AUDITORY STIMULI
Effects of aircraft noise on an intelligibility task
A80-38464

AUTOMATA THEORY
Using representative knowledge to guide decision making in automatic diagnostic systems
[INPE-1686-RPE/117-REV] N80-26033

AUTOMATIC CONTROL
Motion control system development for a mobile robot
A80-37457
Application of LED on-off control system to centrifuge acceleration load
A80-37905

AUTOMATIC FLIGHT CONTROL
Flight-deck automation: Promises and problems
[NASA-TM-81206] N80-26040

B

BACILLUS
Purification and properties of malate dehydrogenase from the extreme thermophile Bacillus caldolyticus
A80-40385

BACTERIA
Neurotransmitter mapping in central thermoregulation
A80-39273
The gas vacuole - An early organelle of prokaryote motility
A80-40379
Structural features of manganese precipitating bacteria
A80-40380
Physical chemistry and evolution of salt tolerance in halobacteria
A80-40383

BEAUFORT SEA (NORTH AMERICA)
Phytoplankton primary production below Arctic Ocean pack ice: An ecosystems analysis
N80-26028

BEHAVIOR
Chances of detecting and differentiating central system effects of drugs in animal experiments with special consideration of behavioural pharmacological methods
[RAE-LIB-TRANS-2034] N80-26029

BINOCULAR VISION
Some characteristics of binocular fixation in the discrimination and recognition of objects
A80-39143

BIOCHEMISTRY
Content of total iron, copper and manganese in liver of animals during hypokinesia, muscle activity and process of recovery
[NASA-TM-76130] N80-24981

BIODYNAMICS
Alteration by hyperoxia of ventilatory dynamics during sinusoidal work
A80-38456
General characterization of the rheological properties of human soft tissues based on measurements made by the local cyclic loading method and a simple phenomenological model of these properties
A80-39271
The impact deformation of the human skull /Experimental investigation and some problems of modeling/. I - A technique for the investigation of the biomechanics of the human skull upon impact
A80-40070
Measurement of the mechanical impedance of human soft tissue in vivo
N80-26031

BIOELECTRICITY
Neurotransmitter mapping in central thermoregulation
A80-39273
Hypothermic responses to neurotensin in vertebrates
A80-39277
Neuron analysis of visual perception
[NASA-CR-163137] N80-24992

BIOINSTRUMENTATION
Development of an automated stress/duress detection system, phase 1 and phase 2
[SAND-79-7038] N80-26036

BIOLOGICAL EFFECTS
Bio-electromagnetic research - Review of some important aspects
A80-39401
Quantifying the hazard of field-man interaction in electrically shielded enclosures
A80-39402
Physical measurements on dielectric properties of biological substances
A80-39407
Electromagnetic control of cell functions
A80-39408
Plants and weightlessness
[NASA-TM-76025] N80-24979
Biological effects of ionizing radiation at the molecular, cellular and organismal levels
[COO-3501-13] N80-24985
Biological effects of ultraviolet radiation
[ISS-R-79/5] N80-25000

BIOLOGICAL EVOLUTION
The circadian rhythms of biological processes and their adaptive significance in vertebrate onto- and phylogenesis --- Russian book
A80-38705
College Park Colloquium on Chemical Evolution: Limits of Life, 4th, University of Maryland, College Park, Md., October 18-20, 1978, Proceedings
A80-40376
Atmospheric constraints on the evolution of metabolism
A80-40377
The gas vacuole - An early organelle of prokaryote motility
A80-40379
Sulphur isotope ratios in late and early precambrian sediments and their implications regarding early environments and early life
A80-40381
Halophily and halotolerance in cyanophytes
A80-40384

BIOMAGNETISM
Multimode time-varying enclosures for exposure and dosimetry in bioelectromagnetic experiments
A80-39406

BIOMEDICAL DATA
Monitoring vital signs in the diver [AD-A071920] N80-24996

BIOMETRICS
Cardioleader use in acyclic types of sports [NASA-TM-76085] N80-24991
Monitoring vital signs in the diver [AD-A071920] N80-24996
Measurement of the mechanical impedance of human soft tissue in vivo N80-26031
Development of an automated stress/duress detection system, phase 1 and phase 2 [SAND-79-7038] N80-26036

BIONICS
Problems of motion control for mobile robots A80-37463
Motion control of biped walking robots A80-37465
Separation of motions in the problem of stabilization of bipedal locomotion A80-38679
Temperature distribution in simulated living tissues irradiated electromagnetically A80-39403

BIOSPHERE
User's manual for biosphere and dose simulation program (BIODOSE) [UCRL-15188] N80-26037

BIOSYNTHESIS
Synthesis of peptides from amino acids and ATP with lysine-rich proteinoid A80-37516

BLOOD
Free amino acids of the blood and some organs in hypokinesia [NASA-TM-75945] N80-24988

BLOOD COAGULATION
A comparative evaluation of the coagulation properties of lymph and blood at high altitude A80-36373

BLOOD PLASMA
Hematological aspects of heat stress in trained and untrained men with special emphasis on erythrocyte volume, acid-base balance and fluid-electrolyte shifts [AD-A071757] N80-24997

BLOOD PRESSURE
Statistical studies on blood pressure of JASDF pilots - Comparison with Japanese adult males A80-37903

BLOOD VESSELS
A mathematical model of a myogenically active blood vessel A80-40071

BLUE GREEN ALGAE
Halophily and halotolerance in cyanophytes A80-40384

BODY TEMPERATURE
Thermoregulation according to central and peripheral temperatures at high ambient temperatures /Mathematical model investigation/ A80-36374
Muscular work as thermal behavior in humans A80-38453
Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford University, Oxford, England, July 30-August 3, 1979 A80-39272
Marijuana and human thermoregulation in a hot environment A80-39275
Human malignant hyperthermia - Treatment with dantrolene sodium A80-39276
Effect of intrahippocampal TRH on body temperature in hibernating and awake ground squirrels A80-39278

BRAIN
The effects of cold acclimatization on the activity of acid peptide-hydrolases in lysosome-enriched fractions of rat brain and liver tissues A80-36375
The ultrastructure of the brain during hypoxia --- Russian book A80-37100
Effects of sustained exposure to hypoxic environment on temporal discrimination behaviour in rats A80-37901
Study on the changes of electroencephalogram, heart rate and respiratory rate during all night sleep A80-37904

BRAIN CIRCULATION
A mathematical model of a myogenically active blood vessel A80-40071

BREADBOARD MODELS
Motion control system development for a mobile robot A80-37457

BRIGHTNESS DISCRIMINATION
Temporal brightness enhancement studied with a large sample of observers - Evidence for individual differences in brightness perception A80-36461

C

CANCER
Temperature distribution in simulated living tissues irradiated electromagnetically A80-39403
Preliminary results of fast neutron treatments in carcinoma of the pancreas [NASA-TM-81516] N80-24983

CARBON DIOXIDE CONCENTRATION
End-tidal CO2 response to low levels of inspired CO2 in awake beagle dogs A80-38455

CARBON MONOXIDE
Low-level carbon monoxide exposure and work capacity at 1600 meters [PB80-129083] N80-25001

CARDIOVASCULAR SYSTEM
The dependence of organism responses on physical load doses under conditions of restricted muscular activity --- during and after space flights A80-39145
Cardioleader use in acyclic types of sports [NASA-TM-76085] N80-24991
Various techniques for evaluating cardiodynamic function using chronically instrumented canine models [AD-A071264] N80-26035

CELLS (BIOLOGY)
Electromagnetic control of cell functions A80-39408
The gas vacuole - An early organelle of prokaryote motility A80-40379
Limits to life at low temperatures and at reduced water contents and water activities A80-40382
Studies on oxygen toxicity in the lungs [AD-A082546] N80-24984

CENTRAL NERVOUS SYSTEM
Chances of detecting and differentiating central system effects of drugs in animal experiments with special consideration of behavioural pharmacological methods [RAE-LIB-TRANS-2034] N80-26029

CEREBROSPINAL FLUID
Respiratory adaptations in acid-base disturbances: Role of cerebral fluids [AD-A073202] N80-24998

CHEMICAL EVOLUTION
Nucleotide-amino acid interactions and their relation to the genetic code A80-37515
Synthesis of peptides from amino acids and ATP with lysine-rich proteinoid A80-37516
College Park Colloquium on Chemical Evolution: Limits of Life, 4th, University of Maryland, College Park, Md., October 18-20, 1978, Proceedings A80-40376
Sulphur isotope ratios in late and early precambrian sediments and their implications regarding early environments and early life A80-40381

CHEMICAL REACTIONS
Nucleotide-amino acid interactions and their relation to the genetic code
A80-37515

CHLOROPHYLLS
A radiative transfer model for remote sensing of laser induced fluorescence of phytoplankton in non-homogeneous turbid water
[NASA-CR-163155] N80-24982

CIRCADIAN RHYTHMS
The circadian rhythms of biological processes and their adaptive significance in vertebrate onto- and phylogenesis --- Russian book
A80-38705

Innate and genetic nature of circadian rhythms
[DOE/TIC-11132] N80-26038

CIVIL AVIATION
Possibilities and limitations of the application of psychological tests --- for flight safety improvement
A80-36775

The council and commissions for disciplining pilots - Infractions and sanctions
A80-39598

Analysis of eighty-four commercial aviation incidents - Implications for a resource management approach to crew training
A80-40340

CLINICAL MEDICINE
Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford University, Oxford, England, July 30-August 3, 1979
A80-39272

Human malignant hyperthermia - Treatment with dantrolene sodium
A80-39276

Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983

Trend prediction as a basis for optimal therapy: A survey report --- derived from clinical studies
[TH-78-E-86] N80-24999

Using representative knowledge to guide decision making in automatic diagnostic systems
[INPE-1686-RPE/117-REV] N80-26033

COCKPITS
Investigation of Minimum Sized Low-Profile Cockpits (MSLPC) and crew escape system integration
[AD-A081055] N80-25004

A simulator evaluation of pilot response to an aircraft cockpit spin indicator system
[AD-A081536] N80-25006

COLD ACCLIMATIZATION
The effects of cold acclimatization on the activity of acid peptide-hydrolases in lysosome-enriched fractions of rat brain and liver tissues
A80-36375

Arctic medical research in the Nordic countries
A80-39280

COLD TOLERANCE
An evaluation of human thermal models for the study of immersion hypothermia protection equipment
[AD-A081100] N80-24994

COMBUSTION PRODUCTS
Instrumented animal systems for toxic assessment of materials
A80-38468

COMPUTER GRAPHICS
Research in interactive scene analysis
[NASA-CR-163196] N80-25003

COMPUTER PROGRAMS
A radiative transfer model for remote sensing of laser induced fluorescence of phytoplankton in non-homogeneous turbid water
[NASA-CR-163155] N80-24982

COMPUTER TECHNIQUES
Motion control system development for a mobile robot
A80-37457

Pilot reactions to communicating with a talking computer
A80-37698

Trend prediction as a basis for optimal therapy: A survey report --- derived from clinical studies
[TH-78-E-86] N80-24999

COMPUTERIZED SIMULATION
The impact deformation of the human skull /Experimental investigation and some problems of modeling/. I - A technique for the investigation of the biomechanics of the human skull upon impact
A80-40070

User's manual for biosphere and dose simulation program (BIODOSE)
[UCRL-15188] N80-26037

CONFERENCES
Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford University, Oxford, England, July 30-August 3, 1979
A80-39272

College Park Colloquium on Chemical Evolution: Limits of Life, 4th, University of Maryland, College Park, Md., October 18-20, 1978, Proceedings
A80-40376

CONSTRAINTS
Limb flail injuries and the effect of extremity restraints in USAF ejections - 1971-1978
A80-37523

CONTROL
Motion control of biped walking robots
A80-37465

CONTROL SIMULATION
Motion control system development for a mobile robot
A80-37457

CONTROL STICKS
A test of Fitts' law with moving targets
A80-38466

CONTROL THEORY
Separation of motions in the problem of stabilization of bipedal locomotion
A80-38679

CYBERNETICS
Innate and genetic nature of circadian rhythms
[DOE/TIC-11132] N80-26038

CYCLIC LOADS
General characterization of the rheological properties of human soft tissues based on measurements made by the local cyclic loading method and a simple phenomenological model of these properties
A80-39271

D

DECISION MAKING
Decision-problem state analysis methodology
[NASA-TM-81194] N80-25002

Using representative knowledge to guide decision making in automatic diagnostic systems
[INPE-1686-RPE/117-REV] N80-26033

DEOXYRIBONUCLEIC ACID
Biological effects of ultraviolet radiation
[ISS-R-79/5] N80-25000

DEVELOPING NATIONS
Microbial processes: Promising technologies for developing countries
[PB80-144686] N80-24986

DIAGNOSIS
Using representative knowledge to guide decision making in automatic diagnostic systems
[INPE-1686-RPE/117-REV] N80-26033

DIASTOLIC PRESSURE
A mathematical model of a myogenically active blood vessel
A80-40071

DIELECTRIC PROPERTIES
Physical measurements on dielectric properties of biological substances
A80-39407

DISCIPLINING
The council and commissions for disciplining pilots - Infractions and sanctions
A80-39598

DISPLAY DEVICES
The event-related brain potential as an index of display-monitoring workload
A80-38465

DIVING (UNDERWATER)
Monitoring vital signs in the diver
[AD-A071920] N80-24996

DOSIMETERS
Multimode time-varying enclosures for exposure and dosimetry in bioelectromagnetic experiments A80-39406

DYNAMIC PROGRAMMING
Adaptive control algorithms and optimization of robot-manipulator motion A80-37122

E

EARTH (PLANET)
College Park Colloquium on Chemical Evolution: Limits of Life, 4th, University of Maryland, College Park, Md., October 18-20, 1978, Proceedings A80-40376
Sulphur isotope ratios in late and early precambrian sediments and their implications regarding early environments and early life A80-40381

ECOLOGY
Variations in phytoplankton physiological parameters during transient nitrogen environments N80-26027
Phytoplankton primary production below Arctic Ocean pack ice: An ecosystems analysis N80-26028

EJECTION INJURIES
Limb flail injuries and the effect of extremity restraints in USAF ejections - 1971-1978 A80-37523

ELECTROENCEPHALOGRAPHY
Structural difference between stage 1 and REM on sleep EEG A80-37902
Study on the changes of electroencephalogram, heart rate and respiratory rate during all night sleep A80-37904

ELECTROMAGNETIC ABSORPTION
Quantifying the hazard of field-man interaction in electrically shielded enclosures A80-39402

ELECTROMAGNETIC COMPATIBILITY
Electromagnetic compatibility /EMC/ to-day - A review /1979-80/ A80-39410

ELECTROMAGNETIC INTERACTIONS
Bio-electromagnetic research - Review of some important aspects A80-39401
Electromagnetic control of cell functions A80-39408

ELECTROMAGNETIC MEASUREMENT
Physical measurements on dielectric properties of biological substances A80-39407

ELECTROMAGNETIC RADIATION
Temperature distribution in simulated living tissues irradiated electromagnetically A80-39403
Some problems on evaluation of RF radiation hazards caused by ISM equipment in Poland A80-39405
Multimode time-varying enclosures for exposure and dosimetry in bioelectromagnetic experiments A80-39406
Light flash phenomena induced by HzE particles [NASA-CR-163011] N80-24993

ELECTROMAGNETIC SHIELDING
Quantifying the hazard of field-man interaction in electrically shielded enclosures A80-39402

ELECTRONIC EQUIPMENT TESTS
Electromagnetic compatibility /EMC/ to-day - A review /1979-80/ A80-39410

ENCLOSURES
Multimode time-varying enclosures for exposure and dosimetry in bioelectromagnetic experiments A80-39406

ENDOCRINE SECRETIONS
Delineating acute neuroendocrine responses in microwave-exposed rats A80-38451

ENZYME ACTIVITY
The effects of cold acclimatization on the activity of acid peptide-hydrolases in lysosome-enriched fractions of rat brain and liver tissues A80-36375
Purification and properties of malate dehydrogenase from the extreme thermophile Bacillus caldolyticus A80-40385

EQUATIONS OF MOTION
Dynamics of multi-body systems [AD-A082436] N80-25007

ERYTHROCYTES
Physical measurements on dielectric properties of biological substances A80-39407
Electromagnetic control of cell functions A80-39408

ESCAPE SYSTEMS
Investigation of Minimum Sized Low-Profile Cockpits (MSLPC) and crew escape system integration [AD-A081055] N80-25004

ETHYL ALCOHOL
Residual effects of alcohol on aircrew performance A80-37524

EXPOSURE
The terrestrial radiation environment and EVA's: Prediction requirements, model improvements, and warning systems --- radiation hazards to orbital workers and spacecrews N80-24685

EXTRAVEHICULAR ACTIVITY
The terrestrial radiation environment and EVA's: Prediction requirements, model improvements, and warning systems --- radiation hazards to orbital workers and spacecrews N80-24685

EYE MOVEMENTS
Some characteristics of binocular fixation in the discrimination and recognition of objects A80-39143

F

FACTOR ANALYSIS
Structural difference between stage 1 and REM on sleep EEG A80-37902

FEMALES
Effect of production microclimate on female thermal state with increased temperature and air humidity [NASA-TM-76082] N80-24990

FIGHTER AIRCRAFT
Investigation of Minimum Sized Low-Profile Cockpits (MSLPC) and crew escape system integration [AD-A081055] N80-25004
Evaluation of UK PQ oxygen mask for use in CF aircraft [AD-A079476] N80-25005
A simulator evaluation of pilot response to an aircraft cockpit spin indicator system [AD-A081536] N80-25006

FINGERS
The sensation of vibration A80-39144

FLIGHT CREWS
Residual effects of alcohol on aircrew performance A80-37524
Analysis of eighty-four commercial aviation incidents - Implications for a resource management approach to crew training A80-40340

FLIGHT SAFETY
Possibilities and limitations of the application of psychological tests --- for flight safety improvement A80-36775
The qualifications of flight personnel, a safety factor in air transport A80-39589
Analysis of eighty-four commercial aviation incidents - Implications for a resource management approach to crew training A80-40340

FLUORESCENCE
A radiative transfer model for remote sensing of laser induced fluorescence of phytoplankton in non-homogeneous turbid water
[NASA-CR-163155] N80-24982

FLYING EJECTION SEATS
Live subject ejection tower testing to determine human tolerance to an increased onset rate of acceleration
[AD-A082993] N80-25008

FOSSILS
Structural features of manganese precipitating bacteria
A80-40380

G

GAS EXCHANGE
Alteration by hyperoxia of ventilatory dynamics during sinusoidal work
A80-38456

GENETIC CODE
Nucleotide-amino acid interactions and their relation to the genetic code
A80-37515

GENETICS
Innate and genetic nature of circadian rhythms
[DOE/TIC-11132] N60-26038

GRAVITATIONAL EFFECTS
Plants and weightlessness
[NASA-TM-76025] N80-24979

GROWTH
Growth and formation of the fore leg skeleton in inbred mice and rats under conditions of hypo-, normo- and hyperdynamia
[NASA-TM-75977] N80-24978

H

HALOPHILES
Physical chemistry and evolution of salt tolerance in halobacteria
A80-40383

HEART RATE
Study on the changes of electroencephalogram, heart rate and respiratory rate during all night sleep
A80-37904

HEAT TOLERANCE
Physiological responses of men and women to humid and dry heat
[AD-A079573] N80-24995
Hematological aspects of heat stress in trained and untrained men with special emphasis on erythrocyte volume, acid-base balance and fluid-electrolyte shifts
[AD-A071757] N80-24997

HEMATOLOGY
Hematological aspects o[illegible] in trained and untrained men with spe[illegible]phasis on erythrocyte volume, acid-base balance and fluid-electrolyte shifts
[AD-A071757] N80-24997

HEREDITY
Growth and formation of the fore leg skeleton in inbred mice and rats under conditions of hypo-, normo- and hyperdynamia
[NASA-TM-75977] N80-24978

HIBERNATION
Effect of intrahippocampal TRH on body temperature in hibernating and awake ground squirrels
A80-39278

HIGH ALTITUDE
A comparative evaluation of the coagulation properties of lymph and blood at high altitude
A80-36373
Blunted hypoxic vasoconstriction in lungs from short-term high-altitude rats
A80-39974
Low-level carbon monoxide exposure and work capacity at 1600 meters
[PB80-129083] N80-25001

HIGH GRAVITY ENVIRONMENTS
Implications of changes in temperature perception and temperature regulation in high pressure heliox oxygen environments
A80-39279

HIGH PRESSURE OXYGEN
Implications of changes in temperature perception and temperature regulation in high pressure heliox oxygen environments
A80-39279

HIGH TEMPERATURE ENVIRONMENTS
Thermoregulation according to central and peripheral temperatures at high ambient temperatures /Mathematical model investigation/
A80-36374
Marijuana and human thermoregulation in a hot environment
A80-39275

HIPPOCAMPUS
Effect of intrahippocampal TRH on body temperature in hibernating and awake ground squirrels
A80-39278

HORMONES
Effect of intrahippocampal TRH on body temperature in hibernating and awake ground squirrels
A80-39278

HOT WEATHER
Thermoregulation during rest and exercise in different postures in a hot humid environment
A80-38452

HUMAN BODY
General characterization of the rheological properties of human soft tissues based on measurements made by the local cyclic loading method and a simple phenomenological model of these properties
A80-39271
Quantifying the hazard of field-man interaction in electrically shielded enclosures
A80-39402
An evaluation of human thermal models for the study of immersion hypothermia protection equipment
[AD-A081100] N80-24994

HUMAN CENTRIFUGES
Application of LED on-off control system to centrifuge acceleration load
A80-37905

HUMAN FACTORS ENGINEERING
New work force roles resulting from new technology
A80-37696
Pilot reactions to communicating with a talking computer
A80-37698
Effect of production microclimate on female thermal state with increased temperature and air humidity
[NASA-TM-76082] N80-24990
Decision-problem state analysis methodology
[NASA-TM-81194] N80-25002
Evaluation of UK PQ oxygen mask for use in CF aircraft
[AD-A079476] N80-25005
Live subject ejection tower testing to determine human tolerance to an increased onset rate of acceleration
[AD-A082993] N80-25008
Development of an automated stress/duress detection system, phase 1 and phase 2
[SAND-79-7038] N80-26036
Head-up transition behavior of pilots during simulated low-visibility approaches
[NASA-TP-1618] N80-26039
Flight-deck automation: Promises and problems
[NASA-TM-81206] N80-26040

HUMAN FACTORS LABORATORIES
The impact deformation of the human skull /Experimental investigation and some problems of modeling/. I - A technique for the investigation of the biomechanics of the human skull upon impact
A80-40070

HUMAN PATHOLOGY
The ultrastructure of the brain during hypoxia --- Russian book
A80-37100

HUMAN PERFORMANCE
Effects of aircraft noise on an intelligibility task
A80-38464
A test of Fitts' law with moving targets
A80-38466
Low-level carbon monoxide exposure and work capacity at 1600 meters
[PB80-129083] N80-25001

The relationship of exercise performance to variaitons in blood acid-base status induced by changes in the inspired oxygen fraction N80-26030

HUMAN REACTIONS

Thermoregulation according to central and peripheral temperatures at high ambient temperatures /Mathematical model investigation/ A80-36374

Temporal brightness enhancement studied with a large sample of observers - Evidence for individual differences in brightness perception A80-36461

Pilot reactions to communicating with a talking computer A80-37698

Muscular work as thermal behavior in humans A80-38453

The sensation of vibration A80-39144

The dependence of organism responses on physical load doses under conditions of restricted muscular activity --- during and after space flights A80-39145

HUMAN TOLERANCES

Bio-electromagnetic research - Review of some important aspects A80-39401

The impact deformation of the human skull /Experimental investigation and some problems of modeling/. I - A technique for the investigation of the biomechanics of the human skull upon impact A80-40070

An evaluation of human thermal models for the study of immersion hypothermia protection equipment [AD-A081100] N80-24994

HUMIDITY

Thermoregulation during rest and exercise in different postures in a hot humid environment A80-38452

Effect of production microclimate on female thermal state with increased temperature and air humidity [NASA-TM-76082] N80-24990

HYPERCAPNIA

Chemical and nonchemical components of ventilation during hypercapnic exercise in man A80-38454

End-tidal CO2 response to low levels of inspired CO2 in awake beagle dogs A80-38455

HYPEROXIA

Alteration by hyperoxia of ventilatory dynamics during sinusoidal work A80-38456

Studies on oxygen toxicity in the lungs [AD-A082546] N80-24984

HYPERTHERMIA

The role of dopamine in temperature regulation during exercise stress A80-39274

Marijuana and human thermoregulation in a hot environment A80-39275

Human malignant hyperthermia - Treatment with dantrolene sodium A80-39276

HYPODYNAMIA

Growth and formation of the fore leg skeleton in inbred mice and rats under conditions of hypo-, normo- and hyperdynamia [NASA-TM-75977] N80-24978

Hypodynamic and hypokinetic condition of skeletal muscles [NASA-TM-76009] N80-24989

HYPOKINESIA

Content of total iron, copper and manganese in liver of animals during hypokinesia, muscle activity and process of recovery [NASA-TM-76130] N80-24981

Free amino acids of the blood and some organs in hypokinesia [NASA-TM-75945] N80-24988

Hypodynamic and hypokinetic condition of skeletal muscles [NASA-TM-76009] N80-24989

HYPOTHERMIA

Hypothermic responses to neurotensin in vertebrates A80-39277

An evaluation of human thermal models for the study of immersion hypothermia protection equipment [AD-A081100] N80-24994

HYPOXIA

The ultrastructure of the brain during hypoxia --- Russian book A80-37100

Effects of sustained exposure to hypoxic environment on temporal discrimination behaviour in rats A80-37901

Blunted hypoxic vasoconstriction in lungs from short-term high-altitude rats A80-39974

I

IMAGE PROCESSING

Research in interactive scene analysis [NASA-CR-163196] N80-25003

IMPACT LOADS

The impact deformation of the human skull /Experimental investigation and some problems of modeling/. I - A technique for the investigation of the biomechanics of the human skull upon impact A80-40070

IMPEDANCE MEASUREMENTS

Measurement of the mechanical impedance of human soft tissue in vivo N80-26031

INDUSTRIAL WASTES

Mammalian toxicological evaluation of TNT wastewaters. Volume 2: Acute and subacute mammalian toxicity of TNT and LAP mixture [AD-A080957] N80-26034

INJURIES

Limb flail injuries and the effect of extremity restraints in USAF ejections - 1971-1978 A80-37523

INTEGRATED CIRCUITS

Application of LED on-off control system to centrifuge acceleration load A80-37905

INTELLIGIBILITY

Effects of aircraft noise on an intelligibility task A80-38464

INTERNATIONAL COOPERATION

Electromagnetic compatibility /EMC/ to-day - A review /1979-80/ A80-39410

INTOXICATION

Residual effects of alcohol on aircrew performance A80-37524

IONIZING RADIATION

Change in radio sensitivity of mice under effect of rotation [NASA-TM-76026] N80-24980

Biological effects of ionizing radiation at the molecular, cellular and organismal levels [COO-3501-13] N80-24985

J

JET AIRCRAFT

Evaluation of UK PQ oxygen mask for use in CF aircraft [AD-A079476] N80-25005

JOINTS (JUNCTIONS)

Dynamics of multi-body systems [AD-A082436] N80-25007

L

LIFE SCIENCES

College Park Colloquium on Chemical Evolution: Limits of Life, 4th, University of Maryland, College Park, Md., October 18-20, 1978, Proceedings A80-40376

Limits to life at low temperatures and at reduced water contents and water activities A80-40382

Physical chemistry and evolution of salt tolerance in halobacteria A80-40383

LIFE SUPPORT SYSTEMS
Evaluation of UK PQ oxygen mask for use in CF aircraft
[AD-A079476] N80-25005
LIGHT EMITTING DIODES
Application of LED on-off control system to centrifuge acceleration load
A80-37905
LIMBS (ANATOMY)
Limb flail injuries and the effect of extremity restraints in USAF ejections - 1971-1978
A80-37523
LIVER
The effects of cold acclimatization on the activity of acid peptide-hydrolases in lysosome-enriched fractions of rat brain and liver tissues
A80-36375
Content of total iron, copper and manganese in liver of animals during hypokinesia, muscle activity and process of recovery
[NASA-TM-76130] N80-24981
LOCOMOTION
The gas vacuole - An early organelle of prokaryote motility
A80-40379
LOW TEMPERATURE ENVIRONMENTS
Limits to life at low temperatures and at reduced water contents and water activities
A80-40382
LOW VISIBILITY
Head-up transition behavior of pilots during simulated low-visibility approaches
[NASA-TP-1618] N80-26039
LUNGS
Blunted hypoxic vasoconstriction in lungs from short-term high-altitude rats
A80-39974
Studies on oxygen toxicity in the lungs
[AD-A082546] N80-24984
LYMPH
A comparative evaluation of the coagulation properties of lymph and blood at high altitude
A80-36373

M

MAN MACHINE SYSTEMS
Sensors, controls, and man-machine interface for advanced teleoperation
A80-37573
New work force roles resulting from new technology
A80-37696
Pilot reactions to communicating with a talking computer
A80-37698
The event-related brain potential as an index of display-monitoring workload
A80-38465
A test of Fitts' law with moving targets
A80-38466
Investigation of Minimum Sized Low-Profile Cockpits (MSLPC) and crew escape system integration
[AD-A081055] N80-25004
A simulator evaluation of pilot response to an aircraft cockpit spin indicator system
[AD-A081536] N80-25006
Dynamics of multi-body systems
[AD-A082436] N80-25007
Live subject ejection tower testing to determine human tolerance to an increased onset rate of acceleration
[AD-A082993] N80-25008
Head-up transition behavior of pilots during simulated low-visibility approaches
[NASA-TP-1618] N80-26039
Flight-deck automation: Promises and problems
[NASA-TM-81206] N80-26040
MANGANESE
Structural features of manganese precipitating bacteria
A80-40380
MANIPULATORS
Adaptive control algorithms and optimization of robot-manipulator motion
A80-37122
MARIJUANA
Marijuana and human thermoregulation in a hot environment
A80-39275
MARINE BIOLOGY
Variations in phytoplankton physiological parameters during transient nitrogen environments
N80-26027
MATERIALS TESTS
Instrumented animal systems for toxic assessment of materials
A80-38468
MATHEMATICAL MODELS
A mathematical model of a myogenically active blood vessel
A80-40071
A radiative transfer model for remote sensing of laser induced fluorescence of phytoplankton in non-homogeneous turbid water
[NASA-CR-163155] N80-24982
An evaluation of human thermal models for the study of immersion hypothermia protection equipment
[AD-A081100] N80-24994
MECHANICAL IMPEDANCE
Measurement of the mechanical impedance of human soft tissue in vivo
N80-2[illegible]031
METABOLISM
Atmospheric constraints on the evolution of metabolism
A80-40377
Studies on oxygen toxicity in the lungs
[AD-A082546] N80-24984
MICROORGANISMS
Microbial processes: Promising technologies for developing countries
[PB80-144686] N80-24986
MICROWAVE SPECTROMETERS
Physical measurements on dielectric properties of biological substances
A80-39407
MICROWAVES
Delineating acute neuroendocrine responses in microwave-exposed rats
A80-38451
MILITARY AVIATION
Limb flail injuries and the effect of extremity restraints in USAF ejections - 1971-1978
A80-37523
MINERAL METABOLISM
Structural features of manganese precipitating bacteria
A80-40380
Content of total iron, copper and manganese in liver of animals during hypokinesia, muscle activity and process of recovery
[NASA-TM-76130] N80-24981
MONITORS
The event-related brain potential as an index of display-monitoring workload
A80-38465
Instrumented animal systems for toxic assessment of materials
A80-38468
MOTION
Problems of motion control for mobile robots
A80-37463
MOTION PERCEPTION
A test of Fitts' law with moving targets
A80-38466
MOTION STABILITY
Separation of motions in the problem of stabilization of bipedal locomotion
A80-38679
MUSCLES
Hypodynamic and hypokinetic condition of skeletal muscles
[NASA-TM-76009] N80-24989
MUSCULAR FUNCTION
Muscular work as thermal behavior in humans
A80-38453
The dependence of organism responses on physical load doses under conditions of restricted muscular activity --- during and after space flights
A80-39145

MUSCULOSKELETAL SYSTEM
Growth and formation of the fore leg skeleton in inbred mice and rats under conditions of hypo-, normo- and hyperdynamia
[NASA-TM-75977] N80-24978
Hypodynamic and hypokinetic condition of skeletal muscles
[NASA-TM-76009] N80-24989

N

NEUROLOGY
Delineating acute neuroendocrine responses in microwave-exposed rats
A80-38451
NEURONS
Neuron analysis of visual perception
[NASA-CR-163137] N80-24992
NEUROPHYSIOLOGY
The ultrastructure of the brain during hypoxia --- Russian book
A80-37100
Neurotransmitter mapping in central thermoregulation
A80-39273
Neuron analysis of visual perception
[NASA-CR-163137] N80-24992
NEUTRON IRRADIATION
Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983
NITROGEN METABOLISM
Variations in phytoplankton physiological parameters during transient nitrogen environments
N80-26027
NOISE REDUCTION
Electromagnetic compatibility /EMC/ to-day - A review /1979-80/
A80-39410
NUCLEOTIDES
Nucleotide-amino acid interactions and their relation to the genetic code
A80-37515
NUMERICAL CONTROL
Problems of motion control for mobile robots
A80-37463
Sensors, controls, and man-machine interface for advanced teleoperation
A80-37573

O

OFF-ON CONTROL
Application of LED on-off control system to centrifuge acceleration load
A80-37905
ONTOGENY
The circadian rhythms of biological processes and their adaptive significance in vertebrate onto- and phylogenesis --- Russian book
A80-38705
OPERATOR PERFORMANCE
New work force roles resulting from new technology
A80-37696
ORBITAL WORKERS
The terrestrial radiation environment and EVA's: Prediction requirements, model improvements, and warning systems --- radiation hazards to orbital workers and spacecrews
N80-24685
OXIDATION
Structural features of manganese precipitating bacteria
A80-40380
OXYGEN CONSUMPTION
The relationship of exercise performance to variaitons in blood acid-base status induced by changes in the inspired oxygen fraction
N80-26030
OXYGEN MASKS
Evaluation of UK PQ oxygen mask for use in CF aircraft
[AD-A079476] N80-25005

P

PANCREAS
Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983
PATHOLOGICAL EFFECTS
Arctic medical research in the Nordic countries
A80-39280
PEPTIDES
The effects of cold acclimatization on the activity of acid peptide-hydrolases in lysosome-enriched fractions of rat brain and liver tissues
A80-36375
Synthesis of peptides from amino acids and ATP with lysine-rich proteinoid
A80-37516
Hypothermic responses to neurotensin in vertebrates
A80-39277
PERCEPTUAL TIME CONSTANT
Temporal brightness enhancement studied with a large sample of observers - Evidence for individual differences in brightness perception
A80-36461
PHARMACOLOGY
Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford University, Oxford, England, July 30-August 3, 1979
A80-39272
Human malignant hyperthermia - Treatment with dantrolene sodium
A80-39276
Chances of detecting and differentiating central system effects of drugs in animal experiments with special consideration of behavioural pharmacological methods
[RAE-LIB-TRANS-2034] N80-26029
Various techniques for evaluating cardiodynamic function using chronically instrumented canine models
[AD-A071264] N80-26035
PHENOLOGY
Light flash phenomena induced by HZE particles
[NASA-CR-163011] N80-24993
PHYSICAL CHEMISTRY
Physical chemistry and evolution of salt tolerance in halobacteria
A80-40383
PHYSICAL EXERCISE
Thermoregulation during rest and exercise in different postures in a hot humid environment
A80-38452
Chemical and nonchemical components of ventilation during hypercapnic exercise in man
A80-38454
The dependence of organism responses on physical load doses under conditions of restricted muscular activity --- during and after space flights
A80-39145
The role of dopamine in temperature regulation during exercise stress
A80-39274
Content of total iron, copper and manganese in liver of animals during hypokinesia, muscle activity and process of recovery
[NASA-TM-76130] N80-24981
Cardioleader use in acyclic types of sports
[NASA-TM-76085] N80-24991
Hematological aspects of heat stress in trained and untrained men with special emphasis on erythrocyte volume, acid-base balance and fluid-electrolyte shifts
[AD-A071757] N80-24997
Low-level carbon monoxide exposure and work capacity at 1600 meters
[PB80-129083] N80-25001
The relationship of exercise performance to variaitons in blood acid-base status induced by changes in the inspired oxygen fraction
N80-26030
PHYSICAL FITNESS
Cardioleader use in acyclic types of sports
[NASA-TM-76085] N80-24991
PHYSICAL WORK
Muscular work as thermal behavior in humans
A80-38453
Alteration by hyperoxia of ventilatory dynamics during sinusoidal work
A80-38456

PHYSIOCHEMISTRY
Chemical and nonchemical components of ventilation during hypercapnic exercise in man A80-38454
PHYSIOLOGICAL EFFECTS
Chemical and nonchemical components of ventilation during hypercapnic exercise in man A80-38454
Hypothermic responses to neurotensin in vertebrates A80-39277
Growth and formation of the fore leg skeleton in inbred mice and rats under conditions of hypo-, normo- and hyperdynamia [NASA-TM-75977] N80-24978
Change in radio sensitivity of mice under effect of rotation [NASA-TM-76026] N80-24980
Content of total iron, copper and manganese in liver of animals during hypokinesia, muscle activity and process of recovery [NASA-TM-76130] N80-24981
Studies on oxygen toxicity in the lungs [AD-A082546] N80-24984
Free amino acids of the blood and some organs in hypokinesia [NASA-TM-75945] N80-24988
Hypodynamic and hypokinetic condition of skeletal muscles [NASA-TM-76009] N80-24989
Physiological responses of men and women to humid and dry heat [AD-A079573] N80-24995
Hematological aspects of heat stress in trained and untrained men with special emphasis on erythrocyte volume, acid-base balance and fluid-electrolyte shifts [AD-A071757] N80-24997
Low-level carbon monoxide exposure and work capacity at 1600 meters [PB80-129083] N80-25001
Various techniques for evaluating cardiodynamic function using chronically instrumented canine models [AD-A071264] N80-26035
PHYSIOLOGICAL RESPONSES
The effects of cold acclimatization on the activity of acid peptide-hydrolases in lysosome-enriched fractions of rat brain and liver tissues A80-36375
The ultrastructure of the brain during hypoxia --- Russian book A80-37100
Effects of sustained exposure to hypoxic environment on temporal discrimination behaviour in rats A80-37901
Delineating acute neuroendocrine responses in microwave-exposed rats A80-38451
Muscular work as thermal behavior in humans A80-38453
Instrumented animal systems for toxic assessment of materials A80-38468
Arctic medical research in the Nordic countries A80-39280
Monitoring vital signs in the diver [AD-A071920] N80-24996
PHYSIOLOGICAL TESTS
A comparative evaluation of the coagulation properties of lymph and blood at high altitude A80-36373
End-tidal CO2 response to low levels of inspired CO2 in awake beagle dogs A80-38455
PILOT PERFORMANCE
Possibilities and limitations of the application of psychological tests --- for flight safety improvement A80-36775
Residual effects of alcohol on aircrew performance A80-37524
Pilot reactions to communicating with a talking computer A80-37698
Statistical studies on blood pressure of JASDF pilots - Comparison with Japanese adult males A80-37903
The qualifications of flight personnel, a safety factor in air transport A80-39589
The council and commissions for disciplining pilots - Infractions and sanctions A80-39598
Analysis of eighty-four commercial aviation incidents - Implications for a resource management approach to crew training A80-40340
A simulator evaluation of pilot response to an aircraft cockpit spin indicator system [AD-A081536] N80-25006
Head-up transition behavior of pilots during simulated low-visibility approaches [NASA-TP-1618] N80-26039
PILOT TRAINING
The qualifications of flight personnel, a safety factor in air transport A80-39589
PLANETARY EVOLUTION
College Park Colloquium on Chemical Evolution: Limits of Life, 4th, University of Maryland, College Park, Md., October 18-20, 1978, Proceedings A80-40376
Atmospheric constraints on the evolution of metabolism A80-40377
PLANKTON
A radiative transfer model for remote sensing of laser induced fluorescence of phytoplankton in non-homogeneous turbid water [NASA-CR-163155] N80-24982
Variations in phytoplankton physiological parameters during transient nitrogen environments N80-26027
PLANTS (BOTANY)
Plants and weightlessness [NASA-TM-76025] N80-24979
PONDS
Halophily and halotolerance in cyanophytes A80-40384
POSTURE
Thermoregulation during rest and exercise in different postures in a hot humid environment A80-38452
PRECAMBRIAN PERIOD
Sulphur isotope ratios in late and early precambrian sediments and their implications regarding early environments and early life A80-40381
PREDICTION ANALYSIS TECHNIQUES
Trend prediction as a basis for optimal therapy: A survey report --- derived from clinical studies [TH-78-E-86] N80-24999
PRESSURE CHAMBERS
The dependence of organism responses on physical load doses under conditions of restricted muscular activity --- during and after space flights A80-39145
PRESSURE EFFECTS
Implications of changes in temperature perception and temperature regulation in high pressure heliox oxygen environments A80-39279
PRIMITIVE EARTH ATMOSPHERE
Atmospheric constraints on the evolution of metabolism A80-40377
PROBLEM SOLVING
Decision-problem state analysis methodology [NASA-TM-81194] N80-25002
PRODUCTIVITY
Effect of production microclimate on female thermal state with increased temperature and air humidity [NASA-TM-76082] N80-24990
Phytoplankton primary production below Arctic Ocean pack ice: An ecosystems analysis N80-26028
PROGNOSIS
Trend prediction as a basis for optimal therapy: A survey report --- derived from clinical studies [TH-78-E-86] N80-24999

PROGRAM VERIFICATION (COMPUTERS)
An evaluation of human thermal models for the study of immersion hypothermia protection equipment
[AD-A081100] N80-24994
PROPELLANTS
Mammalian toxicological evaluation of TNT wastewaters. Volume 2: Acute and subacute mammalian toxicity of TNT and LAP mixture
[AD-A080957] N80-26034
PROTEINOIDS
Synthesis of peptides from amino acids and ATP with lysine-rich proteinoid
A80-37516
PSYCHOLOGICAL EFFECTS
Effects of aircraft noise on an intelligibility task
A80-38464
PSYCHOLOGICAL TESTS
Possibilities and limitations of the application of psychological tests --- for flight safety improvement
A80-36775
PURIFICATION
Purification and properties of malate dehydrogenase from the extreme thermophile Bacillus caldolyticus
A80-40385
PYROPHORIC MATERIALS
Instrumented animal systems for toxic assessment of materials
A80-38468

R

RADIATION DOSAGE
Delineating acute neuroendocrine responses in microwave-exposed rats
A80-38451
Multimode time-varying enclosures for exposure and dosimetry in bioelectromagnetic experiments
A80-39406
RADIATION EFFECTS
Bio-electromagnetic research - Review of some important aspects
A80-39401
Electromagnetic control of cell functions
A80-39408
RADIATION HAZARDS
Quantifying the hazard of field-man interaction in electrically shielded enclosures
A80-39402
Some problems on evaluation of RF radiation hazards caused by ISM equipment in Poland
A80-39405
The terrestrial radiation environment and EVA's: Prediction requirements, model improvements, and warning systems --- radiation hazards to orbital workers and spacecrews
N80-24685
RADIATION MEDICINE
Delineating acute neuroendocrine responses in microwave-exposed rats
A80-38451
RADIATION PROTECTION
Some problems on evaluation of RF radiation hazards caused by ISM equipment in Poland
A80-39405
RADIATION THERAPY
Temperature distribution in simulated living tissues irradiated electromagnetically
A80-39403
Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983
RADIATION TOLERANCE
Change in radio sensitivity of mice under effect of rotation
[NASA-TM-76026] N80-24980
RADIATIVE TRANSFER
A radiative transfer model for remote sensing of laser induced fluorescence of phytoplankton in non-homogeneous turbid water
[NASA-CR-163155] N80-24982
RADIO EQUIPMENT
Some problems on evaluation of RF radiation hazards caused by ISM equipment in Poland
A80-39405
RADIO WAVES
Some problems on evaluation of RF radiation hazards caused by ISM equipment in Poland
A80-39405
RADIOACTIVE ISOTOPES
User's manual for biosphere and dose simulation program (BIODOSE)
[UCRL-15188] N80-26037
RADIOBIOLOGY
Bio-electromagnetic research - Review of some important aspects
A80-39401
Electromagnetic control of cell functions
A80-39408
RAPID EYE MOVEMENT STATE
Structural difference between stage 1 and REM on sleep EEG
A80-37902
RATS
Effects of sustained exposure to hypoxic environment on temporal discrimination behaviour in rats
A80-37901
RDX
Mammalian toxicological evaluation of TNT wastewaters. Volume 2: Acute and subacute mammalian toxicity of TNT and LAP mixture
[AD-A080957] N80-26034
REMOTE CONTROL
Sensors, controls, and man-machine interface for advanced teleoperation
A80-37573
REMOTE SENSORS
Sensors, controls, and man-machine interface for advanced teleoperation
A80-37573
RESOURCES MANAGEMENT
Analysis of eighty-four commercial aviation incidents - Implications for a resource management approach to crew training
A80-40340
RESPIRATION
End-tidal CO2 response to low levels of inspired CO2 in awake beagle dogs
A80-38455
RESPIRATORY PHYSIOLOGY
Alteration by hyperoxia of ventilatory dynamics during sinusoidal work
A80-38456
Respiratory adaptations in acid-base disturbances: Role of cerebral fluids
[AD-A073202] N80-24998
RESPIRATORY RATE
Study on the changes of electroencephalogram, heart rate and respiratory rate during all night sleep
A80-37904
REST
Thermoregulation during rest and exercise in different postures in a hot humid environment
A80-38452
RHEOLOGY
General characterization of the rheological properties of human soft tissues based on measurements made by the local cyclic loading method and a simple phenomenological model of these properties
A80-39271
RIGID STRUCTURES
Dynamics of multi-body systems
[AD-A082436] N80-25007
ROBOTS
Adaptive control algorithms and optimization of robot-manipulator motion
A80-37122
Motion control system development for a mobile robot
A80-37457
Problems of motion control for mobile robots
A80-37463
Motion control of biped walking robots
A80-37465
Technology assessment: The impact of robots
[PB80-142268] N80-26041
ROTATING ENVIRONMENTS
Change in radio sensitivity of mice under effect of rotation
[NASA-TM-76026] N80-24980

S

SAFETY FACTORS
Residual effects of alcohol on aircrew performance A80-37524
Some problems on evaluation of RF radiation hazards caused by ISM equipment in Poland A80-39405

SALINITY
Halophily and halotolerance in cyanophytes A80-40384

SALTS
Physical chemistry and evolution of salt tolerance in halobacteria A80-40383

SCENE ANALYSIS
Research in interactive scene analysis [NASA-CR-163196] N80-25003

SEA WATER
Halophily and halotolerance in cyanophytes A80-40384

SEDIMENTS
Sulphur isotope ratios in late and early precambrian sediments and their implications regarding early environments and early life A80-40381

SENSORY PERCEPTION
The sensation of vibration A80-39144

SKIN (ANATOMY)
The sensation of vibration A80-39144

SKULL
The impact deformation of the human skull /Experimental investigation and some problems of modeling/. I - A technique for the investigation of the biomechanics of the human skull upon impact A80-40070

SLEEP
Structural difference between stage 1 and REM on sleep EEG A80-37902
Study on the changes of electroencephalogram, heart rate and respiratory rate during all night sleep A80-37904

SPACECREWS
The terrestrial radiation environment and EVA's: Prediction requirements, model improvements, and warning systems --- radiation hazards to orbital workers and spacecrews N80-24685

STRESS (PHYSIOLOGY)
The dependence of organism responses on physical load doses under conditions of restricted muscular activity --- during and after space flights A80-39145
The role of dopamine in temperature regulation during exercise stress A80-39274
Growth and formation of the fore leg skeleton in inbred mice and rats under conditions of hypo-, normo- and hyperdynamia [NASA-TM-75977] N80-24978
Free amino acids of the blood and some organs in hypokinesia [NASA-TM-75945] N80-24988
Hypodynamic and hypokinetic condition of skeletal muscles [NASA-TM-76009] N80-24989
Effect of production microclimate on female thermal state with increased temperature and air humidity [NASA-TM-76082] N80-24990
Physiological responses of men and women to humid and dry heat [AD-A079573] N80-24995
Hematological aspects of heat stress in trained and untrained men with special emphasis on erythrocyte volume, acid-base balance and fluid-electrolyte shifts [AD-A071757] N80-24997
Respiratory adaptations in acid-base disturbances: Role of cerebral fluids [AD-A073202] N80-24998
The relationship of exercise performance to variaitons in blood acid-base status induced by changes in the inspired oxygen fraction N80-26030
Development of an automated stress/duress detection system, phase 1 and phase 2 [SAND-79-7038] N80-26036

STRESS (PSYCHOLOGY)
Development of an automated stress/duress detection system, phase 1 and phase 2 [SAND-79-7038] N80-26036

SUBARCTIC REGIONS
Arctic medical research in the Nordic countries A80-39280

SULFUR ISOTOPES
Sulphur isotope ratios in late and early precambrian sediments and their implications regarding early environments and early life A80-40381

SYSTEMS ANALYSIS
Problems of motion control for mobile robots A80-37463

T

TALKING
Pilot reactions to communicating with a talking computer A80-37698

TARGET ACQUISITION
A test of Fitts' law with moving targets A80-38466

TARGET RECOGNITION
Some characteristics of binocular fixation in the discrimination and recognition of objects A80-39143

TASK COMPLEXITY
The event-related brain potential as an index of display-monitoring workload A80-38465

TECHNOLOGICAL FORECASTING
Technology assessment: The impact of robots [PB80-142268] N80-26041

TECHNOLOGY ASSESSMENT
Technology assessment: The impact of robots [PB80-142268] N80-26041

TELEMETRY
Development of an automated stress/duress detection system, phase 1 and phase 2 [SAND-79-7038] N80-26036

TELEOPERATORS
Sensors, controls, and man-machine interface for advanced teleoperation A80-37573

TEMPERATURE DISTRIBUTION
Temperature distribution in simulated living tissues irradiated electromagnetically A80-39403

THERAPY
Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford University, Oxford, England, July 30-August 3, 1979 A80-39272
Trend prediction as a basis for optimal therapy: A survey report --- derived from clinical studies [IR-78-E-86] N80-24999

THERMAL COMFORT
Muscular work as thermal behavior in humans A80-38453

THERMOPHILES
Purification and properties of malate dehydrogenase from the extreme thermophile Bacillus caldolyticus A80-40385

THERMOREGULATION
Thermoregulation according to central and peripheral temperatures at high ambient temperatutes /Mathematical model investigation/ A80-36374
Thermoregulation during rest and exercise in different postures in a hot humid environment A80-38452

Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford University, Oxford, England, July 30-August 3, 1979 A80-39272
Neurotransmitter mapping in central thermoregulation A80-39273
The role of dopamine in temperature regulation during exercise stress A80-39274
Marijuana and human thermoregulation in a hot environment A80-39275
Hypothermic responses to neurotensin in vertebrates A80-39277
Implications of changes in temperature perception and temperature regulation in high pressure heliox oxygen environments A80-39279
Physiological responses of men and women to humid and dry heat [AD-A079573] N80-24995

THYROID GLAND
Effect of intrahippocampal TRH on body temperature in hibernating and awake ground squirrels A80-39278

TIME DEPENDENCE
Blunted hypoxic vasoconstriction in lungs from short-term high-altitude rats A80-39974

TISSUES (BIOLOGY)
General characterization of the rheological properties of human soft tissues based on measurements made by the local cyclic loading method and a simple phenomenological model of these properties A80-39271
Quantifying the hazard of field-man interaction in electrically shielded enclosures A80-39402
Temperature distribution in simulated living tissues irradiated electromagnetically A80-39403
Free amino acids of the blood and some organs in hypokinesia [NASA-TM-75945] N80-24988
Measurement of the mechanical impedance of human soft tissue in vivo N80-26031

TOUCH
The gas vacuole - An early organelle of prokaryote motility A80-40379

TOXICITY
Instrumented animal systems for toxic assessment of materials A80-38468
Mammalian toxicological evaluation of TNT wastewaters. Volume 2: Acute and subacute mammalian toxicity of TNT and LAP mixture [AD-A080957] N80-26034

TOXICOLOGY
Various techniques for evaluating cardiodynamic function using chronically instrumented canine models [AD-A071264] N80-26035

TRACKING (POSITION)
A test of Fitts' law with moving targets A80-38466

TRAJECTORY OPTIMIZATION
Adaptive control algorithms and optimization of robot-manipulator motion A80-37122

TRANSPORT PROPERTIES
User's manual for biosphere and dose simulation program (BIODOSE) [UCRL-15188] N80-26037

TRINITROTOLUENE
Mammalian toxicological evaluation of TNT wastewaters. Volume 2: Acute and subacute mammalian toxicity of TNT and LAP mixture [AD-A080957] N80-26034

U

ULTRASONIC RADIATION
The sensation of vibration A80-39144

ULTRAVIOLET RADIATION
Biological effects of ultraviolet radiation [ISS-R-79/5] N80-25000

V

VASOCONSTRICTION
Blunted hypoxic vasoconstriction in lungs from short-term high-altitude rats A80-39974

VEGETATION GROWTH
Plants and weightlessness [NASA-TM-76025] N80-24979

VERBAL COMMUNICATION
Pilot reactions to communicating with a talking computer A80-37698

VERTEBRATES
The circadian rhythms of biological processes and their adaptive significance in vertebrate onto- and phylogenesis --- Russian book A80-38705
Hypothermic responses to neurotensin in vertebrates A80-39277

VIBRATION EFFECTS
The sensation of vibration A80-39144

VISUAL DISCRIMINATION
Some characteristics of binocular fixation in the discrimination and recognition of objects A80-39143

VISUAL PERCEPTION
Effects of aircraft noise on an intelligibility task A80-38464
Neuron analysis of visual perception [NASA-CR-163137] N80-24992
Light flash phenomena induced by HzE particles [NASA-CR-163011] N80-24993
Head-up transition behavior of pilots during simulated low-visibility approaches [NASA-TP-1618] N80-26039

W

WAKEFULNESS
End-tidal CO2 response to low levels of inspired CO2 in awake beagle dogs A80-38455

WALKING
Motion control of biped walking robots A80-37465

WALKING MACHINES
Motion control system development for a mobile robot A80-37457
Separation of motions in the problem of stabilization of bipedal locomotion A80-38679

WARNING SYSTEMS
The terrestrial radiation environment and EVA's: Prediction requirements, model improvements, and warning systems --- radiation hazards to orbital workers and spacecrews N80-24685

WATER
Limits to life at low temperatures and at reduced water contents and water activities A80-40382

WEIGHTLESSNESS
Plants and weightlessness [NASA-TM-76025] N80-24979

WORK CAPACITY
Low-level carbon monoxide exposure and work capacity at 1600 meters [PB80-129083] N80-25001

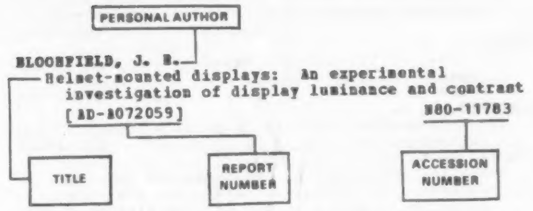
WORKLOADS (PSYCHOPHYSIOLOGY)
Possibilities and limitations of the application of psychological tests --- for flight safety improvement A80-36775
The event-related brain potential as an index of display-monitoring workload A80-38465

blank page

PERSONAL AUTHOR INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 210)* SEPTEMBER 1980

Typical Personal Author Index Listing


PERSONAL AUTHOR
BLOOMFIELD, J. R.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059]
N80-11783
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ADAMS, R. P.
The relationship of exercise performance to variaitons in blood acid-base status induced by changes in the inspired oxygen fraction
N80-26030

AKERBLOM, H. K.
Arctic medical research in the Nordic countries
A80-39280

ALDRICH, J. H., JR.
A simulator evaluation of pilot response to an aircraft cockpit spin indicator system
[AD-A081536] N80-25006

ANTIPOV, Y. S.
Growth and formation of the fore leg skeleton in inbred mice and rats under conditions of hypo-, normo- and hyperdynamia
[NASA-TM-75977] N80-24978

ARLASHCHENKO, N. I.
Change in radio sensitivity of mice under effect of rotation
[NASA-TM-76026] N80-24980

ARNOULT, M. D.
Effects of aircraft noise on an intelligibility task
A80-38464

AVELLINI, B. A.
Physiological responses of men and women to humid and dry heat
[AD-A079573] N80-24995

B

BACK, K. C.
Various techniques for evaluating cardiodynamic function using chronically instrumented canine models
[AD-A071264] N80-26035

BAKER E. M., I.
An evaluation of human thermal models for the study of immersion hypothermia protection equipment
[AD-A081100] N80-24994

BARDATI, F.
Temperature distribution in simulated living tissues irradiated electromagnetically
A80-39403

BARER, A. S.
The impact deformation of the human skull /Experimental investigation and some problems of modeling/. I - A technique for the investigation of the biomechanics of the human skull upon impact
A80-40070

BEATTIE, M.
The role of dopamine in temperature regulation during exercise stress
A80-39274

BEAVER, W. L.
Alteration by hyperoxia of ventilatory dynamics during sinusoidal work
A80-38456

BECKMAN, A. L.
Effect of intrahippocampal TRH on body temperature in hibernating and awake ground squirrels
A80-39278

BEGIASHVILI, V. T.
A mathematical model of a myogenically active blood vessel
A80-40071

BEJCZY, A. K.
Sensors, controls, and man-machine interface for advanced teleoperation
A80-37573

BELAIA, E. V.
General characterization of the rheological properties of human soft tissues based on measurements made by the local cyclic loading method and a simple phenomenological model of these properties
A80-39271

BELETSKII, V. V.
Motion control of biped walking robots
A80-37465

BELK, W. F.
Limb flail injuries and the effect of extremity restraints in USAF ejections - 1971-1978
A80-37523

BELTRAME, F.
Electromagnetic control of cell functions
A80-39408

BENEKEN, J. E.
Trend prediction as a basis for optimal therapy: A survey report
[TH-78-E-86] N80-24999

BERNARDI, P.
Bio-electromagnetic research - Review of some important aspects
A80-39401

Quantifying the hazard of field-man interaction in electrically shielded enclosures
A80-39402

BIANCO, B.
Physical measurements on dielectric properties of biological substances
A80-39407

BISSETTE, G.
Hypothermic responses to neurotensin in vertebrates
A80-39277

BLOM, J. A.
Trend prediction as a basis for optimal therapy: A survey report
[TH-78-E-86] N80-24999

BLUE, J.
Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983

BOGAR, G. P.
User's manual for biosphere and dose simulation program (BIODOSE)
[UCRL-15188] N80-26037

BOGOLEPOV, N. N.
The ultrastructure of the brain during hypoxia
A80-37100

BOLOTIN, IU. V.
Separation of motions in the problem of stabilization of bipedal locomotion
A80-38679

BONDIN, V. I.
Cardioleader use in acyclic types of sports
[NASA-TM-76085] N80-24991
BOWEN, R. W.
Temporal brightness enhancement studied with a large sample of observers - Evidence for individual differences in brightness perception
A80-36461
BRANSFORD, D. R.
Thermoregulation during rest and exercise in different postures in a hot humid environment
A80-38452
BRAUER, R. W.
Implications of changes in temperature perception and temperature regulation in high pressure heliox oxygen environments
A80-39279
BROWN, S.
The role of dopamine in temperature regulation during exercise stress
A80-39274
BUKOWSKI, R.
Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983
BULTE, P.
The qualifications of flight personnel, a safety factor in air transport
A80-39589

C

CABANAC, M.
Muscular work as thermal behavior in humans
A80-38453
CAPUTA, M.
Muscular work as thermal behavior in humans
A80-38453
CASABURI, R.
Alteration by hyperoxia of ventilatory dynamics during sinusoidal work
A80-38456
CHESNEY, G. L.
The event-related brain potential as an index of display-monitoring workload
A80-38465
CHIABRERA, A.
Electromagnetic control of cell functions
A80-39408
CHOW, K. L.
Neuron analysis of visual perception
[NASA-CR-163137] N80-24992
CLARK, J. M.
Chemical and nonchemical components of ventilation during hypercapnic exercise in man
A80-38454
COX, B.
Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford University, Oxford, England, July 30-August 3, 1979
A80-39272
CREMONESE, M.
Biological effects of ultraviolet radiation
[ISS-R-79/5] N80-25000
CROPP, G. J. A.
Low-level carbon monoxide exposure and work capacity at 1600 meters
[PB80-129083] N80-25001
CURRY, R. E.
Flight-deck automation: Promises and problems
[NASA-TM-81206] N80-26040

D

DAMBROSIO, G.
Bio-electromagnetic research - Review of some important aspects
A80-39401
Multimode time-varying enclosures for exposure and dosimetry in bioelectromagnetic experiments
A80-39406
DANIIAROV, S. B.
A comparative evaluation of the coagulation properties of lymph and blood at high altitude
A80-36373
DAVIS, J. G.
Development of an automated stress/duress detection system, phase 1 and phase 2
[SAND-79-7038] N80-26036
DEMANCHE, J. M.
Variations in phytoplankton physiological parameters during transient nitrogen environments
N80-26027
DI MEGLIO, F.
Multimode time-varying enclosures for exposure and dosimetry in bioelectromagnetic experiments
A80-39406
DIAZ, F. J.
Thermoregulation during rest and exercise in different postures in a hot humid environment
A80-38452
DICKEY, D. W.
Low-level carbon monoxide exposure and work capacity at 1600 meters
[PB80-129083] N80-25001
DIETERLY, D. L.
Decision-problem state analysis methodology
[NASA-TM-81194] N80-25002
DILLEY, J. V.
Mammalian toxicological evaluation of TNT wastewaters. Volume 2: Acute and subacute mammalian toxicity of TNT and LAP mixture
[AD-A080957] N80-26034
DINZEO, G.
Quantifying the hazard of field-man interaction in electrically shielded enclosures
A80-39402
DONCHIN, E.
The event-related brain potential as an index of display-monitoring workload
A80-38465
DRAGO, G.
Physical measurements on dielectric properties of biological substances
A80-39407
DRINKWATER, B. L.
Thermoregulation during rest and exercise in different postures in a hot humid environment
A80-38452
DUFFY, J. J.
User's manual for biosphere and dose simulation program (BIODOSE)
[UCRL-15188] N80-26037

E

EGIDI, C.
Electromagnetic compatibility /EMC/ to-day - A review /1979-80/
A80-39410
EHRET, C. F.
Innate and genetic nature of circadian rhythms
[DOE/TIC-11132] N80-26038
EPIKHIN, V. A.
Some characteristics of binocular fixation in the discrimination and recognition of objects
A80-39143
ERMAKOVA, I. I.
Thermoregulation according to central and peripheral temperatures at high ambient temperatures /Mathematical model investigation/
A80-36374
ERVIN, G. N.
Hypothermic responses to neurotensin in vertebrates
A80-39277

F

FARIA, A. D.
Using representative knowledge to guide decision making in automatic diagnostic systems
[INPE-1686-RPE/117-REV] N80-26033
FARRELL, T. R.
Marijuana and human thermoregulation in a hot environment
A80-39275
FENCL, V.
Respiratory adaptations in acid-base disturbances: Role of cerebral fluids
[AD-A073202] N80-24998
FERRARA, G.
Multimode time-varying enclosures for exposure and dosimetry in bioelectromagnetic experiments
A80-39406

FOX, S. W.
Synthesis of peptides from amino acids and ATP with lysine-rich proteinoid
A80-37516

FRENS, J.
Neurotransmitter mapping in central thermoregulation
A80-39273

G

GABEL, R. A.
Respiratory adaptations in acid-base disturbances: Role of cerebral fluids
[AD-A073202] N80-24998

GAHBAUER, R.
Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983

GAUME, J. G.
Instrumented animal systems for toxic assessment of materials
A80-38468

GERLOVIN, E. SH.
The circadian rhythms of biological processes and their adaptive significance in vertebrate onto- and phylogenesis
A80-38705

GEROSA, G.
Temperature distribution in simulated living tissues irradiated electromagnetically
A80-39403

GIANNINI, F.
Quantifying the hazard of field-man interaction in electrically shielded enclosures
A80-39402

GISOLFI, C. V.
The role of dopamine in temperature regulation during exercise stress
A80-39274

GOLDMAN, R. F.
Physiological responses of men and women to humid and dry heat
[AD-A079573] N80-24995

GOLUBIC, S.
Halophily and halotolerance in cyanophytes
A80-40384

GOTO, M.
Study on the changes of electroencephalogram, heart rate and respiratory rate during all night sleep
A80-37904

GRATTAROLA, M.
Electromagnetic control of cell functions
A80-39408

GREENE, E. R.
Development of an automated stress/duress detection system, phase 1 and phase 2
[SAND-79-7038] N80-26036

GUBIN, G. D.
The circadian rhythms of biological processes and their adaptive significance in vertebrate onto- and phylogenesis
A80-38705

GUERRINI, P.
Electromagnetic control of cell functions
A80-39408

H

HACKNEY, J. D.
Studies on oxygen toxicity in the lungs
[AD-A082546] N80-24984

HAINES, R. F.
Head-up transition behavior of pilots during simulated low-visibility approaches
[NASA-TP-1618] N80-26039

HARNETT, R. M.
An evaluation of human thermal models for the study of immersion hypothermia protection equipment
[AD-A081100] N80-24994

HERNING, R.
Marijuana and human thermoregulation in a hot environment
A80-39275

HIRVONEN, J.
Arctic medical research in the Nordic countries
A80-39280

HOFF, B. H.
Human malignant hyperthermia - Treatment with dantrolene sodium
A80-39276

HOFFMEISTER, F.
Chances of detecting and differentiating central system effects of drugs in animal experiments with special consideration of behavioural pharmacological methods
[RAE-LIB-TRANS-2034] N80-26029

HOPKIN, V. D.
New work force roles resulting from new technology
A80-37696

HORTON, J.
Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983

HORVATH, S. M.
Thermoregulation during rest and exercise in different postures in a hot humid environment
A80-38452

HUSSEIN, H. M. G. E.
Measurement of the mechanical impedance of human soft tissue in vivo
N80-26031

I

ISREAL, J. B.
The event-related brain potential as an index of display-monitoring workload
A80-38465

J

JAGACINSKI, R. J.
A test of Fitts' law with moving targets
A80-38466

JELDEN, G. L.
Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983

JONES, R. T.
Marijuana and human thermoregulation in a hot environment
A80-39275

JORRITSMA, F. F.
Trend prediction as a basis for optimal therapy: A survey report
[TH-78-E-86] N80-24999

K

KARMINSKIY, V.
Plants and weightlessness
[NASA-TM-76025] N80-24979

KASPRAS, H.
Possibilities and limitations of the application of psychological tests
A80-36775

KATINAS, G. S.
Hypodynamic and hypokinetic condition of skeletal muscles
[NASA-TM-76009] N80-24989

KOBAYASHI, K.
Thermoregulation during rest and exercise in different postures in a hot humid environment
A80-38452

KOBYLYANSKIY, L. N.
Free amino acids of the blood and some organs in hypokinesia
[NASA-TM-75945] N80-24988

KOGAN, B. I.
Growth and formation of the fore leg skeleton in inbred mice and rats under conditions of hypo-, normo- and hyperdynamia
[NASA-TM-75977] N80-24978

KOH, K. Y.
Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983

KONAKHEVICH, IU. G.
The impact deformation of the human skull /Experimental investigation and some problems of modeling/. I - A technique for the investigation of the biomechanics of the human skull upon impact
A80-40070

KONJIKI, F.
Structural difference between stage 1 and REM on sleep EEG
A80-37902

KOPERSKI, A.
Some problems on evaluation of RF radiation hazards caused by ISM equipment in Poland
A80-39405

KOTLIARSKII, A. M.
Some characteristics of binocular fixation in the discrimination and recognition of objects
A80-39143

KRISTJANSSON, M.
Purification and properties of malate dehydrogenase from the extreme thermophile Bacillus caldolyticus
A80-40385

KURIHARA, Y.
Structural difference between stage 1 and REM on sleep EEG
A80-37902
Statistical studies on blood pressure of JASDF pilots - Comparison with Japanese adult males
A80-37903

KURT, T. L.
Low-level carbon monoxide exposure and work capacity at 1600 meters
[PB80-129083] N80-25001

KURTSER, B. M.
Free amino acids of the blood and some organs in hypokinesia
[NASA-TM-75945] N80-24988

L

LAMPARIELLO, P.
Temperature distribution in simulated living tissues irradiated electromagnetically
A80-39403

LANGE, C. S.
Biological effects of ionizing radiation at the molecular, cellular and organismal levels
[COO-3501-13] N80-24985

LANYI, J. K.
Physical chemistry and evolution of salt tolerance in halobacteria
A80-40383

LEBDA, N.
Delineating acute neuroendocrine responses in microwave-exposed rats
A80-38451

LEBEN, D. F.
Evaluation of UK PQ oxygen mask for use in CF aircraft
[AD-A079476] N80-25005

LENOX, J. B.
Chemical and nonchemical components of ventilation during hypercapnic exercise in man
A80-38454

LEWIS, S. M.
End-tidal CO2 response to low levels of inspired CO2 in awake beagle dogs
A80-38455

LOEPPKY, J. A.
Development of an automated stress/duress detection system, phase 1 and phase 2
[SAND-79-7038] N80-26036

LOMAKINA, L. V.
The effects of cold acclimatization on the activity of acid peptide-hydrolases in lysosome-enriched fractions of rat brain and liver tissues
A80-36375

LOMAX, P.
Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford University, Oxford, England, July 30-August 3, 1979
A80-39272

LU, S.-T.
Delineating acute neuroendocrine responses in microwave-exposed rats
A80-38451

LUNDGREN, C. E. G.
Monitoring vital signs in the diver
[AD-A071920] N80-24996

LYSENKO, S. A.
Free amino acids of the blood and some organs in hypokinesia
[NASA-TM-75945] N80-24988

M

MACHABLISHVILI, O. G.
Effect of production microclimate on female thermal state with increased temperature and air humidity
[NASA-TM-76082] N80-24990

MADDOCK, R.
Marijuana and human thermoregulation in a hot environment
A80-39275

MAGNES, S.
The role of dopamine in temperature regulation during exercise stress
A80-39274

MANBERG, P. J.
Hypothermic responses to neurotensin in vertebrates
A80-39277

MARCHESI, M.
Physical measurements on dielectric properties of biological substances
A80-39407

MARKELL, K. A.
Temporal brightness enhancement studied with a large sample of observers - Evidence for individual differences in brightness perception
A80-36461

MARTINI, C.
Physical measurements on dielectric properties of biological substances
A80-39407

MATSUURA, Y.
Statistical studies on blood pressure of JASDF pilots - Comparison with Japanese adult males
A80-37903

MATZEU, M.
Biological effects of ultraviolet radiation
[ISS-R-79/5] N80-25000

MAZUR, P.
Limits to life at low temperatures and at reduced water contents and water activities
A80-40382

MCMURTRY, I. F.
Blunted hypoxic vasoconstriction in lungs from short-term high-altitude rats
A80-39974

MCNULTY, P. J.
Light flash phenomena induced by HzE particles
[NASA-CR-163011] N80-24993

MELA, G. S.
Physical measurements on dielectric properties of biological substances
A80-39407

MELADZE, V. G.
A mathematical model of a myogenically active blood vessel
A80-40071

MEUNIER, C.
The council and commissions for disciplining pilots - Infractions and sanctions
A80-39598

MICHAELSON, S. M.
Delineating acute neuroendocrine responses in microwave-exposed rats
A80-38451

MILTON, A. S.
Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford University, Oxford, England, July 30-August 3, 1979
A80-39272

MITAGVARIIA, N. P.
A mathematical model of a myogenically active blood vessel
A80-40071

MOORE, S. I.
Hypothermic responses to neurotensin in vertebrates
A80-39277

MORA, F.
The role of dopamine in temperature regulation during exercise stress
A80-39274

MORAN, M. S.
A test of Fitts' law with moving targets
A80-38466

MORANDO, M.
Physical measurements on dielectric properties of biological substances
A80-39407

MORGAVI, G.
Physical measurements on dielectric properties of biological substances
A80-39407

MORRILL, C. G.
Low-level carbon monoxide exposure and work capacity at 1600 meters
[PB80-129083] N80-25001

MORRIS, K. G.
Blunted hypoxic vasoconstriction in lungs from short-term high-altitude rats
A80-39974

MUFTI, I. H.
Dynamics of multi-body systems
[AD-A082436] N80-25007

MURDOCK, L. C.
End-tidal CO2 response to low levels of inspired CO2 in awake beagle dogs
A80-38455

MURPHY, M. R.
Analysis of eighty-four commercial aviation incidents - Implications for a resource management approach to crew training
A80-40340

N

NAKASHIMA, T.
Synthesis of peptides from amino acids and ATP with lysine-rich proteinoid
A80-37516

NANDORFF, A.
Trend prediction as a basis for optimal therapy: A survey report
[TH-78-E-86] N80-24999

NEALSON, K. H.
Structural features of manganese precipitating bacteria
A80-40380

NEMEROFF, C. B.
Hypothermic responses to neurotensin in vertebrates
A80-39277

NEOKESARIISKII, V. N.
Adaptive control algorithms and optimization of robot-manipulator motion
A80-37122

NEWELL, G. W.
Mammalian toxicological evaluation of TNT wastewaters. Volume 2: Acute and subacute mammalian toxicity of TNT and LAP mixture
[AD-A080957] N80-26034

O

OGANOV, V. S.
Hypodynamic and hypokinetic condition of skeletal muscles
[NASA-TM-76009] N80-24989

OKHOTSIMSKI, D. E.
Motion control system development for a mobile robot
A80-37457

OLOUGHLIN, B. J.
End-tidal CO2 response to low levels of inspired CO2 in awake beagle dogs
A80-38455

ONO, M.
Study on the changes of electroencephalogram, heart rate and respiratory rate during all night sleep
A80-37904
Application of LED on-off control system to centrifuge acceleration load
A80-37905

OSADA, H.
Effects of sustained exposure to hypoxic environment on temporal discrimination behaviour in rats
A80-37901

OSBAHR, A. J.
Hypothermic responses to neurotensin in vertebrates
A80-39277

P

PANDOLF, K. B.
Physiological responses of men and women to humid and dry heat
[AD-A079573] N80-24995

PANFEROVA, N. E.
The dependence of organism responses on physical load doses under conditions of restricted muscular activity
A80-39145

PARODI, G.
Electromagnetic control of cell functions
A80-39408

PAUTZKE, C. G.
Phytoplankton primary production below Arctic Ocean pack ice: An ecosystems analysis
N80-26028

PEASE, V. P.
Light flash phenomena induced by HzE particles
[NASA-CR-163011] N80-24993

PENEV, G. D.
Adaptive control algorithms and optimization of robot-manipulator motion
A80-37122

PETLIUK, V. KH.
The impact deformation of the human skull /Experimental investigation and some problems of modeling/. I - A technique for the investigation of the biomechanics of the human skull upon impact
A80-40070

PETRUN, M. D.
Blunted hypoxic vasoconstriction in lungs from short-term high-altitude rats
A80-39974

PETTIT, S.
Delineating acute neuroendocrine responses in microwave-exposed rats
A80-38451

PIMENTAL, N. A.
Physiological responses of men and women to humid and dry heat
[AD-A079573] N80-24995

PLATONOV, A. K.
Problems of motion control for mobile robots
A80-37463

POLEZHAEV, E. F.
Some characteristics of binocular fixation in the discrimination and recognition of objects
A80-39143

POLK, F. E.
Nucleotide-amino acid interactions and their relation to the genetic code
A80-37515

PONNAMPERUMA, C.
Purification and properties of malate dehydrogenase from the extreme thermophile Bacillus caldolyticus
A80-40385

PONTA, D.
Electromagnetic control of cell functions
A80-39408

POTAPOV, A. N.
Hypodynamic and hypokinetic condition of skeletal muscles
[NASA-TM-76009] N80-24989

POTAPOVICH, G. M.
Content of total iron, copper and manganese in liver of animals during hypokinesia, muscle activity and process of recovery
[NASA-TM-76130] N80-24981

PRANGE, A. J.
Hypothermic responses to neurotensin in vertebrates
A80-39277

PUDOV, V. I.
The sensation of vibration
A80-39144

PUKHOV, V. V.
A comparative evaluation of the coagulation properties of lymph and blood at high altitude
A80-36373

R

REIMER, R.
Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983

best copy available

REISCHL, P.
End-tidal CO2 response to low levels of inspired CO2 in awake beagle dogs
A80-38455

REPPERGER, D. W.
A test of Fitts' law with moving targets
A80-38466

REUBEN, J.
Nucleotide-amino acid interactions and their relation to the genetic code
A80-37515

RIDELLA, S.
Physical measurements on dielectric properties of biological substances
A80-39407

RINGUEST, J. L.
An evaluation of human thermal models for the study of immersion hypothermia protection equipment
[AD-A081100] N80-24994

ROBERTS, W.
Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983

RODINA, G. P.
Change in radio sensitivity of mice under effect of rotation
[NASA-TM-76026] N80-24980

RODRIGUEZ-ANTUNEZ, A.
Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983

S

SAITO, I.
Structural difference between stage 1 and REM on sleep EEG
A80-37902

Statistical studies on blood pressure of JASDF pilots - Comparison with Japanese adult males
A80-37903

Study on the changes of electroencephalogram, heart rate and respiratory rate during all night sleep
A80-37904

SAKAGUCHI, E.
Effects of sustained exposure to hypoxic environment on temporal discrimination behaviour in rats
A80-37901

SAKAGUCHI, T.
Effects of sustained exposure to hypoxic environment on temporal discrimination behaviour in rats
A80-37901

SAKURAI, I.
Effects of sustained exposure to hypoxic environment on temporal discrimination behaviour in rats
A80-37901

SCHOENBAUM, E.
Thermoregulatory mechanisms and their therapeutic implications; Proceedings of the Fourth International Symposium on the Pharmacology of Thermoregulation, Oxford University, Oxford, England, July 30-August 3, 1979
A80-39272

SERAYA, V. M.
Change in radio sensitivity of mice under effect of rotation
[NASA-TM-76026] N80-24980

SHAPIRO, Y.
Physiological responses of men and women to humid and dry heat
[AD-A079573] N80-24995

SHEEHAN, M. E.
Implications of changes in temperature perception and temperature regulation in high pressure heliox oxygen environments
A80-39279

SHOCHET, E.
Pilot reactions to communicating with a talking computer
A80-37698

SHOLPO, L. N.
The impact deformation of the human skull /Experimental investigation and some problems of modeling/. I - A technique for the investigation of the biomechanics of the human skull upon impact
A80-40070

SHUGALEI, V. S.
The effects of cold acclimatization on the activity of acid peptide-hydrolases in lysosome-enriched fractions of rat brain and liver tissues
A80-36375

SIMONI, P. O.
Using representative knowledge to guide decision making in automatic diagnostic systems
[INPE-1686-RPE/117-REV] N80-26033

SINCLAIR, R. D.
Chemical and nonchemical components of ventilation during hypercapnic exercise in man
A80-38454

SMIALKOWSKI, T.
Some problems on evaluation of RF radiation hazards caused by ISM equipment in Poland
A80-39405

SORRENTINO, R.
Quantifying the hazard of field-man interaction in electrically shielded enclosures
A80-39402

SPIERDIJK, J.
Trend prediction as a basis for optimal therapy: A survey report
[TH-78-E-86] N80-24999

STALEY, J. T.
The gas vacuole - An early organelle of prokaryote motility
A80-40379

STANTON, T. L.
Effect of intrahippocampal TRH on body temperature in hibernating and awake ground squirrels
A80-39278

STASSINOPOULOS, E. G.
The terrestrial radiation environment and EVA's: Prediction requirements, model improvements, and warning systems
N80-24685

STAVERT, D. M.
End-tidal CO2 response to low levels of inspired CO2 in awake beagle dogs
A80-38455

STREMEL, R. W.
Alteration by hyperoxia of ventilatory dynamics during sinusoidal work
A80-38456

T

TANEYEVA, G. V.
Content of total iron, copper and manganese in liver of animals during hypokinesia, muscle activity and process of recovery
[NASA-TM-76130] N80-24981

TARKHANOVSKII, V.
Plants and weightlessness
[NASA-TM-76025] N80-24979

TAUBY, W. C.
Investigation of Minimum Sized Low-Profile Cockpits (MSLPC) and crew escape system integration
[AD-A081055] N80-25004

TAYLOR, C. L., JR.
Human malignant hyperthermia - Treatment with dantrolene sodium
A80-39276

TEBO, B.
Structural features of manganese precipitating bacteria
A80-40380

TENENBAUM, J. M.
Research in interactive scene analysis
[NASA-CR-163196] N80-25003

THODE, H. G.
Sulphur isotope ratios in late and early precambrian sediments and their implications regarding early environments and early life
A80-40381

TKACHENKO, L. I.
Free amino acids of the blood and some organs in hypokinesia
[NASA-TM-75945] N80-24988

TSIRULNIKOV, E. N.
The sensation of vibration
A80-39144

TURCO, R. F.
Preliminary results of fast neutron treatments in carcinoma of the pancreas
[NASA-TM-81516] N80-24983

TUTTLE, W. C.
Development of an automated stress/duress detection system, phase 1 and phase 2
[SAND-79-7038] N80-26036

TYSON, C. A.
Mammalian toxicological evaluation of TNT wastewaters. Volume 2: Acute and subacute mammalian toxicity of TNT and LAP mixture
[AD-A080957] N80-26034

U

UGLANOVA, N. A.
The impact deformation of the human skull /Experimental investigation and some problems of modeling/. I - A technique for the investigation of the biomechanics of the human skull upon impact
A80-40070

UNDERKOFLER, S.
Hematological aspects of heat stress in trained and untrained men with special emphasis on erythrocyte volume, acid-base balance and fluid-electrolyte shifts
[AD-A071757] N80-24997

UTESHEV, A. B.
Content of total iron, copper and manganese in liver of animals during hypokinesia, muscle activity and process of recovery
[NASA-TM-76130] N80-24981

V

VANBEAUMONT, S.
Hematological aspects of heat stress in trained and untrained men with special emphasis on erythrocyte volume, acid-base balance and fluid-electrolyte shifts
[AD-A071757] N80-24997

VANBEAUMONT, W.
Hematological aspects of heat stress in trained and untrained men with special emphasis on erythrocyte volume, acid-base balance and fluid-electrolyte shifts
[AD-A071757] N80-24997

VANSTEE, E. W.
Various techniques for evaluating cardiodynamic function using chronically instrumented canine models
[AD-A071264] N80-26035

VENABLE, D. D.
A radiative transfer model for remote sensing of laser induced fluorescence of phytoplankton in non-homogeneous turbid water
[NASA-CR-163155] N80-24982

VERNAZZA, G.
Electromagnetic control of cell functions
A80-39408

VIVIANI, R.
Electromagnetic control of cell functions
A80-39408

VOORHEES, J. W.
Effects of aircraft noise on an intelligibility task
A80-38464

W

WALKER, J. C. G.
Atmospheric constraints on the evolution of metabolism
A80-40377

WALL, P. T.
The role of dopamine in temperature regulation during exercise stress
A80-39274

WARD, S. L.
A test of Fitts' law with moving targets
A80-38466

WARD, W. C., JR.
Live subject ejection tower testing to determine human tolerance to an increased onset rate of acceleration
[AD-A032993] N80-25008

WASSERMAN, K.
Alteration by hyperoxia of ventilatory dynamics during sinusoidal work
A80-38456

WEISER, P. C.
Low-level carbon monoxide exposure and work capacity at 1600 meters
[PB80-129083] N80-25001

WHIPP, B. J.
Alteration by hyperoxia of ventilatory dynamics during sinusoidal work
A80-38456

WICKENS, C. D.
The event-related brain potential as an index of display-monitoring workload
A80-38465

WIENER, E. L.
Flight-deck automation: Promises and problems
[NASA-TM-81206] N80-26040

WINOKUR, A.
Effect of intrahippocampal TRH on body temperature in hibernating and awake ground squirrels
A80-39278

WISE, L. M.
Residual effects of alcohol on aircrew performance
A80-37524

WUTTKE, W.
Chances of detecting and differentiating central system effects of drugs in animal experiments with special consideration of behavioural pharmacological methods
[RAE-LIB-TRANS-2034] N80-26029

Y

YURUGI, R.
Effects of sustained exposure to hypoxic environment on temporal discrimination behaviour in rats
A80-37901

1. Report No.
NASA SP-7011 (210)

2. Government Accession No.

3. Recipient's Catalog No.

4. Title and Subtitle
AEROSPACE MEDICINE AND BIOLOGY
A Continuing Bibliography (Supplement 210)

5. Report Date
September 1980

6. Performing Organization Code

7. Author(s)

8. Performing Organization Report No.

9. Performing Organization Name and Address
National Aeronautics and Space Administration
Washington, D. C. 20546

10. Work Unit No.

11. Contract or Grant No.

12. Sponsoring Agency Name and Address

13. Type of Report and Period Covered

14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This bibliography lists 115 reports, articles, and other documents introduced into the NASA scientific and technical information system in August 1980.

17. Key Words (Suggested by Author(s))
Aerospace Medicine
Bibliographies
Biological Effects

18. Distribution Statement
Unclassified - Unlimited

19. Security Classif. (of this report)
Unclassified

20. Security Classif. (of this page)
Unclassified

21. No. of Pages
50

22. Price*
$7.00 HC

*For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1980

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to eleven special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley
COLORADO
University of Colorado, Boulder
DISTRICT OF COLUMBIA
Library of Congress
GEORGIA
Georgia Institute of Technology, Atlanta
ILLINOIS
The John Crerar Library, Chicago
MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge
MISSOURI
Linda Hall Library, Kansas City
NEW YORK
Columbia University, New York
OKLAHOMA
University of Oklahoma, Bizzell Library
PENNSYLVANIA
Carnegie Library of Pittsburgh
WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library
COLORADO
Denver Public Library
CONNECTICUT
Hartford Public Library
MARYLAND
Enoch Pratt Free Library, Baltimore
MASSACHUSETTS
Boston Public Library
MICHIGAN
Detroit Public Library
MINNESOTA
Minneapolis Public Library
MISSOURI
Kansas City Public Library
St. Louis Public Library
NEW JERSEY
Trenton Public Library
NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library
OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library
TENNESSEE
Memphis Public Library
TEXAS
Dallas Public Library
Fort Worth Public Library
WASHINGTON
Seattle Public Library
WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019.

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy of microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESA - Information Retrieval Service, European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

U.S.MAIL

NASA

POSTMASTER: If Undeliverable (Section 158
Postal Manual) Do Not Return

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP-7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP-7037	AERONAUTICAL ENGINEERING Engineering, design, and operation of aircraft and aircraft components	Monthly
NASA SP-7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP-7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP-7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP-7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

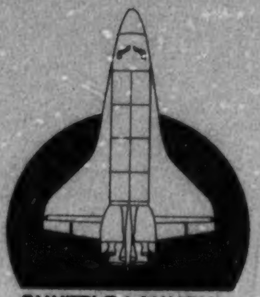
SCIENTIFIC AND TECHNICAL INFORMATION OFFICE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C. 20546

7011 (211)

NASA

Aerospace Medicine and Biology
A Continuing Bibliography with Indexes

NASA SP-7011 (211)
October 1980


SHUTTLE LAUNCH
MARCH 1981

National Aeronautics and
Space Administration

NEWARK PUBLIC LIBRARY
DEC 15 1980
U. S. GOVT. PUBS.
DEPOSITORY 376

Aerospace Medicine & Biology
& Biology Aerospace Medicine
edicine & Biology Aerospace M
space Medicine & Biology Aer
logy Aerospace Medicine & Bio
ine & Biology Aerospace Medic
ce Medicine & Biology Aerospa
Aerospace Medicine & Biology
& Biology Aerospace Medicine
edicine & Biology Aerospace M
space Medicine & Biology Aer
logy Aerospace Medicine & Bio

NASA SP-7011 (211)
Aerospace Medicine and Biology
A Continuing Bibliography with Indexes
Pages 185 - 215
October 1980

NAS 1.21:

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series)	N80-26264 – N80-28294
IAA (A-10000 Series)	A80-40539 – A80-43838

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by PRC Data Services Company.

NASA SP-7011(211)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 211)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in September 1980 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*

NASA Scientific and Technical Information Branch
National Aeronautics and Space Administration
Washington, DC
1980

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This supplement is available as NTISUB/123/093 from the National Technical Information Service (NTIS), Springfield, Virginia 22161 at the price of $7.00 domestic; $14.00 foreign.

INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 212 reports, articles and other documents announced during September 1980 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1980 Supplements.

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A80-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies of accessions are available at $7.00 per document up to a maximum of 40 pages. The charge for each additional page is $0.25. Microfiche(1) of documents announced in *IAA* are available at the rate of $3.00 per microfiche on demand, and at the rate of $1.25 per microfiche for standing orders for all *IAA* microfiche. The price for the *IAA* microfiche by category is available at the rate of $1.50 per microfiche plus a $1.00 service charge per category per issue. Microfiche of all the current AIAA Meeting Papers are available on a standing order basis at the rate of $1.50 per microfiche.

Minimum air-mail postage to foreign countries is $1.00 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

STAR ENTRIES (N80-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page vii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the * symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard $3.50 price, for those documents identified by a # symbol.)

---

(1) A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts*. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: Fachinformationszentrum, Karlsruhe. Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM).

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: U.S. Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free.

Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is $50.00 domestic; $100.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics
and Astronautics
Technical Information Service
555 West 57th Street, 12th Floor
New York, New York 10019

British Library Lending Division,
Boston Spa, Wetherby, Yorkshire,
England

Commissioner of Patents and
Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service
ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Scientific and Technical Information
Facility
P.O. Box 8757
B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Branch (NST-41)
Washington, D.C. 20546

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, California 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey
1033 General Services Administration
Building
Washington, D.C. 20242

U.S. Geological Survey
601 E. Cedar Avenue
Flagstaff, Arizona 86002

U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

U.S. Geological Survey
Bldg. 25, Denver Federal Center
Denver, Colorado 80225

Fachinformationszentrum Energie, Physik,
Mathematik GMBH
7514 Eggenstein Leopoldshafen
Federal Republic of Germany

NTIS PRICE SCHEDULES

Schedule A
STANDARD PAPER COPY PRICE SCHEDULE

(Effective January 1, 1980)

Price Code	Page Range	North American Price	Foreign Price
A01	Microfiche	$ 3.50	$ 5.25
A02	001-025	5.00	10.00
A03	026-050	6.00	12.00
A04	051-075	7.00	14.00
A05	076-100	8.00	16.00
A06	101-125	9.00	18.00
A07	126-150	10.00	20.00
A08	151-175	11.00	22.00
A09	176-200	12.00	24.00
A10	201-225	13.00	26.00
A11	226-250	14.00	28.00
A12	251-275	15.00	30.00
A13	276-300	16.00	32.00
A14	301-325	17.00	34.00
A15	326-350	18.00	36.00
A16	351-375	19.00	38.00
A17	376-400	20.00	40.00
A18	401-425	21.00	42.00
A19	426-450	22.00	44.00
A20	451-475	23.00	46.00
A21	476-500	24.00	48.00
A22	501-525	25.00	50.00
A23	526-550	26.00	52.00
A24	551-575	27.00	54.00
A25	576-600	28.00	56.00
A99	601-up	-- 1/	-- 2/

1/ Add $1.00 for each additional 25 page increment or portion thereof for 601 pages up.

2/ Add $2.00 for each additional 25 page increment or portion thereof for 601 pages and more.

Schedule E
EXCEPTION PRICE SCHEDULE

Paper Copy & Microfiche

Price Code		North American Price	Foreign Price
E01		$ 5.50	$ 11.50
E02		6.50	13.50
E03		8.50	17.50
E04		10.50	21.50
E05		12.50	25.50
E06		14.50	29.50
E07		16.50	33.50
E08		18.50	37.50
E09		20.50	41.50
E10		22.50	45.50
E11		24.50	49.50
E12		27.50	55.50
E13		30.50	61.50
E14		33.50	67.50
E15		36.50	73.50
E16		39.50	79.50
E17		42.50	85.50
E18		45.50	91.50
E19		50.50	100.50
E20		60.50	121.50
E99	Write for quote		
N01		28.00	40.00

TABLE OF CONTENTS

Page

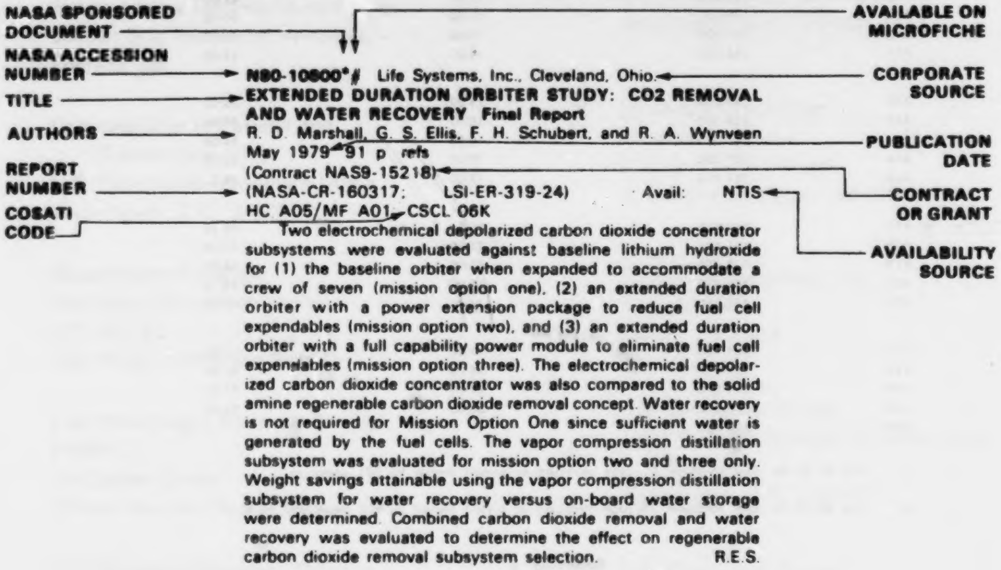
IAA ENTRIES (A80-10000) 185

STAR ENTRIES (N80-10000) 201

Subject Index I-1

Personal Author Index I-25

TYPICAL CITATION AND ABSTRACT FROM *STAR*

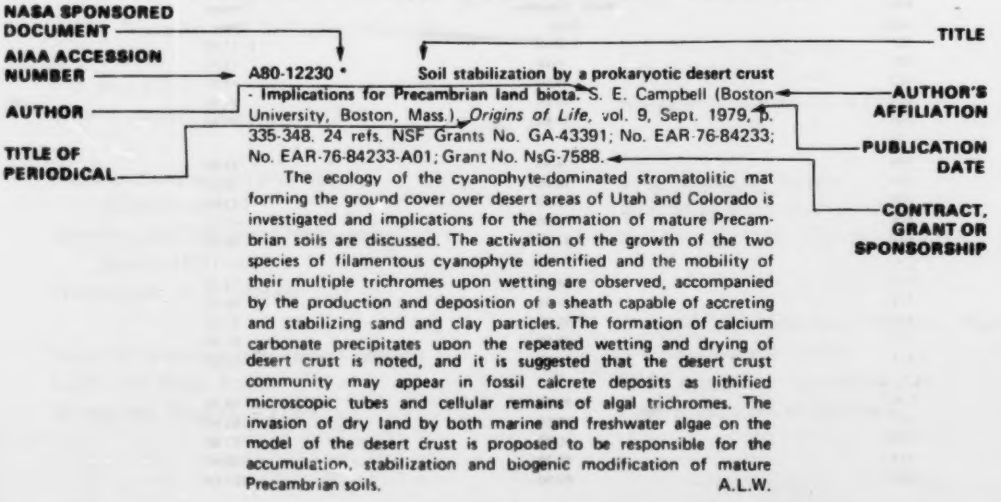


NASA SPONSORED DOCUMENT
NASA ACCESSION NUMBER
TITLE
AUTHORS
REPORT NUMBER
COSATI CODE
AVAILABLE ON MICROFICHE
CORPORATE SOURCE
PUBLICATION DATE
CONTRACT OR GRANT
AVAILABILITY SOURCE

N80-10800*# Life Systems, Inc., Cleveland, Ohio.
EXTENDED DURATION ORBITER STUDY: CO2 REMOVAL AND WATER RECOVERY Final Report
R. D. Marshall, G. S. Ellis, F. H. Schubert, and R. A. Wynveen
May 1979 91 p refs
(Contract NAS9-15218)
(NASA-CR-160317; LSI-ER-319-24) Avail: NTIS
HC A05/MF A01 CSCL 06K

Two electrochemical depolarized carbon dioxide concentrator subsystems were evaluated against baseline lithium hydroxide for (1) the baseline orbiter when expanded to accommodate a crew of seven (mission option one), (2) an extended duration orbiter with a power extension package to reduce fuel cell expendables (mission option two), and (3) an extended duration orbiter with a full capability power module to eliminate fuel cell expendables (mission option three). The electrochemical depolarized carbon dioxide concentrator was also compared to the solid amine regenerable carbon dioxide removal concept. Water recovery is not required for Mission Option One since sufficient water is generated by the fuel cells. The vapor compression distillation subsystem was evaluated for mission option two and three only. Weight savings attainable using the vapor compression distillation subsystem for water recovery versus on-board water storage were determined. Combined carbon dioxide removal and water recovery was evaluated to determine the effect on regenerable carbon dioxide removal subsystem selection. R.E.S.

TYPICAL CITATION AND ABSTRACT FROM *IAA*



NASA SPONSORED DOCUMENT
AIAA ACCESSION NUMBER
AUTHOR
TITLE OF PERIODICAL
TITLE
AUTHOR'S AFFILIATION
PUBLICATION DATE
CONTRACT, GRANT OR SPONSORSHIP

A80-12230 * **Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota.** S. E. Campbell (Boston University, Boston, Mass.), *Origins of Life,* vol. 9, Sept. 1979, p. 335-348. 24 refs. NSF Grants No. GA-43391; No. EAR-76-84233; No. EAR-76-84233-A01; Grant No. NsG-7588.

The ecology of the cyanophyte-dominated stromatolitic mat forming the ground cover over desert areas of Utah and Colorado is investigated and implications for the formation of mature Precambrian soils are discussed. The activation of the growth of the two species of filamentous cyanophyte identified and the mobility of their multiple trichromes upon wetting are observed, accompanied by the production and deposition of a sheath capable of accreting and stabilizing sand and clay particles. The formation of calcium carbonate precipitates upon the repeated wetting and drying of desert crust is noted, and it is suggested that the desert crust community may appear in fossil calcrete deposits as lithified microscopic tubes and cellular remains of algal trichromes. The invasion of dry land by both marine and freshwater algae on the model of the desert crust is proposed to be responsible for the accumulation, stabilization and biogenic modification of mature Precambrian soils. A.L.W.

AEROSPACE MEDICINE AND BIOLOGY *A Continuing Bibliography (Suppl. 211)*

OCTOBER 1980

IAA ENTRIES

A80-40546 **Electrocardiographic exercise testing and ambulatory monitoring to identify patients with ischemic heart disease at high risk of sudden death.** L. A. Ivanova, N. A. Mazur, T. M. Smirnova, A. B. Sumarokov, V. A. Nazarenko, and E. A. Svet (Akademiia Meditsinskikh Nauk SSSR, Moscow, USSR). *American Journal of Cardiology*, vol. 45, June 1980, p. 1132-1138. 22 refs.

The prognostic significance of electrocardiographic exercise testing and ambulatory monitoring in the identification of high risks of sudden death in ischemic heart disease patients is investigated. Holter monitoring and exercise stress testing were performed within a five-day interval on 144 men with established heart disease three months or longer after a definite or probable myocardial infarction. Within a follow-up period of two years following the electrocardiographic testing, 10 sudden deaths among the patients were reported, and it is found that these deaths were associated with reduced maximal exercise heart rate, exercise-induced frequent ventricular arrhythmias and complex ventricular arrhythmias on 24-hr recordings, with the presence of bivariate and trivariate factors leading to an up to 20-fold increase in the incidence of sudden death. The use of inclusive disjunction techniques for the analysis of test parameters is found to allow for the identification of high-risk subgroups. It is also noted that combinations of exercise variables identified patients at very high risk, while bivariates and trivariates were preferable for determining very low risk subgroups. A.L.W.

A80-40547 **Diagnosis of coronary artery disease with exercise radionuclide imaging - State of the art.** L. C. Becker (Johns Hopkins Medical Institutions, Baltimore, Md.). *American Journal of Cardiology*, vol. 45, June 1980, p. 1301-1304. 29 refs.

The ability of techniques of exercise radionuclide perfusion imaging at its present state of development to aid in the diagnosis of coronary artery disease is assessed. The sensitivity and specificity of exercise scintigraphy by both thallium-201 tracing and radionuclide ventrilography reported by published studies is shown to depend on the criteria used in defining an abnormal test, patient selection, the extent of disease and patient responses to exercise, and the tendency of stress thallium imaging to underestimate the extent of disease is pointed out. The two currently practiced methods of exercise scintigraphy are compared, noting the lack of conclusive evidence for the superiority of either one and the technical difficulties of exercise ventriculography. In light of the capabilities, expense and radiation exposure of the techniques, it is recommended that in most cases exercise scintigraphy should not be used as an initial screening examination, but be reserved for those patients whose diagnosis is still in doubt after standard multistage exercise testing, as well as in certain other clinical situations. The expected future improvement of exercise scintigraphy is also noted. A.L.W.

A80-40625 * **Scale effects in the musculoskeletal system, viscera and skin of small terrestrial mammals.** N. Pace, D. F. Rahlmann, and A. H. Smith (California, University, Berkeley and Davis, Calif.). *Physiologist*, vol. 22, no. 6, 1979, p. S-51, S-52. 7 refs. Grant No. NsG-7336.

A80-40846 **Imitation of locomotion under conditions of weightlessness.** V. V. Beletskii and N. S. Konikova. *(Akademiia Nauk SSSR, Izvestiia, Mekhanika Tverdogo Tela,* Sept.-Oct. 1979, p. 48-53.) *Mechanics of Solids*, vol. 14, no. 5, 1979, p. 41-45. Translation.

The analysis deals with the plane motions of a dynamic biped walking machine consisting of 5 inertial elements: a balancer-body and two identical two-link legs. It is shown that simulation of biped walking under zero-g conditions requires appreciably smaller control moments than in the presence of a gravitational field. V.P.

A80-40898 * **Dynamic decisions and work load in multitask supervisory control.** M. K. Tulga (Commercial Information Corp., Woburn, Mass.) and T. B. Sheridan (MIT, Cambridge, Mass.). *IEEE Transactions on Systems, Man, and Cybernetics*, vol. SMC-10, May 1980, p. 217-232. 38 refs. Grant No. NsG-2118.

A paradigm is developed for the problem of allocating in time a single resource to multiple simultaneous task demands which appear randomly, last for various periods, and offer varying rewards for service. Based upon a dynamic optimizing algorithm plus an estimator, and including response time and future discounting constraints, a model of the human decisionmaker is compared to experimental results for human subjects performing such a task at a computer-graphics terminal. Results indicate a reasonable fit, under various model parameters and task conditions, and suggest interesting hypotheses about the nature of human 'planning ahead' and mental work load. (Author)

A80-40899 * **Optimal control model predictions of system performance and attention allocation and their experimental validation in a display design study.** G. Johannsen and T. Govindaraj (Purdue University, Lafayette, Ind.). *IEEE Transactions on Systems, Man, and Cybernetics*, vol. SMC-10, May 1980, p. 249-261. 25 refs. Grant No. NsG-2119.

The influence of different types of predictor displays in a longitudinal vertical takeoff and landing (VTOL) hover task is analyzed in a theoretical study. Several cases with differing amounts of predictive and rate information are compared. The optimal control model of the human operator is used to estimate human and system performance in terms of root-mean-square (rms) values and to compute optimized attention allocation. The only part of the model which is varied to predict these data is the observation matrix. Typical cases are selected for a subsequent experimental validation. The rms values as well as eye-movement data are recorded. The results agree favorably with those of the theoretical study in terms of relative differences. Better matching is achieved by revised model input data. (Author)

A80-40978 **Air traffic control stress and its effects - An investigation at Manchester airport.** V. B. Maxwell and J. H. Crump (University of Manchester Institute of Science and Technology, Manchester, England). *The Controller*, vol. 19, June 1980, p. 31-33.

Air traffic control (ATC) stress research is surveyed along with the effects of the work itself, shift work, environment, interpersonal relationships and individual characteristics. The most consistent predictor of ATC stress has been found to be the number of aircraft controlled, and findings reveal that cardiovascular and psychiatric disorders are the two most prevalent medical disorders among air traffic controllers and that both exceed general population norms.

Attention is also given to a study of Manchester controllers regarding psychological screening for stress and an improved and more sophisticated medical screening which takes account of coronary heart disease risk indicators. J.P.B.

A80-41002 **Comets - A matter of life and death /Milne Lecture/.** F. Hoyle. *Vistas in Astronomy*, vol. 24, pt. 2, 1980, p. 123-139.

It is argued that comets originating during the formation of the planets Uranus and Neptune were responsible for the origin of life on earth and continue to bring new viruses and bacteria. Evidence for the existence of organic molecules within interstellar gas clouds is presented, and difficulties with the currently accepted theory of the emergence of organic compounds from inorganics in the primitive earth environment are pointed out. It is then proposed that interstellar organic compounds could have been swept up by planetesimals in the formation of Uranus and Neptune long after the earth had formed, with the gravitational generation of a halo of bodies surrounding the forming planets, inside which favorable conditions for chemical evolution would be present. Such planetesimals could then be deflected into cometary earth-crossing orbits and release evolved forms of life into the terrestrial atmosphere, where they would have evolved the capacity for photosynthesis. Evidence of the continued arrival of life forms in the form of rapidly spread and patchily distributed viral and bacterial diseases is presented, and it is contended that terrestrial organisms have not evolved an absolute immunity to all virus infections due to the fact that these viruses, most likely of cometary origin, are the source of genetic variability. A.L.W.

A80-41051 # **An analytical evaluation method of manual control system utilizing human pilot model.** K. Tanaka (National Aerospace Laboratory, Chofu, Tokyo, Japan). *Japan Society for Aeronautical and Space Sciences, Transactions*, vol. 23, May 1980, p. 35-50. 16 refs.

The paper examines an analytical evaluation method of a manual control system which consists of an aircraft and a human pilot. The method is based on the assumptions that the control mission determines the critical frequency observed in the pilot, and that the degree of closed-loop stability and human compensation necessary to attain stability determine the human subjective evaluation of the system. A simple evaluation chart is presented based on experimental data on human compensatory dynamics which can explain almost all of the experimental results. The method has advantages of simplicity in the sense of requiring only two typical controlled element parameters to be evaluated, applicability to unstable controlled elements, predictability of controllability limits of manual control, and the possibility of estimating human compensatory dynamics. A.T.

A80-41139 **Brightness exponent as a function of retinal eccentricity in the peripheral visual field - Effects of dark and light adaptation.** N. Osaka (Ottemon Gakuin University, Ibaraki, Osaka, Japan). *Perception and Psychophysics*, vol. 27, no. 6, June 1980, p. 519-523. 28 refs.

Using a method of direct magnitude estimation, the exponent of the brightness power function was determined under dark and light adaptation at luminance levels well above threshold. The exponent was estimated for functions describing the brightness of stimuli presented at the fovea and the following peripheral retinal loci: 10, 20, 30, 40, and 50 deg nasally eccentric to the fovea along the horizontal meridian of the right eye. The exponent for a 1-sec flash was found to be approximately .33 at the fovea and increased slightly with increasing retinal eccentricity. The effect of adaptation on the brightness exponent was not so large when the target luminance was set well above threshold. (Author)

A80-41250 * **The intracellular Na/+/ and K/+/ composition of the moderately halophilic bacterium, Paracoccus halodenitrificans.** M. Sadler, M. McAninch, L. I. Hochstein (NASA, Ames Research Center, Extraterrestrial Research Div., Moffett Field, Calif.), and R. Alico. *Canadian Journal of Microbiology*, vol. 26, no. 4, 1980, p. 496-502. 24 refs.

A80-41318 # **Review - The role of pulse oscillations of intravascular pressure in the regulation of blood circulation (Obzor - Rol' pul'sovykh kolebanii vnutrisosudistogo davleniia v reguliatsii krovoobrashcheniia).** L. I. Osadchii and A. P. Pugovkin (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). *Fiziologicheskii Zhurnal SSSR*, vol. 66, May 1980, p. 617-628. 80 refs. In Russian.

Current understandings of the role of blood pressure oscillations due to the pulsed operation of the circulatory system in the regulation of blood circulation are reviewed. Attention is given to experimental results concerning systemic and organ-level hemodynamic reactions to the alternation of pulsating and nonpulsating perfusate blood flows, and variations in tissue metabolism during pulsating and nonpulsating perfusion, and it is pointed out on the basis of these results that whereas any method of artificial blood circulation causes the destruction of microcirculation as well as tissue hypoxia and metabolic acidosis, nonpulsating perfusion in general leads to more serious damage to capillary transport. Mechanisms for the influence of pulse oscillations on vascular tension are then examined, and areas requiring further investigation are indicated. A.L.W.

A80-41319 # **The organization of the sleep-wakefulness cycle according to data obtained by the continuous daily monitoring of heart rhythm and motor activity (Ob organizatsii tsikla 'bodrstvovanie-son', po dannym sutochnoi nepreryvnoi registratsii serdechnogoritma i dvigatel'noi aktivnosti).** A. I. Belich (Akademiia Nauk SSSR, Institut Evoliutsionnoi Fiziologii i Biokhimii, Leningrad, USSR). *Fiziologicheskii Zhurnal SSSR*, vol. 66, May 1980, p. 642-649. 22 refs. In Russian.

The daily variations in wakefulness and rest periods in the pond turtle Emys orbicularis are investigated by the contactless monitoring of heart rhythm and motor activity in order to determine the temporal structure of the sleep-wakefulness cycle. Results indicate a pronounced slowing of heart rate upon the transition from a state of wakefulness to various levels of sleep, in agreement with the universally observed slowing with increasing depth of sleep-like rest periods. A five-stage characteristic sleep-wakefulness cycle consisting of periods of active and passive waking, daytime rest (cataleptic motionlessness), nighttime rest (catatonic) and rest with relaxed skeletal muscles (intermediate sleep) is determined, with phased autonomic and motor phenomena noted during the stage of intermediate sleep. A.L.W.

A80-41320 # **Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period (Dykhanie i okislitel'noe fosforilirovanie mitokhondrii tkanei mozga i serdtsa pri tsirkuliatornoi gipoksii mozga i v postgipoksicheskom periode).** A. I. Kolotilova, L. V. Govorova, G. V. Kudriavtseva, L. Khari, S. A. Makarov, Iu. M. Malyshev, and S. I. Teplov (Leningradskii Gosudarstvennyi Universitet; Leningradskii Neirokhirurgicheskii Institut, Leningrad, USSR). *Fiziologicheskii Zhurnal SSSR*, vol. 66, May 1980, p. 687-694. 15 refs. In Russian.

A80-41321 # **Changes in the adrenergic regulation of thermogenesis during the long-term adaptation of rats to the cold (Izmeneniia adrenergicheskoi reguliatsii termogeneza pri dolgovremennoi adaptatsii krys k kholodu).** Iu. F. Pastukhov (Akademiia Nauk SSSR, Institut Biologicheskikh Problem Severa. Magadan, USSR). *Fiziologicheskii Zhurnal SSSR*, vol. 66, May 1980, p. 739-745. 16 refs. In Russian.

A80-41645 **A technique for estimating the contribution of photomechanical responses to visual adaptation.** M. V. Srinivasan and G. D. Bernard (Yale University, New Haven, Conn.). *Vision*

Research, vol. 20, no. 6, 1980, p. 511-521. 29 refs. Research supported by the Connecticut Lions Eye Research Foundation; Grants No. NIH-EY-01140; No. NIH-EY-00785.

This paper presents a technique for isolating and quantifying the contribution of photomechanical responses to visual adaptation. The technique is developed in the context of the pupillary mechanism that is active in the primary visual cells of the insect eye. Using a feedback-control model to represent the combination of retinular cell and pupil, it is shown that the effect of pupillary movements on retinal illumination can be inferred by analysing an intensity response function of the pupil. When the technique is applied to the pupils of the butterfly and the fly, the results indicate that in each case, the pupil decreases retinal illumination by approximately 0.7 log units when the ambient light level is increased from pupillary threshold to a level 2.5 log units higher. The validity of the technique is examined by applying it to the human pupil. The results predict changes of retinal illumination which are in close agreement with those expected on the basis of changes in iris diameter, including the Stiles-Crawford effect. The procedure presented here is simple and can, in principle, be applied to many forms of photomechanical adaptation. (Author)

A80-41646 **Target position and velocity - The stimuli for smooth pursuit eye movements.** J. Pola and H. J. Wyatt (New York, State University, New York, N.Y.). *Vision Research*, vol. 20, no. 6, 1980, p. 523-534. 29 refs. Research supported by the State University of New York Research Foundation and New York Foundation; Grant No. NIH-EY-02878.

Smooth pursuit eye movements are usually thought to be guided only by target velocity. We studied the effectiveness of target velocity and target position (offset from the fovea) as stimuli for pursuit movements. Under open-loop conditions, we used induced (apparent) sinusoidal motion as a 'velocity-only' stimulus, and square-wave motion as a 'position-only' stimulus. Over a range of frequencies, position stimuli tended to give larger responses, and response velocity increased linearly with target offset. When open-loop sinusoidal target motion was synthesized using appropriate position-only and velocity-only 'components', the response was about the same as for real sinusoidal motion, suggesting a dominant role for target position in both cases. Using non-periodic step-ramp stimuli as devised by Rashbass, but in the open-loop, we have commonly observed position-directed pursuit movements. (Author)

A80-41661 * **Na+ and Ca2+ ingestion - Plasma volume-electrolyte distribution at rest and exercise.** J. E. Greenleaf and P. J. Brock (NASA, Ames Research Center, Biomedical Research Div., Moffett Field, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 48, May 1980, p. 838-847. 24 refs.

The effects of hypernatremia and hypercalcemia on plasma volume and electrolyte distribution during rest, exercise and recovery in cool and hot environments are investigated. Plasma volume, protein and electrolytes were measured in two groups of five men in the supine position during rest, exercise at 40-47% maximal oxygen consumption and recovery in 26.5 C and 39.4 C environments, after ingestion in the rest period of 16-17 ml/kg hypertonic NaCl, isotonic NaCl or hypertonic calcium gluconate solutions. During the rest period, it is found that the hypertonic Ca drink prevents any rise in plasma volume in both cool and hot environments, while hypertonic Na retarded hypervolemia only in the cool environment and consumption of both isotonic and hypertonic Na in the heat resulted in a hypervolemic response twice as great as that in the cool environment. During exercise and recovery, plasma volume is found to be greatest after drinking hypertonic Na in the heat, while the normal hypervolemic responses during exercise were not influenced by drink composition. Results suggest that hypertonic drinks may be better for maintaining plasma volumes during exercise in the heat. A.L.W.

A80-41690 **Predicting the effects of vertical vibration frequency, combinations of frequencies and viewing distance on the reading of numeric displays.** C. H. Lewis and M. J. Griffin (Southampton, University, Southampton, England). *Journal of Sound and Vibration*, vol. 70, June 8, 1980, p. 355-377. 16 refs. Research supported by the Ministry of Defence (Procurement Executive).

The effects of vertical vibration frequency, viewing distance and multifrequency vibrations on the performance of a numerical reading task are investigated in order to derive frequency weighting functions for the establishment of vibration standards for vehicle design. Subjects were required to read white numerals printed on black cards when subjected to five levels of sinusoidal vibration at ten frequencies between 2.8 and 63 Hz, five levels of sinusoidal vibration at frequencies of 3.15 and 16 Hz with viewing distances from 0.75 to 3.0 m, and twelve combinations of three vibrations at various levels. Contours of vibration levels required to produce mean equal reading errors indicate the visual task to be most sensitive to vibration in the frequency range 8 to 16 Hz, with the sensitivities of individual subjects exhibiting similar trends. Increases in viewing distance from 0.75 to 1.5 m are found to result in increased relative sensitivities to higher frequencies, although the overall effect of vibration is decreased. Finally, the effects of complex vibration on performance are observed to be most accurately predicted from the most severe weighted spectral component alone. A.L.W.

A80-41750 **Space victualling.** N. W. Pirie. *Endeavour*, vol. 4, no. 2, 1980, p. 74-77. 8 refs.

The supplying of space crews with water, food and oxygen is discussed with emphasis on recycling strategies which may be used in a closed environment. The possible sources of energy in a space environment (solar, chemical, nuclear) are indicated, and the recovery and management of water is considered briefly. The photosynthetic recycling of CO2 is then discussed, with attention given to optimal environmental conditions in plant growth chambers, the relative merits of higher plants, algae and photosynthetic bacteria as CO2 sinks and food and oxygen sources and facilities for generating O2 and removing CO2 during periods of darkness such as the lunar night. The relative contributions of biological and electrical forms of material recycling in a closed environment are considered, and the possibility that edible substances may be found on a planet orbiting a star is pointed out. A.L.W.

A80-41757 # **The Shuttle's remote manipulator system - Status and operation.** C. M. Hinds (Spar Aerospace, Ltd., Toronto, Canada). *Deutsche Gesellschaft für Luft- und Raumfahrt and American Astronautical Society, Symposium on Shuttle/Spacelab - The New Transportation System and its Utilization, 3rd, Hanover, West Germany, Apr. 28-30, 1980, DGLR Paper 80-075.* 14 p.

The design and operation of the Shuttle remote manipulator system (RMS) is described, and its uses in conjunction with Spacelab experiments are reviewed along with free flying payloads. Attention is given to modes of control and RMS performance. Special facilities including system testing and simulation are outlined, and current status is discussed. V.T.

A80-41761 # **Manned maneuvering unit.** S. J. Ducsai (Martin Marietta Aerospace, Denver, Colo.). *Deutsche Gesellschaft für Luft- und Raumfahrt and American Astronautical Society, Symposium on Shuttle/Spacelab - The New Transportation System and its Utilization, 3rd, Hanover, West Germany, Apr. 28-30, 1980, DGLR Paper 80-081.* 16 p.

The development and characteristics of the Shuttle manned maneuvering unit (MMU) are described. Three generations of MMU mockups are presented. Consideration is given to MMU structure, configurations, control arm details, control electronics, and propulsion scheme. Different usages of the MMU are discussed. V.T.

A80-41876 **Performance effects of alcohol intoxication and hangover at ground level and at simulated altitude.** W. E. Collins (FAA, Civil Aeromedical Institute, Oklahoma City, Okla.). *Aviation, Space, and Environmental Medicine,* vol. 51, Apr. 1980, p. 327-335. 29 refs.

Eight private pilots, four men and four women, were trained to perform on a two-dimensional tracking task (joystick control of a localizer/glideslope instrument) and to respond as quickly as possible to the onset of a red pinlight, eppended to the tracking instrument, by depressing a button on the joystick. Tracking and reaction time scores were obtained under both static (stationary) and dynamic conditions (during angular acceleration), at ground level and at a simulated altitude of 3658 m. Subjects performed in the evening after a monitored dinner, drank prepared beverages from 2100 to midnight, and were tested again. Subjects slept 4-5 h, were awaken around 0645, were fed, and performed the tasks again, beginning about 0730. At midnight following alcohol ingestion (3.25 ml of 100-proof alcohol/kg body weight), peak breath alcohol levels averaged 91 mg%. Impairment in tracking performance and in visual reaction time occurred during midnight sessions following alcohol ingestion. While ratings of hangover and other questionnaire data indicate awareness of hangover symptoms, no hangover-related performance impairment was recorded during morning sessions. In addition, no significant altitude/alcohol interactions on performance were obtained during either acute intoxication or hangover periods. These results thus offer no evidence contrary to the 8-hour rule. (Author)

A80-41877 **Electroencephalographic recordings during parachute jump sessions.** P. Gauthier, L. Jouffray, M. Rodi, and C. Gottesmann (Nice, Université, Nice, France). *Aviation, Space, and Environmental Medicine,* vol. 51, Apr. 1980, p. 336-338. 10 refs.

Electroencephalographic (EEG) recordings of experienced parachutists were done by means of telemetry before, during, and after jumps of up to 3500m. During free-fall and after stabilization, alpha rhythm was recorded from several alpha reactive subjects when they closed their eyes. No pathological EEG recordings were obtained during the different phases of the jump. (Author)

A80-41879 **Psychomotor performance during ozone exposure - Spectral and discriminant function analysis of EEG.** J. A. Gliner, S. M. Horvath, R. A. Sorich (California, University, Santa Barbara, Calif.), and J. Hanley (California, University, Santa Barbara and Los Angeles, Calif.). *Aviation, Space, and Environmental Medicine,* vol. 51, Apr. 1980, p. 344-351. 17 refs. Research supported by the California State Air Resources Board.

Two experiments were conducted to evaluate the effects of ozone on the electroencephalogram during psychomotor performance. The first experiment consisted of a 2-h visual sustained attention task in room air and 0.75 parts per million (ppm) ozone. The second experiment was a divided attention study which combined a visual choice reaction time situation with an auditory sustained attention task. Ozone levels in this experiment were 0.0 ppm, 0.3 ppm, and 0.75 ppm. Spectral and discriminant function analyses were performed on the EEG collected during these studies. Attempts were made to categorize the EEG between different ozone levels, at rest, during each task performance, and between task and no-task performance within each ambient air condition. Discriminations between conditions for individuals were quite good, but discriminations for the combined subjects were disappointing with the exception of those between task and no-task conditions, which were moderately good. (Author)

A80-41880 **Rhesus brain gas tension and learned task performance responses to normoxic and hyperoxic breathing.** A. A. Karl, S. L. Ward, M. E. Souder, A. T. Kissen, and G. L. Causer (USAF, Aerospace Medical Research Laboratory, Wright-Patterson AFB; Systems Research Laboratories, Inc., Dayton, Ohio). *(Aerospace Medical Association, Annual Meeting, 50th, Washington, D.C., May 14-17, 1979.) Aviation, Space, and Environmental Medicine,* vol. 51, Apr. 1980, p. 352-355. 21 refs. Contract No. F33615-76-C-5001. (AMRL-TR-105)

The impact of extended exposure to 21 and 100% O2 breathing mixtures on brain tissue oxygenation and performance of a learned task was studied in seven rhesus monkeys. Trained in the Sidman Avoidance Task, the animals were exposed to either breathing mixture for a period of 3.5 h in which brain tissue partial pressures of O2, CO2 and N2 were observed. With 100% O2, O2 and CO2 tensions rose significantly (less than 0.01 and less than 0.05, respectively) above control levels while N2 tension fell significantly (less than 0.01) below its baseline value. With 100% O2 no statistically significant difference in gas tension values was shown for performance vs. nonperformance conditions. There was no difference in the number of shocks received with either breathing mixture. Lever press response frequency decreased throughout the experiment for both groups. During the last performance session, response frequency for the 100% O2 group leveled off, whereas for the 21% O2 group it continued to decrease. (Author)

A80-41881 **Effect of induced cyclic changes of deep body temperature on performance in a flight simulator.** T. M. Gibson, J. R. Allan, C. J. Lawson, and R. G. Green (RAF, Institute of Aviation Medicine, Farnborough, Hants., England). *Aviation, Space, and Environmental Medicine,* vol. 51, Apr. 1980, p. 356-360. 17 refs.

Previous studies have shown that performance of a simple motor task may be degraded by heating the skin when the body temperature is above a critical level of 37.6 C. The experiment reported here confirms these findings for performance in a simple flight simulator. The significance of the results is discussed with reference to flight in high-performance aircraft. (Author)

A80-41882 **Visual search performance during simulated radar observation with and without a sweepline.** R. I. Thackray and M. Touchstone (FAA, Civil Aeromedical Institute, Oklahoma City, Okla.). *Aviation, Space, and Environmental Medicine,* vol. 51, Apr. 1980, p. 361-366. 17 refs.

A complex vigilance task was used to study the effect of a radar sweepline on attentional processes. The visual display was designed to approximate an automated air traffic control radar display. There were 28 men and women, half assigned to the sweep and half to the no-sweep condition, tested over a 20h session. Although the no-sweep appeared to be generally superior to the sweep condition in all measures of detection efficiency, none of the differences was significant. Measures of eye fixation paralleled the patterns of change in performance during the task session. However, as with performance, mean fixation durations for the sweep and no-sweep conditions did not differ, nor were individual differences in scanning activity related to performance. Possible reasons for the lack of relationship between scanning activity and performance are discussed. (Author)

A80-41883 **The thermal properties of a survival bag incorporating metallised plastic sheeting.** I. M. Light and J. N. Norman (Aberdeen, University, Aberdeen, Scotland). *Aviation, Space, and Environmental Medicine,* vol. 51, Apr. 1980, p. 367-370. 23 refs.

Five male subjects were exposed to a cooling environment equivalent to 1082 W/sq m. The subjects wore a clothing assembly with insulation properties of 1.55 clo. A casualty bag incorporating metallized plastic sheeting was provided for additional insulation. Deep body temperature fell 1.2 C and mean skin temperature 2.6 C over the 2-h period. Metallized plastic sheeting did not prevent heat loss through the clothing assembly, as indicated by the falls in body and skin temperature and an increase in metabolic heat production. From measurements made during the exposure, the calculated insulation value of the complete assembly of 2.93 clo was close to the predicted value of 2.80 clo calculated from the thermal resistance of the assembly layers. It is concluded that the metallized plastic sheeting in this casualty bag did not provide significant additional thermal insulation. (Author)

A80-41884 **Effect of an altered rest-activity or feeding schedule on the shift of motor activity rhythm of mice.** H. Murakami and Y. Murakami (Kobe University, Kobe, Japan). *Aviation, Space, and Environmental Medicine,* vol. 51, Apr. 1980, p. 371-374. 11 refs.

Preflight acclimatization to the rhythm of destination and postflight daytime activity are assumed to be effective countermeasures against the jet lag syndrome. Regarding this idea, resynchronization of motor activity rhythm was investigated in mice subjected to daytime exercises on a driven belt before or after the reversal of lighting regimen. In addition, the effect of prior daytime feeding was studied. No evidence was manifested that the forced exercises or feeding schedule would hasten synchronization. This result indicates that the central control system of motor activity rhythm could not be manipulated favorably by such method in mice. On the basis of the result obtained, the applicability of countermeasures to human beings was discussed. (Author)

A80-41885 **Cardiovascular responses of man exposed to plus Gz accelerations in a centrifuge.** B. Vettes, H. Vieillefond, and R. Auffret (Centre d'Essais en Vol, Laboratoire de Médecine Aérospatiale, Brétigny-sur-Orge, Essonne, France). *Aviation, Space, and Environmental Medicine,* vol. 51, Apr. 1980, p. 375-378. 13 refs. Translation.

Cardiovascular investigations were conducted in male volunteer subjects exposed to plus Gz accelerations. Electrocardiogram, blood pressure, heart rate, stroke volume, and cardiac output were recorded. Accelerations ranging from plus 1.5 Gz to plus 6 Gz were applied during periods of from 30 s to 20 min. Acceleration was achieved in 10-90 s. Heart rate markedly increased as a function of acceleration intensity, reaching 160 beats/s. Decreases in cardiac output (30-40 percent) and stroke volume were also observed. Protection by an anti-G suit reduces tachycardia. Accelerations induce various electrocardiographic disorders lasting several minutes after the stress has been stopped. These are sometimes the first symptons of functional cardiovascular failure. The centrifuge turns out to be an excellent screening tool. However, when used for testing various aircrew equipment, strict monitoring of the subjects is required. (Author)

A80-41886 **Evaluation of an acute mountain sickness questionnaire - Effects of intermediate-altitude staging upon subjective symptomatology.** D. A. Stamper, R. T. Sterner, and S. M. Robinson (U.S. Army, Letterman Army Institute of Research, San Francisco, Calif.; U.S. Army, Institute of Environmental Medicine, Natick, Mass.). *Aviation, Space, and Environmental Medicine,* vol. 51, Apr. 1980, p. 379-387. 17 refs.

A80-41887 **Identification of the minimum noise level capable of producing an asymptotic temporary threshold shift.** M. R. Stephenson, C. W. Nixon, and D. L. Johnson (USAF, Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio). *Aviation, Space, and Environmental Medicine,* vol. 51, Apr. 1980, p. 391-396. 9 refs. Research sponsored by the U.S. Environmental Protection Agency and U.S. Air Force. (AMRL-TR-79-106)

The present study was designed to identify the minimum noise level capable of producing an asymptotic temporary threshold shift (ATTS). It was estimated that at some level below 85 dBA, probably 70-80 dBA, there existed an exposure level at which no ATTS would occur. This level would then define an exposure condition below which personnel could be exposed for indefinite periods of time without adverse auditory effects. Subjects were exposed to continuous pink noise for 24 h at levels of 65, 70, 75, 80, and 85 dBA. TTS growth and recovery was measured at specific intervals throughout each condition. Results demonstrate that at the most sensitive frequency (4000 Hz), an ATTS threshold level would be predicted in the region of 75-80 dBA. (Author)

A80-41888 * **Is the weight loss of hyperbaric habitation a disorder of osmoregulation.** L. W. Raymond, N. S. Raymond, V. P. Frattiali, J. Sode, C. S. Leach, and W. H. Spaur (NASA, Johnson Space Center, Houston, Tex.; National Naval Medical Center, Bethesda, Md.; U.S. Navy, Experimental Diving Unit, Panama City, Fla.). *Aviation, Space, and Environmental Medicine,* vol. 51, Apr. 1980, p. 397-401. 18 refs.

To examine the weight loss of hyperbaric helium-oxygen habitation, the exchange of liquids and calories was measured in six men who lived in this atmosphere for 32 d. The maximum pressure was 49.5 ATA. The men lost 3.7-10.1 kg, in spite of warm ambient (31-32 C) temperatures and adequate calories (2,737 kcal/d) provided for the sedentary ways of chamber living. Weight loss and a calculated fluid deficit were accompanied by significant hemoconcentration, shown by increases in serum proteins. These changes were followed by a rise in urinary aldosterone and vasopressin, but not thirst. Weight loss in hyperbaric atmospheres is probably multifactorial, but the data suggests an uncoupling of normal osmoregulation may have occured in the present set of subjects. This may have been due to altered lung mechanics, increased catecholamines, or effects of high pressure on cellular responses to vasopressin. (Author)

A80-41890 **Minimizing the psychological effects of a wartime disaster on an individual.** D. K. Kentsmith (U.S. Veterans Administration Hospital; Creighton University, Omaha; Nebraska, University, Lincoln, Neb.). *Aviation, Space, and Environmental Medicine,* vol. 51, Apr. 1980, p. 409-413. 23 refs.

In this paper, the psychological reactions of individuals and groups to a wartime disaster, such as nuclear explosion, are presented. The psychological literature on disasters is discussed. The presentation attempts to emphasize viewing the victims of a disaster as individuals responding in a normal way to an overwhelming experience rather than labeling them as psychiatric patients. The various phases of a disaster are discussed with particular emphases on the preventive measures and leadership roles which may be taken by the physician. The development and treatment of situational psychoses, as well as neurotic reactions, are examined and the dynamics especially of long-lasting neurotic problems explored. The paper concludes by making specific recommendations regarding the establishment of disaster plans and training programs at each military facility. It is suggested that the use of such plans may help minimize the psychological effects of a wartime disaster on the individual. (Author)

A80-41977 **Absolute and relative work capacity in women at 758, 586, and 523 torr barometric pressure.** D. S. Miles, J. A. Wagner, S. M. Horvath, and J. A. Reyburn (California, University, Santa Barbara, Calif.). *Aviation, Space, and Environmental Medicine,* vol. 51, May 1980, p. 439-444. 25 refs. Grants No. AF-AFOSR-78-3534; No. NIH-AG-00021.

The present study evaluated cardiorespiratory responses to exercise in six young women (22-34 yr) in relationship to maximal oxygen uptake at sea level and moderate altitudes. Pulmonary ventilation was consistently 10-15% higher at altitudes when expressed as a percent of maximal oxygen uptake, primarily due to an increase in respiratory rate. At altitudes down to a barometric pressure of 523 torr, the control of heart rate responses and decrements in maximal oxygen uptake in women were similar to those in males, but ventilatory control mechanisms differed. S.D.

A80-41978 **Effect of direction and rate of change of deep body and skin temperatures on performance of a rotary pursuit task.** T. M. Gibson, P. J. Redman, and J. R. Allan (RAF, Institute of Aviation Medicine, Farnborough, Hants., England). *Aviation, Space, and Environmental Medicine,* vol. 51, May 1980, p. 445-447. 5 refs.

Performance at a pursuit rotor task has been studied during the overshoot of core temperature caused by sudden cooling after heating, and the undershoot caused by sudden heating after cooling. Conditions were chosen so that effects of the absolute levels of core and skin temperature could be discounted. The results showed that the direction of change of core and skin temperature, rates of change of core temperature between -0.07 and +0.06 C/min, and rates of change of skin temperature between -1.0 and +1.0 C/min did not affect performance; particular circumstances of this experiment, especially the short duration of the changes in direction studied, make this conclusion tentative. Comparison with earlier studies indicates that the major determinants of performance at elevated body temperatures are absolute levels of mean skin temperature, with the absolute level of core temperature having a less significant role. (Author)

A80-41979 Respiratory gas exchange during positive pressure breathing and rapid decompression to simulated altitudes of 18.3 and 24.4 km. D. E. Holness, J. A. G. Porlier, K. N. Ackles, and G. R. Wright (Defence and Civil Institute of Environmental Medicine, Downsview, Ontario, Canada). *Aviation, Space, and Environmental Medicine*, vol. 51, May 1980, p. 454-458.

Respiratory gas exchange was studied, using the technique of mass spectrometry, during events of slow and rapid decompression of human subjects to simulated altitudes of 60,000 and 80,000 ft (18.3 and 24.4 km, respectively). Positive breathing pressures and G-suit counterpressures were employed in three series of decompression experiment. Low levels of inspired carbon dioxide and nitrogen reflected the rebreathing of gases throughout the experiments. Application of a positive breathing pressure of 70 torr, accompanied by a jerkin pressure equal to breathing pressure and a G-suit counterpressure of four times the breathing pressure on the trunk and limbs, respectively, maintained alveolar oxygen at physiologically safe levels during decompression to 60,000 ft (18.3 km) altitude. Similarly, 80 torr positive breathing pressure, in combination with four times the breathing pressure in the G suit, adequately satisfied the requirements for oxygen during rapid decompression to 80,000 ft (24.4 km) simulated altitude. (Author)

A80-41980 Combined effect of hypoxia and cold on the phospholipid composition of lung surfactant in rats. R. Kumar, K. S. Hegde, B. Krishna, and R. S. Sharma (Defence Institute of Physiology and Allied Sciences, Delhi, India). *Aviation, Space, and Environmental Medicine*, vol. 51, May 1980, p. 459-462. 18 refs.

The phospholipid composition of lung tissue and lung lavage in rats exposed to acute hypoxia, chronic hypoxia, and acute and chronic hypoxia associated with cold has been estimated and compared with controls. Different fractions of phospholipids were separated by thin layer chromatography. Results showed that acute hypoxia lowered phospholipids in lung lavage but superimposition of cold lowered phospholipids both in lung tissue and lavage. In chronic hypoxia, phospholipid contents of lung tissue and lavage decreased while the addition of cold showed no further reduction in lung tissue phospholipids; on the contrary phosphatidyl choline fraction of lung lavage increased. It is concluded that the effect of hypoxia alone in lowering surfactant is related to the duration of exposure. Cold with hypoxia lowers phospholipids in the acute stage; in the chronic stage; it does not further reduce phospholipids. (Author)

A80-41981 Pickup of visual information by the pilot during a ground control approach in a fighter aircraft simulator. J. P. Papin, P. Naureils, and G. Santucci (Centre d'Etudes et de Recherches de Médecine Aérospatiale, Paris, France). *Aviation, Space, and Environmental Medicine*, vol. 51, May 1980, p. 463-469. 18 refs.

Before providing the new single-seat fighter aircraft with selective visual information display systems, it is necessary to conduct new studies of the visual behavior of pilots flying these aircraft in order to determine the nature of information to be displayed. The authors describe a modified NAC Eye Mark recorder which can be used in tight spaces without any interfering light source and give an example of its use in an experiment conducted in a Mirage III R training simulator. The reported experiment was designed to analyse the visual behavior of 12 pilots of four different qualification levels who flew a ground control approach (GCA) test each day for five consecutive days. The results show that the pilot's visual behavior is stable, both on an intra- and inter-individual basis. In addition, it is possible to classify the control panel instruments as a function of the number of times and length of time they are checked. (Author)

A80-41982 Comparison of reactive hyperemia in warm and cool human forearms over a range of ischemic periods. I. Shakir, B. A. Gooden, and I. C. MacDonald (Queen's Medical Centre, Nottingham, England). *Aviation, Space, and Environmental Medicine*, vol. 51, May 1980, p. 470-472. 11 refs.

The characteristics of reactive hyperemia in the warm human forearm are well documented but comparable data at lower temperatures are sparse. The present study was designed to examine reactive hyperemia in the forearms of 8 subjects using a range of ischemic periods of 0.5, 1, 2, 4, and 8 min at plethysmograph temperatures of 34 and 14 C. The peak flow rates and hyperemic volumes following all of the durations of ischemia were significantly lower at 14 C. There was a proportional relationship between the hyperemic volume and the duration of ischemia at both temperatures. The differences noted in the magnitude of the responses at the two temperatures may be explained by a reduction in the rate of metabolism in the forearm at the lower temperature, but reduced vascular distensibility cannot be excluded. (Author)

A80-41983 * Effects of chronic centrifugation on skeletal muscle fibers in young developing rats. W. D. Martin (Albert B. Chandler Medical Center, Lexington, Ky.). *Aviation, Space, and Environmental Medicine*, vol. 51, May 1980, p. 473-479. 22 refs. Grant No. NsG-2187.

Three groups of 30-d old male and female rats were centrifuged for 2, 4, 8, and 16 weeks, after which their soleus and plantaris muscles were analysed for changes in proportions of muscle fiber types. The groups were: earth control, maintained at earth gravity without rotation; rotation control, subjected to a gravitational force of 1.05 G and 28 rpm; and rotation experimental, subjected to a gravitational force of 2 G and 28 rpm. Muscle fibers were classified into four fiber types on the basis of actomyosin ATPase activity as slow oxidative, fast oxidative glycolytic and either fast glycolytic (plantaris) or intermediate (soleus). Hypergravity resulted in an increase in slow oxidative fibers in soleus relative to the earth control, but not of females treated similarly. The relationship of body weight to the changes in proportion of slow oxidative fibers is discussed. (Author)

A80-41984 Rocket plume burn hazard. A. M. Stoll, J. R. Piergallini, and M. A. Chianta (U.S. Naval Material Command, Naval Air Development Center, Warminster, Pa.). *Aviation, Space, and Environmental Medicine*, vol. 51, May 1980, p. 480-484. 10 refs.

By use of miniature rocket engines, the burn hazard posed by exposure to ejection seat rocket plume flames was determined in the anaesthetized rat. A reference chart is provided for predicting equivalent effects in human skin based on extrapolation of earlier direct measurements of heat input for rat and human burns. The chart is intended to be used in conjunction with thermocouple temperature measurements of the plume environment for design and modification of escape seat system to avoid thermal injury on ejection from multiplace aircraft. (Author)

A80-41985 Acceleration effects on pulmonary blood flow distribution using perfusion scintigraphy. J. E. Whinnery (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine*, vol. 51, May 1980, p. 485-491. 11 refs.

The effects of increased acceleration (Gz stress) on the distribution of pulmonary blood flow in the miniature swine were measured with a gamma scintillation camera using Technecium 99-m labeled human macro-aggregated albumin and human albumin microspheres. Multiple studies with Gz levels from -4 Gz to +8 Gz were obtained in the same animals, thus allowing an accurate comparison of the effects of acceleration stress on the distribution of pulmonary blood flow. The animals were fitted with abdominal anti-G suits and instinctively performed straining maneuvers, thus simulating the environment and actions of advanced fighter aircraft pilots during the increased acceleration stress of aerial combat maneuvering. Marked shifts in pulmonary flow were observed with both +Gz and -Gz acceleration. The greatest magnitude of change during +Gz was observed up to +4 Gz; however, changes in the distribution of flow did occur even up to +8 Gz. Large changes in blood flow distribution also occurred in going to -4 Gz. The changes in perfusion distribution in the lungs are a major determinant of the blood oxygen desaturation that occurs during +Gz acceleration. A decreased arterial blood saturation can affect overall performance and reduce effectiveness during sustained high +Gz. (Author)

A80-41986 **Aerobic power and body fat of men and women during army basic training.** J. F. Patton, W. L. Daniels, and J. A. Vogel (U.S. Army, Research Institute of Environmental Medicine, Natick, Mass.). *Aviation, Space, and Environmental Medicine,* vol. 51, May 1980, p. 492-496. 22 refs.

A80-41987 * **Interactions between surface cooling and LBNP-induced central hypovolemia.** P. B. Raven (Moss Heart Center, Dallas; Texas College of Osteopathic Medicine, Fort Worth, Tex.), M. Saito, F. A. Gaffney, J. S[illegible]hutte, and C. G. Blomqvist (Moss Heart Center, Dallas, Tex.). *Aviation, Space, and Environmental Medicine,* vol. 51, May 1980, p. 497-503. 30 refs. Research supported by the Moss Heart Foundation; Grant No. NsG-9026.

The paper describes a study carried out to determine the extent to which whole body surface cooling (WBSC) modifies the effects of the central hypovolemia produced by lower body negative pressure (LBNP) at normal skin temperatures. It is shown that WBSC produces a central displacement of cutaneous venous volume resulting in an increase in stroke volume. V.T.

A80-41988 **Development, test, and evaluation of an advanced anti-G valve for the F-15.** R. R. Burton, R. M. Shaffstall, and J. L. Jaggars (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine,* vol. 51, May 1980, p. 504-509. 5 refs.

A Hi Flow Ready Pressure (HFRP) anti-G valve increasing the rate of G-suit pressurization threefold is described. The valve was tested on eight F-15 pilots. It had better valve response, reduced valve error scores, and allowed the pilots to tolerate high-G exposures with less effort. V.T.

A80-41989 **Prevalence of coronary heart disease risk factors in a young military population.** J. F. Patton and J. A. Vogel (U.S. Army, Research Institute of Environmental Medicine, Natick, Mass.). *Aviation, Space, and Environmental Medicine,* vol. 51, May 1980, p. 510-514. 38 refs.

This study was undertaken to determine the extent to which coronary heart disease risk factors are manifest in a young (17-35 years old) male military population. Approximately 360 individuals underwent medical and physical determination of body composition, blood cholesterol analysis, blood pressure measurement, history of smoking, and a maximal exercise stress test to assess maximal oxygen uptake (VO_2 max) and the incidence of electrocardiographic abnormalities. Obesity (over 20% body fat), elevated blood cholesterol (over 200 mg/dl), and cigarette smoking (over 10 cigarettes/d) were the most predominant risk factors with incidences of 29, 32, and 36%, respectively. Only 2.4% of the sample had a positive stress test as indicated by an ST-segment depression of 1 mm or greater. An inverse relationship between maximal oxgen uptake and percent body fat was the only significant finding between level of aerobic power and risk factor prevalence. These data provide information on the prevalence of cardiovascular disease risk factors in an age group for which there has been only limited information. (Author)

A80-41990 **Agricultural aviation medicine in the Soviet Union.** S. R. Mohler (Wright State University, Dayton, Ohio). *Aviation, Space, and Environmental Medicine,* vol. 51, May 1980, p. 515-517. 6 refs.

The paper examines agricultural aviation medicine in the Soviet Union. The program gives specific attention to aerial application operations and includes special preflight pilot medical examinations, aircraft with specialized protective airflow systems for pilots, minimum flight altitude spraying limit of 5 m, and the use of a 'chemical logbook' by each pilot in addition to the flight logbook. The Soviet workhorse aircraft, the Antonov AN-2, can serve multipurpose roles since it can be converted to executive, courier, cargo, air taxi, or ambulance use. A new single-engine turbojet biplane, the Polish M-15, is being evaluated in the Soviet Union as a replacement for the AN-2. A.T.

A80-41991 **Disorders of the menstrual cycle in airline stewardesses.** R. Iglesias, A. Terrés, and A. Chavarria (Compañia Mexicana de Aviación, S.A., Mexico City, Mexico). *Aviation, Space, and Environmental Medicine,* vol. 51, May 1980, p. 518-520. 8 refs.

Of 200 airline stewardesses, 39 percent underwent unfavorable changes in the menstrual cycle after commencing aeronautical activities while 11 percent who had previous disorders healed soon after joining the company. Although 48 percent of the stewardesses underwent changes in menstruation during flight, in about half of these the menstrual flow increased and in the other half it decreased or disappeared, only to reappear with greater intensity after the flight; 38 percent of the stewardesses manifested suffering from pelvic discomfort after long flights. Sufficient research in this field has not been done. Therefore, it is difficult to trace the exact origin and mechanism of these changes in the menstrual cycle. Stress and internal desynchronization due to disruption of circadian rhythm may intervene in generating these disorders. (Author)

A80-41992 **Relation of breathing oxygen-argon gas mixtures to altitude decompression sickness.** J. P. Cooke, K. G. Ikels, J. D. Adams, and R. L. Miller (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine,* vol. 51, June 1980, p. 537-541. 32 refs.

A 95% oxygen-5% argon breathing mixture produced by a molecular sieve generator was shown to be similar to a 95% O_2-5% N_2 mixture for breathing during 1-h exposures at 7,620 m or 10,972 m, as determined by the detection of proportionate numbers of intravascular bubbles in the pulmonary arteries of dogs. Comparable results were obtained with 95% O_2-5% He or 100% O_2. The partial pressures of a 5% mixture at 7,620 and 10,972 m were 14.1 and 8.6 Torr, respectively, and were apparently low enough so that the nonmetabolizable gases did not result in differences in the incidence of intravascular bubble formation or decompression sickness. Argon at the 10% level showed a nonsignificant trend to produce more bubbles. Individual susceptibility or resistance to bubble formation was observed with the different gases. Denitrogenation with either 5

no subject complaints were attributable to cold air inhalation. Recent studies in the literature suggest that cold air is not fully warmed in the upper respiratory passages; however, the present study observed only slight changes in measured physiological responses to rest and exercise with cold air breathing. (Author)

A80-41993 **Ambiguous response of lung lamellar bodies to sauna-like heat stress in two age groups of adult male rats.** M. E. Heino (Helsinki, University, Helsinki, Finland). *Aviation, Space, and Environmental Medicine,* vol. 51, June 1980, p. 542, 543. 10 refs. Research supported by the Finnish Sauna Society.

A80-41994 **Active muscle torques about long-bone axes of major human joints.** A. E. Engin (Ohio State University, Columbus, Ohio) and I. Kaleps (USAF, Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio). *Aviation, Space, and Environmental Medicine*, vol. 51, June 1980, p. 551-555. USAF-supported research.

Incorporation of the active muscle torques into the multi-segmented total-human-body models can be considered the next major improvement of these models. The first step toward achievement of this goal is to obtain active muscle torque data about long-bone axes of major human joints. This paper presents results of research conducted to collect such data at the shoulder, hip, elbow, knee, and ankle joints. Active muscle torques were determined about the long-bone axes of the upper arm, upper leg, lower arm, and lower leg, which are the body segments associated with the major joints mentioned. Numerical results are presented for three male subjects for a specific number of body segment orientations with respect to the joints. It was concluded that, although there are intra- and inter-subject variations for the maximum values of the active muscle torques about long-bone axes, there are some trends one can establish for the behavior of the magnitudes of these torques. (Author)

A80-41995 * **Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment.** D. E. Philpott, R. Corbett, C. Turnbill, S. Black, D. Dayhoff, J. McGourty, R. Lee, G. Harrison (NASA, Ames Research Center, Ultrastructural Research Laboratory and Biomedical Research Div., Moffett Field, Calif.), and L. Savik (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR). *Aviation, Space, and Environmental Medicine*, vol. 51, June 1980, p. 556-562. 27 refs.

Ten rats, five centrifuged during flight to simulate gravity and five stationary in flight and experiencing hypogravity, orbited the Earth. No differences were noted between flight-stationary and flight-centrifuged animals, but changes were seen between these two groups and ground controls. Morphological alterations were observed comparable to those in the experiment flown on Cosmos 782 and to the retinal cells exposed to high-energy particles at Berkeley. Affected cells in the outer nuclear layer showed swelling, clearing of cytoplasm, and disruption of the membranes. Tissue channels were again found, similar to those seen on 782. After space flight, preliminary data indicated an increase in cell size in montages of the nuclear layer of both groups of flight animals. This experiment shows that weightlessness and environmental conditions other than cosmic radiation do not contribute to the observed damage of retinal cells. (Author)

A80-41996 **On-line analysis of eye movements using a digital computer.** R. W. Baloh, L. Langhofer, V. Honrubia, and R. D. Yee (California, University, Los Angeles, Calif.). *Aviation, Space, and Environmental Medicine*, vol. 51, June 1980, p. 563-567. 10 refs. Grant No. NIH-NS-09823.

We describe a microcomputer system for on-line analysis of eye movement recordings. Quantitative data from the patient and statistical comparison with normative data is available within seconds of test completion. Three types of eye movements are analyzed - voluntary saccades, smooth pursuit, and nystagmus. The first two are induced by a computer-controlled laser dot projected onto a screen and the third by a computer-controlled optokinetic drum, caloric infusion, and rotary chair. The computer algorithm differentiates the eye position signal to yield an instantaneous eye velocity record. Saccades are identified based on their characteristic velocity profile. For pursuit and nystagmus, the velocity record is modified by linearly interpolating across segments in which saccades occurred. The gain (output eye velocity/input eye velocity) is calculated after Fourier analysis of the data. (Author)

A80-41997 * **Piracetam and fish orientation during parabolic aircraft flight.** R. B. Hoffman, G. A. Salinas, and J. L. Homick (NASA, Johnson Space Center, Neurophysiology Laboratory, Houston, Tex.). *Aviation, Space, and Environmental Medicine*, vol. 51, June 1980, p. 568-576. 40 refs.

Goldfish were flown in parabolic Keplerian trajectories in a KC-135 aircraft to assay both the effectiveness of piracetam as an antimotion sickness drug and the effectiveness of state-dependent training during periods of oscillating gravity levels. Single-frame analyses of infrared films were performed for two classes of responses - role rates in hypogravity or hypogravity orienting responses (LGR) and climbing responses in hypergravity or hypergravity orienting responses (HGR). In Experiment I, preflight training with the vestibular stressor facilitated suppression of LGR by the 10th parabola. An inverse correlation was found between the magnitudes of LGR and HGR. Piracetam was not effective in a state-dependent design, but the drug did significantly increase HGR when injected into trained fish shortly before flight. In Experiment II, injections of saline, piracetam, and modifiers of gamma-aminobutyric acid - aminooxyacetic acid (AOAA) and isonicotinic acid did not modify LGR. AOAA did significantly increase HGR. Thus, the preflight training has a beneficial effect in reducing disorientation in the fish in weightlessness, but the drugs employed were ineffective. (Author)

A80-41998 **Red blood cell count /RCC/ and volume /MCV/ of three subjects in a hypobaric chamber.** L. S. Sewchand, R. E. Lovlin, G. Kinnear, and S. Rowlands (Calgary, University, Calgary, Alberta, Canada). *Aviation, Space, and Environmental Medicine*, vol. 51, June 1980, p. 577, 578. 12 refs. Research supported by the Medical Research Council of Canada.

Measurements of red blood cell count (RCC) and mean corpuscular volume (MCV) were made on three subjects during a 42-h continuous exposure to low barometric pressure. RCC varied insignificantly in two subjects, but increased steadily with time in the third. MCV decreased appreciably (12-14%) in all three subjects 5 h after exposure to the low pressure but returned close to baseline values after 40 h. It is concluded that 1) short exposures to low barometric pressures result in a reduction in red cell size; 2) increased red cell production in response to low oxygen levels shows individual variations. (Author)

A80-41999 **The effect of sustained +Gz acceleration on extravascular lung water content in domestic fowl.** W. J. Weidner and L. F. Hoffman (California, University, Davis, Calif.). *Aviation, Space, and Environmental Medicine*, vol. 51, June 1980, p. 579-582. 19 refs. Research supported by the California Lung Association and California Heart Association.

A80-42000 **An attempted validation study of the birthdate-based biorhythm /BBB/ hypothesis.** C. E. Englund and P. Naitoh (U.S. Navy, Naval Health Research Center, San Diego, Calif.). *Aviation, Space, and Environmental Medicine*, vol. 51, June 1980, p. 583-590. 37 refs. Navy-supported research.

The birthdate-based biorhythm (BBB) hypothesis was examined for utility as a predictor of human performance. Data from quizzes of 26 students taken periodically throughout a semester, and measures over 1 month of landing performance by seven pilots were analyzed by multiple regression/correlation methods. Regression equations were developed to test the correspondence between performance and cycle phases. A second analysis used a nonorthogonal least-square spectrum method to determine if the data contained any systematic rhythms in the infradian range. No significant results were obtained which would support the BBB hypothesis as a predictor of human performance. Also, no evidence was found to substantiate the existence of the three proposed BBB cycles. (Author)

A80-42001 **Physiological effects of cold air inhalation during exercise.** G. H. Hartung, L. G. Myhre, and S. A. Nunneley (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine*, vol. 51, June 1980, p. 591-594. 17 refs.

Selected physiological responses of six normal subjects were observed, during rest and exercise, while they breathed either ambient or cold (-35 C) air. All experiments were 10 min in duration, and the exercise experiments consisted of pedalling a bicycle ergometer at loads requiring approximately 60% and 75% of each subject's maximum oxygen consumption. Heart rates and minute ventilations during the most strenuous exercise averaged approximately 170 bpm and 70 l, respectively. Diastolic blood pressure was significantly higher, and expired air temperature was significantly lower, during cold air inhalation. Oxygen uptake, respiration rate, and rectal temperature were not affected by cold air breathing and no subject complaints were attributable to cold air inhalation. Recent studies in the literature suggest that cold air is not fully warmed in the upper respiratory passages; however, the present study observed only slight changes in measured physiological responses to rest and exercise with cold air breathing. (Author)

A80-42002 * **Energy status and oxidation reduction status in rat liver at high altitude /3.8 km/.** R. D. Reed and N. Pace (California, University, Berkeley, Calif.). *Aviation, Space, and Environmental Medicine,* vol. 51, June 1980, p. 595-602. 31 refs. Grant No. NsG-7262.

Adult male rats were exposed to 3.8-km altitude for intervals ranging from 1 h-60 d. Liver samples were taken under light ether anesthesia and were examined by enzymatic analyses. Within 1-6 h of hypoxic exposure, ATP levels decreased while ADP and AMP levels increased, producing a fall in calculated ATP/ADP and adenylate charge ratios. Concurrently, lactate/pyruvate and alpha-glycerophosphate/dihydroxyacetone phosphate ratios increased markedly. Direct measurements of cellular pyridine nucleotides indicated increased NADH/NAD and NADPH/NADP ratios. Levels of total adenosine phosphates and pyridine nucleotides decreased in a significant accompanying response. Many metabolite levels and calculated ratios returned to near-normal values within 1 week of exposure, indicating secondary intracellular adjustments to hypoxic stress; however, persistence of that stress is reflected in lactate concentrations and both substrate redox ratios. Results support and explore concepts that increased oxidation-reduction status and decreased energy status are primary events during hypoxia. (Author)

A80-42003 * **Thresholds for detection of constant rotary acceleration during vibratory rotary acceleration.** B. Clark, J. D. Stewart, and N. H. Phillips (NASA, Ames Research Center, Moffett Field; San Jose State University, San Jose, Calif.). *Aviation, Space, and Environmental Medicine,* vol. 51, June 1980, p. 603-606. 19 refs. Grant No. NCC2-35.

The effects of vibratory angular acceleration on detection thresholds for constant angular acceleration in a dynamic flight simulator are reported in three experiments. Detection thresholds were determined for 10 pilots and four nonpilots using a random, double-staircase procedure while the subjects sat erect in a device which rotated about an earth-vertical axis. Constant angular acceleration were presented for 0.5 and 1.0 s with concurrent, vibratory angular acceleration at 1 and 5 Hz, and thresholds with no vibratory angular acceleration were established. The thresholds were obtained while the subjects observed a visual reference in the enclosed cockpit in two experiments and in total darkness in a third. The results confirmed earlier experiments showing an inverse relationship between the duration of constant angular acceleration and detection threshold and showed that the detection thresholds in darkness were higher than with a visual reference present. Two analyses of variance revealed no significant differences in thresholds across the three vibration conditions. These results indicate that vibratory angular acceleration of fairly high levels can be present in a dynamic flight simulator without masking the pilot's ability to detect either maneuver or disturbance motions. (Author)

A80-42004 **Psychomotor deterioration during exposure to heat.** Y. Epstein, G. Keren, J. Moisseiev, O. Gasko, and S. Yachin (Ministry of Defence, Medical Corps - Physiological Research Unit, Tel Aviv; Chaim Sheba Medical Centre, Samat-Gan, Israel). *Aviation, Space, and Environmental Medicine,* vol. 51, June 1980, p. 607-610. 14 refs.

The effect of different heat loads on vigilance and complex cognitive tasks involved in a mission of different intensities were examined. Nine healthy volunteers were randomly exposed for 2 h to three climatic conditions: comfort (21 C), moderate heat load (30 C) and severe heat load (35 C). The subjects were assigned to missions of shooting at targets of three different sizes. Physiological parameters (heart rate, rectal temperature, and sweat rate) and psychomotor ability were monitored. Exposure to 35 C gave rise to elevated heart rate, rectal temperature, and dehydration of 2.5%, while exposure to 21 C and 30 C caused no physiological burden. Speed of performance were significantly higher when the subjects were exposed to moderate heat load than to either comfort or severe heat load. Percentage of errors, however, rose gradually with the rise in heat load. The results indicate: (1) the effect of the intensity of the task and heat load on deteriorating performance are synergistic; (2) psychomotor performance deteriorates even before physiological parameters are impaired, possibly because of feelings of discomfort; and (3) even highly motivated subjects are effected by heat load, especially when assigned to complex missions which require a high state of vigilance, cooperation, and coordination. (Author)

A80-42005 **Human tolerance to aerial combat maneuvers.** R. R. Burton and R. M. Shaffstall (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine,* vol. 51, July 1980, p. 641-648. 15 refs.

An acceleration profile was developed on the USAF School of Aerospace Medicine's 6.1-m radius centrifuge to measure human tolerance to the Aerial Combat Maneuver (ACM). The ACM profile is a continuous repetitive, 4.5 G for 15 s to 7 G for 15 s, cyclic G exposure which is terminated by the subject at his fatigue endpoint. ACM tolerances using this type of G profile were determined for seven subjects at four different seatback angles; i.e. 13, 30, 55, and 65 deg from the vertical. Group (mean + or - S.E.) tolerances for the ACM were 170 + or - 17 s at 13 deg and 541 + or - 48 s at 65 deg. These tolerances were not usually correlated with relaxed gradual onset G tolerances. The subjective fatigue endpoint was physiologically verified using heart rate, heart rhythm, and performance criteria at the four seatback angles. The potential value of the ACM profile is considered as a measure of the effectiveness of anti-G equipment and methods in the aerial combat environment. (Author)

A80-42006 **Frank orthogonal vectorcardiograms in humans during and after exposure to +Gz acceleration stress.** M. H. Laughlin, J. E. Whinnery, J. A. Strom, D. J. Cosgrove, E. L. Fitzpatrick, H. N. Keiser, and R. N. Whittaker, Jr. (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine,* vol. 51, July 1980, p. 653-660. 25 refs.

Frank orthogonal vectorcardiograms (VCGs) were recorded from 10 subjects prior to, during, and for 15 min after exposures to +3 Gz, +5 Gz and +7 Gz. The order of acceleration exposure was randomized, with the individual exposures separated by at least 1 week. Standard USAF anti-G suits were worn by all subjects. Detailed analysis of the scalar lead electrocardiograms revealed no abnormalities. There were no consistent signs of conduction disturbances or ischemic ST-T segment changes. The QRS axis of the VCG demonstrated posterior rotation in the sagittal plane and counterclockwise rotation in the transverse plane during +Gz stress. The changes in the VCGs recorded during +Gz stress appeared to be related to rotational changes of the heart due to mechanical stress or 10% mixtures of the inert gases was quite effective, as shown by a reduction in the number of intravascular bubbles detected. (Author)

A80-42007 **Catecholamine excretion in A-10 pilots.** G. S. Krahenbuhl, S. H. Constable, P. W. Darst, J. R. Marett, G. B. Reid, and L. C. Reuther (Arizona State University, Tempe, Ariz.). *Aviation, Space, and Environmental Medicine,* vol. 51, July 1980, p. 661-664. 16 refs. Contract No. F33615-78-C-0053.

Catecholamine excretion was determined for 15 USAF pilots during surface attack training in the A-10 aircraft. Timed urine samples were used to determine excretion rates of epinephrine and norepinephrine during basal conditions, during five sorties performed in high-realism simulators, and during six actual flights. Catecholamine excretion was significantly elevated (p less than 0.05) over basal rates during all 11 training sorties; therefore, it was concluded that A-10 conversion and surface attack training results in a significant stress response in the subjects. The stress response experienced in the simulator diminished across trials; the stress response from aircraft flights remained steady through all sorties monitored. The relative proportions of epinephrine and norepinephrine remained similar across all but the final sorties in both the simulator and the aircraft. These occasions were typified by increased norepinephrine and decreased epinephrine excretion rates. (Author)

A80-42008 **Molecular sieve generation of aviator's oxygen - Performance of a prototype system under simulated flight conditions.** R. L. Miller, K. G. Ikels (USAF, School of Aerospace Medicine, Brooks AFB, Tex.), M. J. Lamb, E. J. Buscola (U.S. Naval Material Command, Naval Air Development Center, Warminster, Pa.), and R. H. Ferguson (U.S. Naval Air Systems Command, Washington, D.C.). *Aviation, Space, and Environmental Medicine*, vol. 51, July 1980, p. 665-673. 9 refs.

The molecular sieve method of generating an enriched-oxygen breathing gas is one of several candidate onboard oxygen generation (OBOG) systems under joint Army-Navy-Air Force development for application in tactical aircraft. The performance of a nominal two-man-capacity molecular sieve oxygen generation system was characterized under simulated flight conditions. Data are given on the composition of the molecular sieve-generated breathing gas (oxygen, nitrogen, carbon dioxide, and argon) as a function of inlet air pressure, altitude, breathing gas flow rate, and ambient temperature. The maximum oxygen concentration observed was 95%, with the balance argon. At low demand flow rates and certain conditions of pressure and altitude, the argon enrichment factor exceeded that of oxygen giving a maximum argon concentration of 6.6% with the balance oxygen. The structural integrity of the unit was verified by vibration and centrifuge testing. The performance of the molecular sieve unit is discussed in the context of aircraft operating envelopes using both diluter-demand and 100% delivery subsystems. (Author)

A80-42010 **Device for measuring the precision of eye-hand coordination while tracking changing size.** D. Regan and K. I. Beverley (Dalhousie University, Halifax, Canada). *Aviation, Space, and Environmental Medicine*, vol. 51, July 1980, p. 688-693. 14 refs. National Research Council of Canada Grant No. A-0323; Grant No. AF-AFOSR-78-3711.

Psychophysical evidence supports the idea that the human visual pathway computes an object's rate of change of angular size rather independently of other visual parameters, including contrast and intensity. This independence could provide a basis for accurately judging the component of an object's velocity along a line through the eye in the working visual environment where many visual parameters vary simultaneously. We describe a procedure for quantifying a subject's ability to track changing size, and illustrate the procedure with preliminary experimental data. The subject's R.M.S. tracking errors are displayed in three frequency bands. Our device also measures the perturbing effect of sideways motion upon the subject's ability to track changing size. Such data may go some way to predict a subject's performance in tasks of eye-limb coordination, especially where visual information is largely restricted to the changing-size channel. (Author)

A80-42011 **Toward the development of a new aptitude selection test battery for air traffic control specialists.** J. O. Boone (FAA, Civil Aeromedical Institute, Oklahoma City, Okla.). *Aviation, Space, and Environmental Medicine*, vol. 51, July 1980, p. 694-699. 14 refs.

In an effort to update and refine the selection battery for air traffic controllers, five experimental tests measuring aptitudes and skills considered important in air traffic work were administered to 1,828 newly selected air traffic control specialist (ATCS) trainees on their first day of training at the FAA Academy in Oklahoma City. The five experimental tests and the five tests presently used by the Office of Personnel Management (OPM) for selecting ATCS trainees were employed in an iterative stepwise regression (stepdown procedure). The tests that made a significant contribution in predicting Academy scores were then used to form a composite and the old test battery and the new battery were compared. The new composite demonstrated a statistically significant increase in the multiple correlation over the old test battery. Use of the new test battery could result in a savings to the FAA in terms of Academy attrition due to failures. It could also aid in upgrading the quality of ATCS selectees and aid in minimizing human error in air traffic control work. (Author)

A80-42012 **Alveolar macrophages and pulmonary surfactant of altitude-raised rats.** K. S. Hegde, R. Kumar, B. Krishna, and H. S. Nayar (Defence Institute of Physiology and Allied Sciences, Delhi, India). *Aviation, Space, and Environmental Medicine*, vol. 51, July 1980, p. 700-703. 17 refs.

Alveolar macrophages and pulmonary surfactant were estimated in rats raised at high altitude (3500 m) and compared with control rats. Macrophages were obtained by washing the lungs with isotonic saline and counted in a haemocytometer to obtain the total number present. Proportions of two types of macrophages (precursor and mature) have been evaluated. Different fractions of phospholipids in lung lavage and lung tissue were separated by thin layer chromatography and estimated colorimetrically. The results showed a reduction in the number of macrophages/g of lung with a corresponding decrease in surfactant. The percentage of immature (precursor) macrophages was lower in high-altitude-raised rats. These changes observed in alveolar macrophages and lung surfactant could be due to an altered metabolism at high altitude. (Author)

A80-42013 * **The architecture of the avian retina following exposure to chronic 2 G.** R. G. Orlando and J. A. Negulesco (Ohio State University, Columbus, Ohio). *Aviation, Space, and Environmental Medicine*, vol. 51, July 1980, p. 704-708. 18 refs. Research supported by the Ohio State University; Contract No. NAS2-6634.

Rhode Island Red female chicks at 2 weeks posthatch were subjected, for 7 d, to either earth gravity of 1 G or a 2-G hypergravity environment by chronic whole-body centrifugation. Animals were sacrificed at 3 weeks posthatch and the eyes were enucleated, fixed in 10% BNF, doubly embedded, sectioned at 7-8 microns and routinely processed with H & E for histological examination. Compared to normogravity controls, animal exposure for 1 week to the chronic effects of 2-G resulted in a significantly decreased mean width of the photoreceptor, inner nuclear, and inner plexiform retinal layers. The outer nuclear, outer plexiform, and ganglion cell layers of the retina appeared minimally affected by the hypergravity state since the mean width of these layers showed no noticeable differences from earth gravity control animals. The present anatomic findings suggest a reduction in the detection of motion or rapid changes in illumination by the avian retina when the animal is exposed at a 2-G environment. (Author)

A80-42014 **Aeromedical transportation of psychiatric patients - Historical review and present management.** D. R. Jones (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine*, vol. 51, July 1980, p. 709-716. 32 refs.

A80-42015 **Air transport of the man who needs everything.** P. J. Hansen (USAF, Scott AFB, Ill.). *Aviation, Space, and Environmental Medicine*, vol. 51, July 1980, p. 725-728. 6 refs.

General considerations for the multiple-trauma victim should include a secure airway, a patent intravenous line, elevation of the head and chest over 10 deg, wounds dresses, use of nasogastric tube, urinary drainage catheter, stabilization and splinting of fractures, adequate orders to facilitate patient management during transport, and a comprehensive summary of patient problems. A clinical assessment - preflight, inflight and postflight - preferably by the same person is ideal. The paper focuses on discussing the priorities followed in the clinical assessment: airway and breathing; bleeding (circulation and shock); digestive organs (rupture or injury); excretory organs (rupture or injury); fractures (splints, casts, and back supports); hide (burns and wounds); and good management plan. S.D.

A80-42051 # **The effect of the acute ischemia of the brain on the permeability of the hemato-ophthalmic barrier (Vliianie ostroi ishemii golovnogo mozga na pronitsaemost' gemato-oftal'micheskogo bar'era).** T. V. Birich and S. A. Eremenko (Minskii Meditsinskii Institut, Minsk, Belorussian SSR). *Akademiia Nauk BSSR, Doklady,* vol. 24, no. 6, 1980, p. 568-571. 12 refs. In Russian.

A80-42098 **Use of the multivariate approach to enhance the diagnostic accuracy of the treadmill stress test.** P. S. Greenberg, B. Cangiano, L. Leamy, and M. H. Ellestad (Memorial Hospital Medical Center, Long Beach, Calif.). *Journal of Electrocardiology,* vol. 13, no. 3, 1980, p. 227-236. 39 refs. Research supported by the Memorial Hospital Medical Foundation Funds.

The use of a computerized multivariate analysis to enhance the sensitivity, specificity and predictive value of the treadmill stress test is investigated. Twenty-one selected variables were analyzed for 142 male and 57 female patients who had undergone a stress test and cardiac catheterization with selective coronary angiography. A univariate analysis of variance reveals ten of the variables in males and 14 of the variables in women to exhibit significant differences between normal and diseased (greater than 70% stenosis in one or more coronary arteries) groups. A multivariate discriminant analysis of the variables then shows only three variables in men (test duration, infarct by ECG, ST depression in the recovery period) and five variables in women (infarct history, anginal pain during test, ST resting changes, infarct by ECG, age) to be significant discriminators. Sensitivities of 84%, 85% and 85%; specificities of 80%, 94% and 86%; and predictive values of 89%, 90% and 89% are obtained for the males, females and the entire group, respectively; and it is concluded that multivariate discriminant analysis is a reliable means of determining the probability of coronary artery disease in a highly select group of patients. A.L.W.

A80-42341 # **Investigation of the operation of eye-telescope systems (Issledovanie funktsionirovaniia sistemy glaz-teleskop).** E. V. Khrunov, V. M. Kazachkov, V. I. Metlik, and E. N. Khludeev. *Kibernetika i Vychislitel'naia Tekhnika,* no. 46, 1979, p. 8-16. 5 refs. In Russian.

Experimental results are presented on the operation of eye-telescope systems under conditions of space flight; such operations may be necessary when automatic remote viewing equipment aboard a manned spacecraft fails and its operation must be replaced by visual observation. The tests consisted of continuous operator observation of an operative field of view with the aim of detecting and recognizing test objects. Results of ten-day studies show that operators who were subjected to simulated weightlessness performed slightly less well than those who were not subjected to weightlessness. B.J.

A80-42344 # **Exemplary model of an eye-telescope system for the detection of manned spacecraft on a background of stars (Primernaia model' sistemy glaz-telescop pri obnaruzhenii pilotiruemykh kosmicheskikh korablei na fone zvezd).** E. V. Khrunov, V. M. Kazachkov, and E. N. Khludeev. *Kibernetika i Vychislitel'naia Tekhnika,* no. 46, 1979, p. 27-30. In Russian.

A theoretical investigation of a model for the detection of manned spacecraft on a background of stars is presented. The stars and the spacecraft are considered to be point sources discretely and arbitrarily situated in the field of view; the search for the spacecraft model is carried out in the field of view of a telescope immobile with respect to the background. A formula is presented for the determination of the time of detection as a function of the relative contrast of stars with the background, the number of point sources in the telescope field of view, and the angular velocity of the observer. B.J.

A80-42345 # **The effect of psychic self-regulation /autogenous training/ on the maintenance of the professional skill of pilots (Vliianie psikhicheskoi samoreguliatsii /autogennoi trenirovki/ na sokhranenie professional'nogo navyka u letchikov).** Iu. F. Isaulov. *Kibernetika i Vychislitel'naia Tekhnika,* no. 46, 1979, p. 30-36. In Russian.

Experimental data are presented which show that methods of psychic self-regulation, particularly autogenous training, can be used to maintain the professional skills of pilots for long periods of time. A classification of the various stages of the development and maintenance of professional skills is presented, and the application of the methods discussed to specific flight situations is examined. B.J.

A80-42346 # **Some problems in pattern detection (Nekotorye voprosy obnaruzheniia zakonomernostei).** Iu. P. Ponomarev and L. A. Rastrigin (Rizhskoe Vysshee Voennoe Aviatsionnoe Inzhenernoe Uchilischche, Riga, Latvian SSR). *Kibernetika i Vychislitel'naia Tekhnika,* no. 46, 1979, p. 36-41. In Russian.

It is shown that multidimensional extrapolation can be used to estimate the parameters of a system in a new situation on the basis of limited a priori information on the parameters of the same system in known situations. Such algorithms can be used to develop highly efficient systems for the study of new processes on the basis of the rational combination of artificial and natural intelligences. It is emphasized that personal qualities have a great influence on the search for new patterns. B.J.

A80-42347 # **The ergatic intellect of electrical energy systems (Ergaticheskii intellekt elektroenergeticheskikh sistem).** Iu. V. Shcherbina and D. B. Banin (Kievskii Politekhnicheskii Institut, Kiev, Ukrainian SSR). *Kibernetika i Vychislitel'naia Tekhnika,* no. 46, 1979, p. 46-52. In Russian.

The ergatic intellect is defined as the combined intellect of a multipurpose polyergatic system composed of the 'creative' possibilities of system personnel and of the formalized possibilities of acquisition, transmission, storage, processing, and application of information. The ergatic intellect should be based on machine memory, machine operations of data search, and the 'creative' activities of personnel. The concept of ergatic intellect is applied to the organization of a complex electrical energy system. A general algorithm for the activity of the human operator of such a system is presented. B.J.

A80-42349 # **Mathematical model for evaluating human operator activity in solving the problem of limiting controllability in an ergatic control and monitoring system (Matematicheskaia model' otsenki deiatel'nosti cheloveka-operatora pri reshenii zadachi predel'noi upravliaemosti v ergaticheskoi sisteme upravleniia i kontrolia).** V. A. Kas'ianov and L. N. Degtiarenko (Kievskii Institut Inzhenerov Grazhdanskoi Aviatsii, Kiev, Ukrainian SSR). *Kibernetika i Vychislitel'naia Tekhnika,* no. 46, 1979, p. 77-82. In Russian.

A80-42846 **Overview of human engineering considerations for electro-optical displays.** J. M. Booth and R. J. Farrell (Boeing Aerospace Co., Seattle, Wash.). In: Advances in display technology; Proceedings of the Seminar, San Diego, Calif., August 29, 30, 1979. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1979, p. 78-108. 126 refs.

Many parameters must be considered to obtain a display that is maximally useful to the human operator. Direct observation of a candidate display by the designer and survival in the marketplace provide some guidance, but whenever possible design decisions should be based on relevant test data. This paper summarizes the more critical design parameters, describes some of the available test data, and illustrates some of the characteristics of the test situation that determine whether a set of test results are relevant to a particular design problem. This discussion of test characteristics applies both to the evaluation of available test results and to the design of new test programs aimed at providing data relevant to display component subsystem or system design. (Author)

A80-42847 **Two-dimensional spatial frequency content and confusions among dot matrix characters.** M. E. Maddox (Virginia Polytechnic Institute and State University, Blacksburg, Va.). In: Advances in display technology; Proceedings of the Seminar, San Diego, Calif., August 29, 30, 1979. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1979, p. 109-116. 5 refs. Grant No. DAAG29-77-G-0067.

A two-phase study was conducted which related the confusions among dot matrix characters to the two-dimensional spatial frequency similarity of these characters. During the first phase of the study, subjects were shown single alphanumeric characters from four different dot matrix fonts and five matrix size/character subtense combinations. Data from this phase of the research were analyzed in terms of both correctness and character confusion frequencies. The second phase of the study consisted of digitizing and analyzing all characters from two of the fonts used in the first phase. The fonts chosen represent the most and least confusable of the four, based on the performance data obtained. In addition to the spatial frequency similarity measure, a simple digital Phi coefficient was calculated for each character pair. The final analysis performed in this study was the correlation of observed performance (confusions) with objective similarity measures (2-D spectra and Phi coefficients). (Author)

A80-42849 **Two-channel model of image processing in the human retina.** D. Granrath and B. R. Hunt (Arizona, University, Tucson, Ariz.). In: Advances in display technology; Proceedings of the Seminar, San Diego, Calif., August 29, 30, 1979.

Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1979, p. 126-133. 13 refs. Grant No. AF-AFOSR-76-3024-C.

A model describing the decomposition of imagery in the human retina is developed based on the retina's cellular structure. Two types of retinal cells, horizontals and amacrines, perform spatial averaging across the retina to form a low-pass image channel. This low spatial frequency information is fed back to the retina's receptor cells to form a difference channel of high-passed spatial frequencies. Such a model is suggested by electrophysiological as well as psychophysical evidence. Analysis of the model characterizes the low-pass channel as a contrast channel and the difference channel as an edge detection channel. Application of the model to image quality assessment suggests a two factor approach involving metrics in the model's eye domain. (Author)

A80-42935 # **Myocardial dystrophy in athletes (Distrofiia miokarda u sportsmenov).** L. A. Butchenko, M. S. Kushakovskii, and N. B. Zhuravleva. Moscow, Izdatel'stvo Meditsina, 1980. 224 p. 82 refs. In Russian.

The book discusses experimental investigations of changes in the myocardia of athletes, with particular emphasis on the state of the heart and hemodynamics in athletes with myocardial dystrophy brought on by overstressing. The physiological and pathological bases of myocardial dystrophy in athletes and in the general population are examined, with attention given to the biochemical and cytological disturbances of the myocardium caused by the elevated influence of the sympathetic nervous system during physical exertion, and the influence of myocardial dystrophy on heart function, hemodynamics, and respiration. Mechanisms for the disruption of myocardial repolarization observed in electrocardiograms indicating myocardial dystrophy are discussed, and a classification of the types of myocardial dystrophy encountered in athletes on the basis of electrocardiogram changes is presented. Finally, the treatment and prophylaxis of myocardial dystrophy in athletes are examined. A.L.W.

A80-43011 **Postflight studies on fungal phenotypes irradiated in space.** P. A. Volz (Eastern Michigan University, Ypsilanti, Mich.). *(Kosmicheskie Issledovaniia*, vol. 17, Nov.-Dec. 1979, p. 920-926.) *Cosmic Research*, vol. 17, no. 6, May 1980, p. 762-769. 22 refs.

A80-43151 **Physiological responses of men and women to humid and dry heat.** Y. Shapiro, K. B. Pandolf, B. A. Avellini, N. A. Pimental, and R. F. Goldman (U.S. Army, Research Institute of Environmental Medicine, Natick, Mass.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 49, July 1980, p. 1-8. 32 refs.

Sex differences in the physiological responses of men and women to hot, wet and hot, dry environments are investigated. Nine female and 10 male subjects were acclimated to walking on a treadmill for two 50-min periods preceded and separated by 10-min rest periods and then exposed to six environments ranging from a control at 20 C, 40% relative humidity to hot-wet climates at 35 and 37 C and 90% and 80% relative humidity and hot-dry climates at 49 and 54 C and 20% and 10% relative humidity, during which the treadmill exercise was performed. During the hot-dry exposures, heart rates and rectal temperatures are found to be significantly lower in men, with no significant differences in sweat rates, while during hot-wet exposures, both mean final rectal temperature and sweating rates were lower in the females. These differences are not found to be correlated with differences in maximal O2 uptake, body weight, skin surface area or percentage of body fat, and are found to be negatively related to body surface area to mass ratio. It is suggested that the higher body surface area to mass ratio, better peripheral feedback from skin wettedness and higher thermoregulatory set point in females may explain their greater tolerance to hot-wet environments and lower tolerance to hot-dry environments. A.L.W.

A80-43152 **Interaction of dopamine and haloperidol with O2 and CO2 chemoreception in carotid body.** S. Lahiri, T. Nishino, A. Mokashi, and E. Mulligan (Pennsylvania, University, Philadelphia, Pa.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 49, July 1980, p. 45-51. 21 refs. Grants No. NIH-HL-19737-03; No. NIH-HL-08899-15.

Effects of dopamine and of a dopaminergic blocker, haloperidol, on the responses of carotid body chemoreceptors to hypoxia and hypercapnia were investigated in 16 anesthetized cats. Intravenous infusion of dopamine (10-20 microgram/min) decreased carotid body chemoreceptor responses to hypoxia and hypercapnia. The effect was greater at higher levels of arterial oxygen and carbon dioxide tension stimulus. Thus, the magnitude of the dopamine effect depended on the degree of both oxygen tension- and carbon dioxide tension-medicated excitation of the receptors. Haloperidol potentiated responses to both hypoxia and hypercapnia but apparently did not stimulate the receptors in the absence of these stimuli. Potentiation by haloperidol and inhibition by dopamine of excitatory effects due to arterial oxygen tension decrease and arterial carbon dioxide tension increase are complementary. The data suggest that chemoreception of dopamine, O2, and CO2 converges at some site in the carotid body. Persistence of hypoxic and hypercapnic responses, following dopamine-blocking doses of haloperidol, does not support the theory that regulation of dopamine release is responsible for O2 and CO2 chemoreception in the carotid body of the cat. (Author)

A80-43153 **Changes in pulmonary PV characteristics of human subjects at an altitude of 5,366 m.** A. Mansell (Hospital for Sick Children, Toronto, Canada), A. Powles (McMaster University, Hamilton, Ontario, Canada), and J. Sutton (Arctic Institute of North America, Yukon, Canada). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 49, July 1980, p. 79-83. 30 refs. Research sponsored by the Arctic Institute of North America; Grant No. NIH-HL-14102-05.

Changes in pulmonary pressure-volume (PV) characteristics were measured in seven young adult human subjects following 9-30 days of acclimatization at an altitude of 5366 m. Increases in peak expiratory flow and decreases in total pulmonary resistance were found to be consistent with the reduced gas density at high altitude, however forced expiratory volume in 1 sec decreased in four of the subjects, suggesting an increase in the resistance of small airways or a decrease in lung recoil. Helium dilution measurements indicated increases in total lung capacity in all the subjects, and leftward shifts in the static expiratory pressure-volume curves were obtained with abnormally low lung recoil at 60% total lung capacity. The lung volume increases and PV curve shifts obtained were observed to be indistinguishable from those obtained during exercise-induced asthma and acute isocapnic hypoxia. A.L.W.

A80-43184 * # **A Portable Oxygen Subsystem - Description and preliminary thermal performance prediction.** F. Sribnik (United Technologies Corp., Hamilton Standard Div., Windsor Locks, Conn.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-7.* 9 p. 8 refs. Members, $1.50; nonmembers, $3.00. Contract No. NAS9-15246.

This paper describes the use, operation, and preliminary thermal modeling of a Portable Oxygen Subsystem (POS). The POS is a partial rebreather which is being developed for Shuttle Orbiter support. Normally used as a pre-breather for denitrogenization prior to EVA, this semi-closed, breath powered breathing system can also be used for emergencies in the event of a contaminated or oxygen-deficient cabin atmosphere, to support an emergency transfer between vehicles, or as a clean oxygen supply in the event of a contaminated ambient atmosphere in the vicinity of the Orbiter after landing. (Author)

A80-43192 * # **Water recovery by catalytic treatment of urine vapor.** P. Budininkas (Gard, Inc., Niles, Ill.), P. D. Quattrone, and M. I. Leban (NASA, Ames Research Center, Moffett Field, Calif.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-16.* 6 p. Members, $1.50; nonmembers, $3.00. Contracts No. NAS2-9715; No. NAS2-10237.

The objective of this investigation was to demonstrate the feasibility of water recovery on a man-rated scale by the catalytic processing of untreated urine vapor. For this purpose, two catalytic systems, one capable of processing an air stream containing low urine vapor concentrations and another to process streams with high urine vapor concentrations, were designed, constructed, and tested to establish the quality of the recovered water. (Author)

A80-43195 # **Environmental control of a pressurized equipment container for Shuttle flights - The Spacelab Igloo.** K. Beckmann (ERNO Raumfahrttechnik GmbH, Bremen, West Germany). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-19.* 6 p. Members, $1.50; nonmembers, $3.00.

One of the standard payloads of the new Shuttle Space Transportation System will be the European Spacelab. The modular concept of Spacelab provides eight basic flight configurations, three of which require the use of a pressurized equipment container - the so-called Igloo. The equipment installed in Igloo - various electronic boxes providing experiment support functions - has to be protected during all mission phases against a multitude of environmental loads. The environmental control system discussed herein has to provide working conditions for the electronic equipment consistent with their operating temperature, pressure and humidity requirements. The control of these parameters is achieved by the use of a Freon 21 fluid loop and external multilayer thermal insulation, a pressure relief valve and burst disk, and desiccators, respectively. This environmental control system has been developed and fabricated by ERNO. (Author)

A80-43205 # **A history of the Naval Research Laboratory contributions to submarine life support systems.** H. W. Carhart and J. E. Johnson (U.S. Navy, Naval Research Laboratory, Washington, D.C.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-29.* 8 p. 12 refs. Members, $1.50; nonmembers, $3.00.

Research on submarine life support systems culminated in the use of LiOH for CO2 removal, KO2 for rebreathers, chlorate candles as a source of O2 and catalytic removal of H2. With the advent of nuclear power, it became evident that the limitation of submergence time of a submarine would now be man himself and his need for a respirable atmosphere, rather than availability of stored power. Therefore, NRL intensified its efforts in the 1950's in atmosphere sampling and analysis, atmosphere control, sources of oxygen, CO2 removal, catalytic burning, adsorbent carbon beds, electrostatic precipitators and automatic monitoring and control. (Author)

A80-43206 # **Atmospheric monitoring in submersibles.** J. J. DeCorpo, J. R. Wyatt, and F. E. Saalfeld (U.S. Navy, Naval Research Laboratory, Washington, D.C.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-31.* 6 p. 9 refs. Members, $1.50; nonmembers, $3.00.

CAMS Mark I is a combination mass spectrometer-infrared atmosphere monitor that provides the fleet with a reliable, service approved analyzer with the ability to monitor continuously the atmosphere in various submarine locations. A second generation of the CAMS, CAMS Mark II, is currently under development which will expand the flexibility of CAMS Mark I while maintaining its high level of reliability. A description of CAMS Mark I will be presented with examples of operational accomplishments. A technical description of the CAMS Mark II development program will also be presented along with the system approach for integrating the life support equipment. (Author)

A80-43207 # **Carbon dioxide effects on submarines.** M. L. Shea, A. A. Messier, and K. R. Bondi. *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-32.* 2 p. 9 refs. Members, $1.50; nonmembers, $3.00.

Results of laboratory experiments and health studies of submarine personnel carried out in order to estimate the effects of prolonged exposure to elevated levels of CO2 are briefly summarized. The effects of CO2 on lungs, kidneys, and bones have been studied in animals. In contrast to experiments with 1% CO2, guinea pigs exposed to 0.5% showed no lung ultrastructural changes, although kidney calcification was observed after 8 weeks of exposure. Plasma calcium was elevated, and bone calcium showed a small decrease. An animal experiment involving CO2 concentrations from ambient (0.03%) to 0.5%, is being conducted now in order to determine at what CO2 levels all effects on target organs disappear. This is important, as improved scrubber design makes it possible to approach threshold CO2 levels in submarines. V.L.

A80-43208 # **Atmospheric monitoring for submarine applications.** J. E. Rice and B. A. Pilon (Bendix Corp., Communications Div., Ann Arbor, Mich.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-33.* 6 p. Members, $1.50; nonmembers, $3.00.

The Central Atmospheric Monitoring Systems (CAMS-Mark II) are described, noting that they will have the capability to provide data on all non-reactive gases in the range of 2 to 300 amu in concentrations, at the parts per million (ppm) or fractional ppm level. The discussion reviews the following items: (1) the development of atmospheric monitoring instrumentation, (2) the requirements of the new CAMS-II system, (3) the effect of these requirements on design options, and (4) a general description of the trade-off and selection of a mass spectrometer. M.E.P.

A80-43209 * # **NASA-Ames Life Sciences Flight Experiments program - 1980 status report.** W. E. Berry, C. C. Dant, G. MacLeod

(GE Management and Technical Services Co., Moffett Field, Calif.), and B. A. Williams (NASA, Ames Research Center, Moffett Field, Calif.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-34.* 3 p. Members, $1.50; nonmembers, $3.00.

The paper deals with the ESA's Spacelab LSFE (Life Sciences Flight Experiments) program which, once operational, will provide new and unique opportunities to conduct research into the effects of spaceflight and weightlessness on living organisms under conditions approximating ground-based laboratories. Spacelab missions, launched at 18-month intervals, will enable scientists to test hypotheses from such disciplines as vestibular physiology, developmental biology, biochemistry, cell biology, plant physiology, and similar life sciences. V.P.

A80-43210 # **A monitor for atmospheric composition and contaminants in closed environments.** R. M. Cason and M. E. Koslin (Perkin-Elmer Corp., Pomona, Calif.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-35.* 5 p. Members, $1.50; nonmembers, $3.00. Contract No. N00024-79-C-5689.

Exploration of the sea necessitates research on the long-term effects of a closed controlled atmosphere on man. Submarine atmosphere analyzers have been developed, including the Central Atmospheric Monitoring System (CAMS I). CAMS I represents an accurate and reliable monitoring system, but lacks flexibility. CAMS II is a flexible system with a minimum of operator interface. (Author)

A80-43211 * # **Life sciences experiments on Spacelab 1.** M. C. Buderer and G. A. Salinas (NASA, Johnson Space Center; GE Management and Technical Services Co., Houston, Tex.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-36.* 4 p. Members, $1.50; nonmembers, $3.00.

The objectives and procedures regarding various biological experiments to be conducted on Spacelab 1 are reviewed. These include the mapping of the HZE cosmic ray particle flux within the Spacelab module, investigating the effects of nullgravity on circadian cycles in the slime mold, Neurospora crassa, and measuring nutations of the dwarf sunflower, Helianthus annus. Emphasis is placed on research regarding possible changes in vestibulocular reflexes, vestibulospinal pathways, cortical functions involving perception of motion and spatial susceptibility. Also discussed are experiments regarding erythrokinetics in man and the effects of prolonged weightlessness of the humoral immune response in humans. J.P.B.

A80-43212 * # **Evaluation of biological models using Spacelab.** D. Tollinger (GE Management and Technical Services Co., Moffett Field, Calif.) and B. A. Williams (NASA, Ames Research Center, Moffett Field, Calif.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-38.* 7 p. 30 refs. Members, $1.50; nonmembers, $3.00. Contract No. NAS9-15850.

Biological models of hypogravity effects are described, including the cardiovascular-fluid shift, musculoskeletal, embryological and space sickness models. These models predict such effects as loss of extracellular fluid and electrolytes, decrease in red blood cell mass, and the loss of muscle and bone mass in weight-bearing portions of the body. Experimentation in Spacelab by the use of implanted electromagnetic flow probes, by fertilizing frog eggs in hypogravity and fixing the eggs at various stages of early development and by assessing the role of the vestibulocular reflex arc in space sickness is suggested. It is concluded that the use of small animals eliminates the uncertainties caused by corrective or preventive measures employed with human subjects. J.P.B.

A80-43213 * # **The development of a Space Shuttle Research Animal Holding Facility.** R. B. Jagow (Lockheed Missiles and Space Co., Inc., Sunnyvale, Calif.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-39.* 6 p. Members, $1.50; nonmembers, $3.00. Contract No. NAS2-10128.

The ability to maintain the well being of experiment animals is of primary importance to the successful attainment of life sciences flight experiment goals. To assist scientists in the conduct of life sciences flight experiments, a highly versatile Research Animal Holding Facility (RAHF) is being developed for use on Space Shuttle/Spacelab missions. This paper describes the design of the RAHF system, which in addition to providing general housing for various animal species, approximating the environment found in ground based facilities, is designed to minimize disturbances of the specimens by vehicle and mission operations. Life-sustaining capabilities such as metabolic support and environmental control are provided. RAHF is reusable and is a modular concept to accommodate animals of different sizes. The basic RAHF system will accommodate a combination of 24 500-g rats or 144 mice or a mixed number of rats and mice. An alternative design accommodates four squirrel monkeys. The entire RAHF system is housed in a single ESA rack. The animal cages are in drawers which are removable for easy access to the animals. Each cage contains a waste management system, a feeding system and a watering system all of which will operate in zero or one gravity. (Author)

A80-43214 * # **Experiment operations in Spacelab.** J. A. Giannovario (GE Management and Technical Services Co., Moffett Field, Calif.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-40.* 6 p. 8 refs. Members, $1.50; nonmembers, $3.00. Contract No. NAS9-15850.

A review is presented of laboratory procedures which are expected to be used in Life Sciences experiments on Spacelab. The impact of hypogravity on these procedures is discussed. Specimen treatments with solutions, 'snap' freezing, and micro-mass measurements are explored in detail. Potential solutions for these operational problems are offered. (Author)

A80-43215 # **O2 sensing for environmental control and monitoring systems.** J. D. Fuller and F. P. Rudek (General Electric Co., Space Div., Philadelphia, Pa.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-41.* 5 p. Members, $1.50; nonmembers, $3.00.

The General Electric oxygen (O2) partial pressure sensor has an operational record including thousands of hours of flight time accumulated during the NASA Skylab and Apollo-Soyuz missions. It was selected for use on the joint Soviet-American Apollo-Soyuz flight as well as the upcoming Shuttle and European Spacelab programs. In Shuttle and Spacelab, the sensor will perform the same function as the Skylab application which was to provide the control signal for maintaining proper O2 levels in the two gas (O2/N2) cabin atmosphere. The sensor is a self-contained, self-powered electrochemical cell which generates a millivolt signal as a function of the O2 partial pressure in the environment being monitored. The millivolt signal generated is automatically compensated for temperature and, if required, further conditioned to be compatible with end item telemetry and instrumentation systems. The General Electric O2 sensor has evolved into a device suitable wherever continuous real-time monitoring of O2 is critical and has been successfully adapted to a wide range of man-rated environmental control systems in addition to that of the spacecraft cabin O2 monitor described above. (Author)

A80-43216 # **Maintainable maintenance disconnect valve /MMDV/ for on-orbit component replacement.** T. E. Burr, C. K. Boynton, and A. O. Brouillet (United Technologies Corp., Hamilton Standard Div., Windsor Locks, Conn.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-42.* 5 p. Members, $1.50; nonmembers, $3.00.

Future long duration space missions will require maintenance disconnect valves to support on-orbit removal and replacement of fluid line components. The Maintainable Maintenance Disconnect Valve (MMDV), a lightweight disconnect valve developed specifically to simplify EVA and IVA zero 'g' fluid component replacement is described. A probe version of the MMDV is examined which simplifies the replacement of small components, such as instruments, in liquid lines. The MMDV is a rugged, compact, positive isolation valve that permits component attachment to fixed plumbing and provides component replacement without liquid spillage or air inclusion. Thus, servicing operations on liquid loops on-orbit can be accomplished without the need for evacuation and backfilling. Applications described include the 25 Kw power system, space operations center, orbital transfer vehicle, and permanent space-based vehicle liquid loops. (Author)

A80-43217 # **Anti-exposure suits in the VP community.** B. F. Withers (U.S. Navy, Pacific Fleet, San Diego, Calif.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-43.* 3 p. Members, $1.50; nonmembers, $3.00.

The paper considers engineering/operational interface involved in the design as regards human factors engineering, production, and maintenance of an appropriate quick-donning anti-exposure suit for the patrol community. Requirements are significantly different from those of the tactical air community. The patrol community flies longer missions into areas where rescue often cannot be effected for several hours. The longer missions make a constant wear garment totally impractical, but increased rescue time mandates that the garment be capable of sustaining life for many hours in water temperature less than 40 F. Drawing board systems are often impractical in the fleet situation. Systems often sacrifice maintainability for sophistication of function which must be viewed very critically; all of the above factors must be integrated to produce a reliable, effective anti-exposure suit for the patrol community. (Author)

A80-43218 # **The classification of spinal column deformities resulting from aircraft ejection forces.** L. E. Kazarian (USAF, Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-44.* 8 p. 10 refs. Members, $1.50; nonmembers, $3.00. AF Project 7231-11-01. (AMRL-TR-80-38)

Fractures, dislocations and fracture dislocations of the spinal column occur, with relative frequency, as the result of emergency escape from high performance USAF tactical aircraft. For purposes of vertebral column research, current methods for classifying operational injuries are inadequate. Injury identification and classification techniques vary to such a degree, comparison between injury types and mechanisms are invalid. The purpose of this paper is to formulate a consistent classification of spinal column injuries categorized according to engineering assessment and interpretation of roentgenographic changes in spinal column elements and regions. Spinal injury modes are classified according to direction of applied load with the resulting skeletal deformities. (Author)

A80-43219 * # **The factors influencing the formation of Li2CO3 from LiOH and CO2.** S. H. Davis, Jr. (Rice University, Houston, Tex.) and L. D. Kissinger (NASA, Johnson Space Center, Houston, Tex.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-45.* 6 p. Members, $1.50; nonmembers, $3.00.

LiOH is used to remove CO2 from the atmosphere in three environmental control systems of the Shuttle program, and the investigation of the performance dependent parameters for the CO2 reaction with LiOH is reported. Emphasis is placed on LiOH quality acceptance criteria and on identifiying the relationships between the reaction rate and the following independent parameters: temperature, CO2 partial pressure (PP), H2O concentration in the solid, amount of remaining LiOH and the porosity of the LiOH pellets. Results showed that the reaction rate is proportional to the CO2 PP for PP at least as high as 40 mm Hg (5330 N/sq m). It is also noted that a significant difference in the reactivity of wet and dry LiOH was not detected. J.P.B.

A80-43220 * # **Development of a preprototype thermoelectric integrated membrane evaporation subsystem for water recovery.** H. E. Winkler (NASA, Johnson Space Center, Houston, Tex.) and G. J. Roebelen, Jr. (United Technologies Corp., Hamilton Standard Div., Windsor Locks, Conn.). *American Society of Mechanical Engineers, Intersociety Environmental Systems Conference, San Diego, Calif., July 14-17, 1980, Paper 80-ENAs-46.* 8 p. Members, $1.50; nonmembers, $3.00.

A three-man urine water recovery preprototype subsystem using a new concept to provide efficient potable water recovery from waste fluids on extended duration space flights has been designed, fabricated, and tested. Low power, compactness, and gravity insensitive operation are featured in this vacuum distillation subsystem that combines a hollow fiber polysulfone membrane evaporator with a thermoelectric heat pump. Application and integration of these key elements have solved problems inherent in previous reclamation subsystem designs. The hollow fiber elements provide positive liquid/gas phase control with no moving parts other than a waste liquid recirculation pump and a product water withdrawal pump. Tubular membranes provide structural integrity, improving on previous flat sheet membrane designs. A thermoelectric heat pump provides latent energy recovery. (Author)

blank page

STAR ENTRIES

N80-27067* National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.

METHOD AND AUTOMATED APPARATUS FOR DETECTING COLIFORM ORGANISMS Patent

W. Preston Dill (Boeing Aerospace Co., Houston, Tex.), Rueben E. Taylor (Boeing Aerospace., Houston, Tex.), and Eldon L. Jeffers, inventors (to NASA) (Boeing Aerospace Co., Houston, Tex.) Issued 20 May 1980 14 p Filed 4 Apr. 1978 Sponsored by NASA
(NASA-Case-MSC-16777-1; US-Patent-4,204,037;
US-Patent-Appl-SN-893657; US-Patent-Class-435-3;
US-Patent-Class-23-230B; US-Patent-Class-204-195B;
US-Patent-Class-422-68; US-Patent-Class-435-32;
US-Patent-Class-435-34; US-Patent-Class-435-38;
US-Patent-Class-435-39; US-Patent-Class-435-289;
US-Patent-Class-435-290; US-Patent-Class-435-291;
US-Patent-Class-435-311; US-Patent-Class-435-316) Avail: US Patent and Trademark Office CSCL 06C

Method and automated apparatus are disclosed for determining the time of detection of metabolically produced hydrogen by coliform bacteria cultured in an electroanalytical cell from the time the cell is inoculated with the bacteria. The detection time data provides bacteria concentration values. The apparatus is sequenced and controlled by a digital computer to discharge a spent sample, clean and sterilize the culture cell, provide a bacteria nutrient into the cell, control the temperature of the nutrient, inoculate the nutrient with a bacteria sample, measures the electrical potential difference produced by the cell, and measures the time of detection from inoculation.

Official Gazette of the U.S. Patent and Trademark Office

N80-27068*# National Aeronautics and Space Administration, Washington, D. C.

CHANGE IN RADIOSENSITIVITY OF RATS DURING HYPOKINETIC STRESS

I. P. Chernov Jan. 1980 11 p refs Transl. into ENGLISH from Radiobiologiya (USSR), no. 4, 1978 p 574-578 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75968) Avail: NTIS HC A02/MF A01 CSCL 06C

The laws governing stress modification of radiation sickness in relation to hypokinetic stress were investigated. It was found that gamma irradiation (800 rad) of rats on the third day of exposure to hypokinesia increased the radiosensitivity of the animals which was determined by the survival rate and the dynamics of body weight and the weight of some internal organs. The same radiation dose was given on the 20th day of hypokinesia and on the third day of recovery from the 20 day hypokinesia decreased the radiosensitivity of rats. It is concluded that the variations in the radiosensitivity observed may be due to a stress effect of hypokinesia. R.E.S.

N80-27069*# Oregon Univ. Health Sciences Center, Portland. Dept. of Neurology.

COUNTERCURRENT DISTRIBUTION OF BIOLOGICAL CELLS Final Report, 1 Jan. 1978 - 31 Mar. 1979

D. E. Brooks Mar. 1979 46 p refs
(Contract NAS8-32817)
(NASA-CR-161487) Avail: NTIS HC A03/MF A01 CSCL 06C

A neutral polymer phase system consisting of 7.5 percent dextran 40/4.5 percent PEG 6, 0 11 M Na phosphate, 5 percent fetal bovine serum (FBS), pH 7.5, was developed which has a high phase droplet electrophoretic mobility and retains cell viability over many hours. In this and related systems, the drop mobility was a linear function of drop size, at least in the range 4-30 micron diameter. Applications of and electric field of 4.5 v/cm to a system containing 10 percent v/v bottom phase cleared the system more than two orders of magnitude faster than in the absence of the field. At higher bottom phase concentrations a secondary phenomenon intervened in the field driven separations which resulted in an increase in turbidity after clearing had commenced. The increase was associated with a dilution of the phase system in the chamber. The effect depended on the presence of the electric field. It may be due to electroosmotic flow of buffer through the Amicon membranes into the sample chamber and flow of phase system out into the rinse stream. Strategies to eliminate this problem are proposed. R.E.S.

N80-27070*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF SHARPLY LOWERED MUSCULAR ACTIVITY ON THE THYROID GLAND OF THE WHITE RAT

K. Bekishev Apr. 1980 9 p refs Transl. into ENGLISH from Izv. Akad. Kaz. Khim. SSR, (USSR) no. 2, Mar. - Apr. 1978 p 75-78 Transl. by Kanner (Leo) Associates, Redwood, Calif.
(Contract NASw-3199)
(NASA-TM-76114) Avail: NTIS HC A02/MF A01 CSCL 06C

The effect of hypokinesia on the thyroid gland of 200 white rats was studied. The rats were kept in 16x6x6 cm cages for 90 days. The functional activity of the thyroids increased after 24 hrs of partial immobilization and peaked after 15 days. After 30 days of immobilization, the functional activity returned to normal in one third of the test animals and after 60 days in all animals. After 15 days of immobilization, the test animals began to lose weight (in comparison to the controls) and remained underweight for the rest of the test period (up to 90 days). When returned to normal conditions, they caught up with and even overtook in weight the control animals after about 1 month. All changes produced by hypokinesia were reversible after 1 month. Author

N80-27071*# National Aeronautics and Space Administration, Washington, D. C.

THE EFFECT PRODUCED BY PHENOBARBITAL, SEX HORMONE AND BY CASTRATION ON THE DEVELOPMENT OF GASTRIC MUCOSA DESTRUCTION DUE TO ELECTRIZATION OF IMMOBILIZED RATS

P. S. Botsolin May 1980 7 p refs Transl. into ENGLISH from Farmakol. Toksikol. (USSR), v. 31, no. 2, 1968 p 197-199 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(NASA-TM-76156) Avail: NTIS HC/ A02/MF A01 CSCL 06C

The action of phenobarbital on the development of gastric mucosa destruction in rats, brought on through three hours of electrization of immobilized animals, was studied. The evidence showed that phenobarbital exerts a preventive action on the development of destructive lesions affecting the gastric mucosa in non-castrated rats of both sexes, in non-castrated males receiving testosterone propionate, as well as in castrated males and non-castrated females receiving diethylstilbestrol propionate. In castrated female rats, however, phenobarbital proved to be of little effect. Author

N80-27072* National Aeronautics and Space Administration. Pasadena Office, Calif.

SIMULTANEOUS MUSCLE FORCE AND DISPLACEMENT TRANSDUCER Patent

Cyril Feldstein (JPL), Gilbert W. Lewis (JPL), and Virgil H. Culler, inventors (to NASA) (JPL) Issued 27 May 1980 5 p Filed 30 Sep. 1977 Supersedes N80-12730 (18 - 03, p 0376) Sponsored by NASA
(NASA-Case-NPO-14212-1; US-Patent-4,204,544;
US-Patent-Appl-SN-838308; US-Patent-Class-128-642;
US-Patent-Class-128-774; US-Patent-Class-128-782;
US-Patent-Class-33-125R; US-Patent-Class-73-781;
US-Patent-Class-338-2) Avail: US Patent and Trademark Office CSCL 06B

A myocardial transducer for simultaneously measuring force and displacement within a very small area of myocardium is disclosed. The transducer comprised of an elongated body forked at one end to form an inverted Y shaped beam with each branch of the beam constituting a low compliant tine for penetrating the myocardium to a predetermined depth. Bonded to one of the low compliance tines is a small piezoresistive element for converting a force acting on the beam into an electrical signal. A third high compliant tine of the transducer, which measures displacement of the myocardium in a direction in line with the two low compliant tines, is of a length that just pierces the surface membrane. A small piezoresistive element is bonded to the third tine at its upper end where its bending is greatest. Displacement of the myocardium causes a deformation in curvature of the third tine, and the second small piezoresistive element bonded to the surface of its curved end converts its deformation into an electrical signal.

Official Gazette of the U.S. Patent and Trademark Office

N80-27073*# National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.

AN IMPLANTABLE ELECTRICAL DEVICE Patent Application

Murzban D. Jhabvala, inventor (to NASA) Filed 27 May 1980 12 p

(NASA-Case-GSC-12560-1; US-Patent-Appl-SN-153246) Avail: NTIS HC A02/MF A01 CSCL 06B

A fully implantable and self-contained therapeutic device for stimulating the regeneration of severed nerves by electrical energy is disclosed. The device is composed of a flexible electrode array for surrounding damaged nerves and a signal generator for driving the electrode array with periodic electrical impulses of nanoampere magnitude to induce regeneration of the damaged nerves. NASA

N80-27074*# National Aeronautics and Space Administration, Washington, D. C.

CHANGES IN LEUKOCYTE STABILITY IN HYPODYNAMIA

I. I. Federov, Z. P. Federova, Ye. N. Pekus, and T. L. Sakun Jan. 1980 8 p refs Transl. into ENGLISH from Vrach. Delo. (USSR), Apr. 1972, p 44-48 Transl. by Scientific Translation Service, Santa Barbara, Calif.

(Contract NASw-2791)

(NASA-TM-75944) Avail: NTIS HC A02/MF A01 CSCL 06P

Leukocytolysis was determined under conditions of hypokinesia of 10 days to 1 month duration in healthy persons and in experiments on albino rats of 1 month duration. It was found that prolonged restriction of movement resulted, both in clinical and experimental conditions, in a considerable increase of leukocytolysis (by two-three-fold). Leukocytolysis also continued for several days after cessation of hypokinesia. R.E.S.

N80-27075*# National Aeronautics and Space Administration. Langley Research Center, Langley Station, Va.

ERROR ANALYSIS AND CORRECTIONS TO PUPIL DIAMETER MEASUREMENTS WITH LANGLEY RESEARCH CENTER'S OCULOMETER

C. L. Fulton (Purdue Univ.) and R. L. Harris, Jr. May 1980 17 p refs

(NASA-TM-81806) Avail: NTIS HC A02/MF A01 CSCL 06B

Factors that can affect oculometer measurements of pupil diameter are: horizontal (azimuth) and vertical (elevation) viewing angle of the pilot; refraction of the eye and cornea; changes in distance of eye to camera; illumination intensity of light on the eye; and counting sensitivity of scan lines used to measure diameter, and output voltage. To estimate the accuracy of the measurements, an artificial eye was designed and a series of runs performed with the oculometer system. When refraction effects are included, results show that pupil diameter is a parabolic function of the azimuth angle similar to the cosine function predicted by theory: this error can be accounted for by using a correction equation, reducing the error from 6% to 1.5% of the actual diameter. Elevation angle and illumination effects were found to be negligible. The effects of counting sensitivity and output voltage can be calculated directly from system documentation. The overall accuracy of the unmodified system is about 6%. After correcting for the azimuth angle errors, the overall accuracy is approximately 2%. Author

N80-27076*# National Aeronautics and Space Administration, Washington, D. C.

SOME PROBLEMS OF HUMAN ADAPTATION AND ECOLOGY UNDER THE ASPECT OF GENERAL PATHOLOGY

V. P. Kaznacheyev Jul. 1980 15 p refs Transl. into ENGLISH from Vestn. Akad. Med. Nauk SSSR (USSR), no. 11, Nov. 1979 p 51-57 Transl. by Kanner (Leo) Associates, Redwood City, Calif.

(NASA-TM-76095) Avail: NTIS HC A02/MF A01 CSCL 06S

The main problems of human adaptation at the level of the body and the population in connection with the features of current morbidity of the population and certain demographic processes are analyzed. The concepts of health and adaptation of the individual and human populations are determined. The importance of the anthropo-ecological approach to the investigation of the adaptation process of human populations is demonstrated. Certain features of the etiopathogenesis of diseases are considered in connection with the population-ecological regularities of human adaptation. The importance of research on general pathology aspects of adaptation and the ecology of man for planning, and organization of public health protection is discussed. Author

N80-27077*# National Aeronautics and Space Administration, Washington, D. C.

THE USE OF ANTIGRAVITY SUITS IN THE TREATMENT OF IDIOPATHIC ORTHOSTATIC HYPOTENSION

K. Landmark and S. Kravik Apr. 1980 8 p refs Transl. into ENGLISH from Tidsskr. Norske Laegeforen. (Norway), v. 99, no. 30, 1979 p 1530-1531 Transl. by Kanner (Leo) Associates, Redwood City, Calif.

(Contract NASw-3199)

(NASA-TM-75804) Avail: NTIS HC A02/MF A01 CSCL 06E

Idiopathic orthostatic hypotension is an uncommon disease characterized by a drop in blood pressure when going from a recumbent to a standing position. Treatment by medication generally produces poor results. Three patients at the Royal Hospital in Oslo were treated with antigravity suits and all were able to maintain adequate blood pressures in the standing position. One patient improved dramatically and was able to take short walks while wearing the suit. The two other patients, however, felt that wearing the suits eventually became uncomfortable. This treatment represents a useful treatment alternative for intractable cases. Author

N80-27078*# National Aeronautics and Space Administration, Washington, D. C.

THE EFFECT OF HYPODYNAMIA ON MINERAL AND PROTEIN METABOLISM IN CALCIFIED TISSUES OF THE MAXILLODENTAL SYSTEM (EXPERIMENTAL RADIOISOTOPE STUDY)

A. A. Prokhonchukov, Ye. A. Kovalenko, A. G. Kolesnik, Yu. I. Kondratyev, and N. A. Ilyushko Jul 1980 15 p refs Transl. into ENGLISH from Stomatologiya (USSR), v. 49, no. 4, 1970 p 1-6 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prepared by Central Dental Research Inst., Moscow

(Contract NASw-3199)

(NASA-TM-75998) Avail: NTIS HC A02/MF A01 CSCL 06P

Mineral and protein metabolism was studied in experiments on 60 white rats, using P-32 and Ca-45 uptake in the mineral fractions, 2C-14-glycine in the protein fractions, and P-32 in both fractions of calcified tissues as indices over a 100 day period of experimental hypodynamia. Combined alterations in mineral and protein metabolism occurred in the calcified tissues of the experimental animals. The most pronounced changes were found in P-32 and 2C-14-glycine metabolism. In the incisors and femoral bones, these alterations occurred in two phases: P-32 and 2C-14-glycine uptake first increased, then decreased. Changes in Ca-45 metabolism were less pronounced, particularly in the initial period of the experiment. A marked reduction in P-32, Ca-45, and 2C-14-glycine uptake was found in various fractions of the calcified tissues on the 100th day of experimental hypodynamia. Author

N80-27079*# National Aeronautics and Space Administration, Washington, D. C.

THE BEHAVIOR OF FATTY ACIDS IN THE BLOOD PLASMA OF MONKEYS FOLLOWING EXPOSURE TO SHORT TERM STRESSES

M. L. Michailov, U. Gnuechtel, S. Nitschkoff, R. Baumann, and G. Gnauck May 1980 [illegible] p refs Transl. into ENGLISH from Acta Biol. Med. Ger. (East Germany), v. 32, 1974 p 675-680 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prepared by East German Acad. of Sci.

(NASA-TM-76151) Avail: NTIS HC A02/MF A01 CSCL 06P

Monkeys exposed to short term stresses (immobilization, jealousy) were found to develop hyperlipacidemia with a rise in concentration of unsaturated fatty acids in blood plasma, especially of oleic acid, and a relative decrease of saturated free fatty acids, chiefly of palmitinic acid. This finding was more pronounced under immobilization stress than in the jealousy situation. Meanwhile, the composition of triglycerides did not change essentially under the conditions used. Author

N80-27080# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.

HUMAN RESPONSE TO HYPOXIA-MOTION SICKNESS STRESS AS A PREDICTOR OF THE SPACE SICKNESS SYNDROME

Aaron V. Barson, Jr. Oct. 1979 6 p refs Presented at Intern. Aerospace Federation, Manila, 8-12 Oct. 1979 Sponsored by AE

(AF Proj. 7231)

(AD-A080306; AMRL-TR-79-86) Avail: NTIS HC A02/MF A01 CSCL 06/19

The change observed during the hypoxia runs supports the hypothesis that hypoxic states lower human tolerance to vestibular stimuli. The frequency of occurrence of symptoms in this study is encouraging since little change in presentation was found between the normoxia and hypoxia runs. Large variations in the symptom presentations would have indicated that hypoxia symptoms were being misread as motion sickness symptoms, thereby skewing the results. From these results it is obvious that a significant research effort is needed to futher delineate and verify the various aspects of this theory. Additional human investigations in one-g and zero-g are needed to verify that the proposed hemodynamic changes and oxygenation parameters potentiates or causes space sickness. Animal studies will be needed to quantify the type and amount of circulatory disruption and hypoxia caused by zero-g exposure. If hypoxia proves to be implicated in the space sickness syndrome, it may be possible to use this hypoxia-motion sickness stress response as an indicator (in earth gravity) of a person's susceptibility to zero-g space sickness. GRA

N80-27081# California Univ., Berkeley. Lawrence Berkeley Lab. Physics Computer Science and Mathematics Div.

MAGNETIC FIELD ON HUMANS: EPIDEMIOLOGICAL STUDY DESIGN, PART 2

John S. Colonias Sep. 1979 20 p refs

(Contract W-7405-eng-48)

(LBL-9357-Pt-2) Avail: NTIS HC A02/MF A01

A study, designed to investigate the epidemiological health effects resulting from occupational magnetic field exposure produced by various nuclear instruments such as cyclotrons, bubble chambers, and spectrometers was previously described. The methodology involved in determining the magnetic field exposure to such instruments is described. DOE

N80-27082# Rensselaer Polytechnic Inst., Troy, N. Y.

PRIMARY PRODUCTIVITY, HETEROTROPHY, METABOLIC INDICATORS OF STRESS AND INTERACTIONS IN ALGAL-BACTERIAL MAT COMMUNITIES AFFECTED BY A FLUCTUATING THERMAL REGIME Ph.D. Thesis

David Lawrence Tison 1980 44 p refs

(Contract EY-76-C-09-0001)

(DP-MS-80-14) Avail: NTIS HC A03/MF A01

Thermal habitats in effluent cooling waters from production nuclear reactors at the Savannah River Plant are unlike natural to ambient temperatures for unpredictable lengths of time. Rates of primary production, glucose heterotrophy, and the composition of algal-bacterial mat communities growing along a thermal gradient from about 50 to 35 C during periods of reactor operation were studied. Cyanobacteria were the only photoautotrophs in mat communities above 40 C while cyanobacteria and eucaryotic algae comprised the photoautotrophic component of mat communities below 40 C. The heterotrophic component of these communities above 40 C was made up to stenothermic and eurythermic thermophilic bacteria while both eurythermic thermophiles and mesophilic bacteria were found in communities below 40 C. Results of temperature shift experiments indicated that the short-term response of the photoautotrophic component of these communities to thermal stress was an increase in the percentage of photosynthate released extracellularly. DOE

N80-27083# Massachusetts General Hospital, Boston.

CdTe AMBULATORY VENTRICULAR FUNCTION MONITOR

J. L. Lazewatsky, N. M. Alpert, R. H. Moore, C. A. Boucher, H. W. Strauss, G. Entine (Radiation Monitoring Devices, Inc.), R. Chaney (Ohio Nuclear Inc.), and R. Schreiner (Ohio Nuclear Inc.) 1979 5 p refs Presented at IEEE Nucl. Sci. Symp., San Francisco, 17 Oct. 1979

(Contract EY-76-C-02-2541)

(CONF-791037-26) Avail: NTIS HC A02/MF A01

A prototype device consisting of two arrays of CdTe detectors, ECG amplifiers and gate, microprocessor, and tape recorder was devised to record simultaneous ECG and radionuclide blood pool data from the left ventricle for extended periods during normal activity. The device is intended to record information concerning both normal and abnormal physiology of the heart and to permit the evaluation of the pharmaceuticals under everyday conditions. Preliminary results indicate that the device is capable of recording and reading out data from both phantoms and patients. DOE

N80-27084# Chicago Univ., Ill. Dept. of Radiology.

MODIFIED CONJUGATE COUNTING TECHNIQUE FOR QUANTITATIVE MEASUREMENT OF RADIOACTIVITY IN VIVO

B. M. W. Tsui, C.-T. Chen, N. J. Yasillo, C.J. Ortega, and D. B. Charleston 1979 24 p Presented at the 21st Ann. Meeting of the AAPM, Atlanta, 29 Jul. - 2 Aug. 1979 Prepared in cooperation with Franklin McLean Mem. Res. Inst., Chicago

(Contract EY-76-C-02-0069)

(CONF-790782-1) Avail: NTIS HC A02/MF A01

A modified conjugate counting method is presented for studying biochemical transformations in health and disease, in making realistic radiation-absorbed dose estimates, and in developing clinical procedures indicative of abnormal functions. A new instrument design improves the accuracy to within 5%. DOE

N80-27085# National Physical Lab., Teddington (England). Div. of Electrical Science.

DEVELOPMENT OF A METHOD FOR THE TRACEABLE CALIBRATION OF DEFIBRILLATOR ENERGY METERS

J. R. Stockton and R. C. Smith Aug. 1979 41 p refs

(NPL-DES-55) Avail: NTIS HC A03/MF A01

The development, intercomparison and agreement of two independent, traceable methods; one calorimetric and one digital sampling; for the measurement of the energy of cardiac defibrillator pulses, are discussed. The use of the sampling method to calibrate a defibrillator energy meter, a commercial instrument used for the routine calibration of defibrillators is described. Some observations on methods of making future measurements on energy meters and on possible designs for digital energy meters are included. Author (ESA)

N80-27086# Technische Universitaet, Brunswick (West Germany). Sonderforschungsbereich 58.

HEART RATE VARIABILITY, PILOT WORKLOAD, TASK DIFFICULTY, TRACKING
Fred Volker Schick and Hans Radke Jul. 1979 38 p refs In GERMAN; ENGLISH summary Report will also be announced as translation (ESA-TT-653) Sponsored by DFVLR
(DFVLR-FB-79-33) Avail: NTIS HC A03/MF A01; DFVLR, Cologne DM 8,60

The usefulness of measurements of heart rate variations for the assessment of pilot workload was studied in a laboratory experiment. Statistical methods were used to analyze the data. The heart rate variations were studied as a function of standard deviations, sums of absolute differences, and frequencies of reversals of instantaneous heart rate. Author (ESA)

N80-27087# Southampton Univ. (England). Inst. of Sound and Vibration Research.
THE EFFECT OF HEARING PROTECTORS ON THE PERCEPTION OF WARNING AND INDICATOR SOUNDS: A GENERAL REVIEW
P. A. Wilkins and A. M. Martin Aug. 1978 217 p refs
Sponsored by UK Health and Safety Executive
(ISVR-TR-98) Avail: NTIS HC A10/MF A01

The literature on the auditory effects of wearing hearing protectors was reviewed. A conceptual model of the perception process suggests that the three components, audibility, attention demand and recognition are of importance. Several suggested methods of predicting the audibility of complex sounds in noise are compared and their limitations highlighted. Although a number of studies consider the attention demand of warning sounds, it is concluded that they do not allow any firm conclusions on the effect of inattention to be drawn. Inconsistent use of hearing protectors could, via a temporary shift in the threshold of hearing, result in signals being inaudible when subsequently wearing hearing protectors. It is hypothesized that by reducing the loudness and changing the spectral character of sounds, hearing protectors may impair their attention demand value and their recognition by the wearer. An evaluation of the situation of workers who suffer from an existing noise-induced hearing loss suggests that when wearing hearing protection their perception of sounds in noise may be governed by their doubly elevated absolute thresholds rather than the masker threshold criteria relevant to those with normal hearing. Author (ESA)

N80-27088# Bureau of Radiological Health, Rockville, Md. Div. of Electronic Products.
AN EVALUATION OF MICROWAVE EMISSIONS FROM SENSORMATIC ELECTRONIC SECURITY SYSTEMS Final Report
Howard I. Bassen Feb. 1980 8 p refs
(PB80-155385; DHEW/PUB-FDA-80-8106) Avail: NTIS HC A02/MF A01 CSCL 13L

The concern over potential microwave radiation hazards associated with models of the Sensormatic Electronic Security System has recently been expressed by various groups in the public health, labor, and industrial sectors. Because of this concern, a reevaluation of these specific devices was initiated to confirm Bureau of Radiological Health measurements taken on early models of this device in 1971. The findings of both the early survey, and this more recent one, confirm the BRH's position that emissions from the Sensormatic devices fall well below current U. S. guidelines for permissible exposure of humans to microwave radiation. GRA

N80-27089# Lister Hill National Center for Biomedical Communications, Bethesda, Md. Communications Engineering Branch.
ADAPTIVE DELTA MODULATION FOR TELEPHONE BIOTELEMETRY OF ECG (ELECTROCARDIOGRAPH) Final Report
Surachai Suthasinekul Jun. 1979 57 p refs
(PB80-160773; LHNCBC-79-21) Avail: NTIS HC A04/MF A01 CSCL 06B

Signal processing techniques and their applications in biomedical communications were investigated. Emphasis was on the application of digital coding techniques in telephone biotelemetry of electrocardiograph (EEG) signals. Existing techniques for telephone biotelemetry are briefly reviewed, their shortcomings are identified, and some possible solutions to the problems are discussed. One particular approach is the application of adaptive delta modulation (ADM) for digital encoding of ECG. The design and implementation of such an ADM system in the laboratory indicates that three ADM-encoded ECGs can be time-division multiplexed and transmitted through one telephone channel. GRA

N80-27090*# National Aeronautics and Space Administration, Washington, D. C.
COMMUNITY REACTIONS TO AIRCRAFT NOISE IN THE VICINITY OF AIRPORT: A COMPARATIVE STUDY OF THE SOCIAL SURVEYS USING INTERVIEW METHOD
Yasutaka Osada Apr. 1980 18 p refs Transl. into ENGLISH of Koshu Eiseiin Kenkyu Hokoku (Tokyo), v. 20, no. 2, 1971 p 119-127 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75439) Avail: NTIS HC A02/MF A01 CSCL 05J

A comparative study was performed on the reports of community reactions to aircraft noise. The direct and immediate reactions to aircraft noise such as perceived noisiness, interference with conversations, etc. and various emotional influences were most remarkable; indirect and long term influences such as disturbance of mental work and physical symptoms were less remarkable. Author

N80-27091*# Boeing Commercial Airplane Co., Seattle, Wash.
NASA TLA WORKLOAD ANALYSIS SUPPORT. VOLUME 2: METERING AND SPACING STUDIES VALIDATION DATA
James L. Sundstrom Jul. 1980 402 p refs
(Contract NAS1-13741)
(NASA-CR-3239) Avail: NTIS HC A18/MF A01 CSCL 05H

Four sets of graphic reports--one for each of the metering and spacing scenarios--are presented. The complete data file from which the reports were generated is also given. The data was used to validate the detail task of both the pilot and copilot for four metering and spacing scenarios. The output presents two measures of demand workload and a report showing task length and task interaction. R.E.S.

N80-27092*# National Aeronautics and Space Administration, Washington, D. C.
THE MORALE CLIMATE OF THE CREW (FROM OBSERVATIONS OF A SUBMARINE DOCTOR)
V. Kulikov Jul. 1980 8 p Transl. into ENGLISH from Morsk. Sb. (USSR), no. 7, Jul. 1979 p 35-38 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76094) Avail: NTIS HC A02/MF A01 CSCL 05J

Personnel interrelationships as affected by sociopsychological compatibility are examined. Practical examples are cited. The principle of complementary temperaments is explored. Stress is laid upon the need for creating conditions that will permit personnel to deal with compatibility problems during the prevoyage preparation period and especially during the confining conditions of a long voyage. J.M.S.

N80-27093*# Boeing Commercial Airplane Co., Seattle, Wash.
NASA TLA WORKLOAD ANALYSIS SUPPORT. VOLUME 3: FFD AUTOPILOT SCENARIO VALIDATION DATA Final Report
James L. Sundstrom Jul. 1980 361 p
(Contract NAS1-13741)
(NASA-CR-3240) Avail: NTIS HC A16/MF A01 CSCL 05H

The data used to validate a seven time line analysis of forward flight deck autopilot mode for the pilot and copilot for NASA B737 terminal configured vehicle are presented. Demand workloads are given in two forms: workload histograms and workload summaries (bar graphs). A report showing task length and task interaction is also presented. R.E.S.

N80-27094# Air Force Human Resources Lab., Brooks AFB, Tex. Flying Training Div.

APPLIED BEHAVIOR ANALYSIS IN FLYING RESEARCH Interim Report, Jun. - Aug. 1978

Jon S. Bailey (Florida State Univ., Tallahassee) and Ronald G. Hughes Jan. 1980 17 p refs
(AF Proj. 1123)
(AD-A081750; AFHRL-TR-79-38) Avail: NTIS HC A02/MF A01 CSCL 05/9

Research developments in learning theory over the past 50 years have led to principles of behavior which have been shown in innumerable applied settings to be valuable in analyzing and modifying human behavior. When applied to flying training using simulators, these principles suggest that a significant contribution could be made in improving the way in which instructor pilots teach new students via more effective use of simulator functions. In addition, flying skills could probably be acquired more readily if tasks were presented in a more systematic manner, taking the principles of learning into account. When the simulator is conceptualized as merely an inferior copy of an aircraft, its potential as a teaching device (perhaps superior to the actual plane, in this regard) is likely to be overlooked. Thus, a behavioral analysis of optimal conditions of learning would make a major contribution to both the design and use of current and future flight simulators. In this report, an attempt is made to elucidate the basic principles of behavior and to relate them to the task of improving flying training. GRA

N80-27095# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Oberpfaffenhofen (West Germany). Inst. fuer Physik der Atmosphaere.

THE INFLUENCE OF THE FLIGHT ALTITUDE AND THE LIMITATION OF THE FIELD OF VIEW ON THE VISIBILITY OF TARGETS ON THE GROUND AND THE MAXIMUM VISIBILITY FLIGHT ALTITUDE

Hans-Eberhard Hoffmann Sep. 1979 44 p refs In GERMAN; ENGLISH summary Report will also be announced as translation (ESA-TT-654)
(DFVLR-FB-79-35; ESA-TT-654) Avail: NTIS HC A03/MF A01; DFVLR, Cologne DM 8,60

The visibility of targets on the ground for observers in an aircraft was studied. The maximum flight altitudes at which detection, recognition, or identification of ground targets is still possible were calculated under the assumption that the visibility distance is a logarithmic function of the altitude. The constants of this function were determined experimentally. Author (ESA)

N80-27979 California Univ., Berkeley.

TRANSIENT DIFFUSION IN MULTI-LAYER BIOLOGICAL TISSUE Ph.D. Thesis

Joseph Rasson 1979 126 p
Avail: Univ. Microfilms Order No. 8014852

The oxygen tension profile in the human cornea while a soft contact lens is in situ was investigated to answer some of the questions concerning the clinical application of soft contact lenses. A mathematical model of the cornea contact lens system was developed to predict the transient response of a Clark-type oxygen sensor pressed into the lens. Due to the lack of data on human corneal diffusion parameters, an analysis of the effect of different parameters on the oxygen tension profile was performed. The results indicate that the diffusion properties of corneal epithelium, specifically, its oxygen up-take rate and thickness, have dominant effects on oxygen tension under the lens. These findings could prove useful in determining which individuals can and cannot wear soft contact lenses. The diffusion property of the contact lens, its oxygen transmissibility, also has a significant effect on the oxygen tension under the lens. The agreement between the experimental results and the mathematical model indicates that the diffusion properties of the human cornea which exist in the literature are a reasonable estimation of actual normal diffusion parameters. Dissert. Abstr.

N80-27980 California Univ., Berkeley.

INSTRUMENTATION FOR THE MEASUREMENT OF VISCOSITY AND FLOW OF BIOLOGICAL FLUIDS Ph.D. Thesis

Lawrence Eugene Crooks 1979 223 p
Avail: Univ. Microfilms Order No. 8014642

Several ways to use nuclear magnetic resonance (NMR) to measure properties of fluids were investigated with emphasis on the measurement of fluid flow velocity. The technique also provided a measure of molecular self diffusion which was converted to the fluid's viscosity. The flow characteristic measured was a velocity distribution function which relates the fraction of fluid flowing to the fluid velocity. It is shown that a multiple pulse NMR sequence can be used to determine the velocity distribution. A self diffusion measurement gives the diffusion coefficient of a whole sample, whether it is stationary or flowing. It is also shown that varying the experiment timing, restricted diffusion can be observed and the size of biological miscelles can be estimated. The results of a study of diffusion in cervical mucus are presented. Results indicate that NMR relaxation time can also be used to determine the hemaglobin concentration in whole blood. Results of this type of measurement on leukemic whole blood and various blood fractions are presented. Dissert. Abstr.

N80-27981*# National Aeronautics and Space Administration, Washington, D. C.

EXPERIMENTAL GASTRIC ULCERS INDUCED BY IMMOBILIZATION AND ELECTRIC SHOCK OF RATS AND THEIR PHARMACOTHERAPY

O. N. Zabrodin May 1980 7 p refs Transl. into ENGLISH from Farmakol. Toksikol. (USSR), v. 28, no. 6, 1965 p 717-719 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76157) Avail: NTIS HC A02/MF A01 CSCL 06C

The mechanism of development of experimental gastric ulcers, induced in rats by combined immobilization and electric shock, was analyzed pharmacologically with peripheral neurotropic agents. It is concluded that: (1) The most marked preventive effect in the development of the experimentally induced gastric ulcers was displayed by agents capable of blocking the ascending activation system of the reticular formation. (2) Sympathetic fibers, which disrupt the trophism of the gastric wall, form the efferent portion of the reflex arc. (3) Gastric secretion does not appear to be the primary cause of ulceration. R.E.S.

N80-27982*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF CENTRAL NEUROTROPIC SUBSTANCES ON THE HYPOPHYSISADRENAL CORTEX SYSTEM DURING IMMOBILIZATION OF ANIMALS

V. Ye. Ryzhenkov May 1980 9 p refs Transl. into ENGLISH from Farmakol. Toksikol. (USSR), v. 31, no. 5, 1968 p 545-548 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76158) Avail: NTIS HC A02/MF A01 CSCL 06C

The immobilization of guinea pigs for 5, 12, 24 and 48 hours, by securing to a slab, results in a persistent rise of the blood plasma 17-oxycorticosteroid concentration. Repeated administration of phenobarbital (50 mg/kg) and of the sodium salt of gamma-oxybutyric acid (500 mg/kg), as well as the combined administration of central m- and n-cholinolytics with small doses of phenobarbital tends to inhibit activation of the adrenal cortex during 48 hour immobilization of the animals. Repeated administration of aminazine (20 mg/kg) tends to decrease activation of the adrenal cortex. The administration of reserpine (0.1-5 mg/kg) 12-18 hours before immobilization of guinea pigs increases the response of the hypophysis-adrenal cortex system. Author

N80-27983*# National Aeronautics and Space Administration, Washington, D. C.

OXYGEN CONSUMPTION OF ANIMALS UNDER CONDITIONS OF HYPOKINESIA

Ye. N. Loginova, A. I. Volozhin, I. G. Krasnyku, and Ye. A. Stroganova May 1980 11 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), no. 4, Jul.-Aug. 1975 p 32-36 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original Doc. prepared by Med. Stomatological Inst., Moscow

(Contract NASw-3198)
(NASA-TM-76167) Avail: NTIS HC A02/MF A01 CSCL 06C

The influence of hypokinesia on the oxygen consumption of rats, dog, and squirrels was investigated. Three periods of gaseous exchange were revealed in rats under conditions of a limited motor activity. During the first 10-15 days O2 consumption displayed a sharp elevation; on the 20th-30th day, it became stabilized at a higher level (in comparison with control) and it sharply rose again on the 40th-100th day. In dogs, hypokinesia produced a reduction of O2 consumption and then a tendency to its elevation was seen. A short period of physical exercises in squirrels after hypokinesia led to increased oxygen consumption at rest. R.E.S.

N80-27984*# National Aeronautics and Space Administration, Washington, D. C.

MECHANISMS OF WATER-SALT METABOLISM DISTURBANCES IN DOGS SUBJECTED TO SIX MONTH HYPOKINESIA

V. I. Korolkov, Ye. A. Kovalenko, V. P. Krotov, N. A. Ilyushko, V. A. Kondratyeva, and Yu. I. Kondratyev May 1980 9 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter (USSR), no. 6, 1977 p 32-35 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76170) Avail: NTIS HC A02/MF A01 CSCL 06C

Water-salt metabolism in dogs during prolonged restricted motor activity (hypokinesia) was investigated. It was found that hydration occurred and fluid was redistributed between the extra- and intra-cellular sectors. Also, electrolyte excretion rose, and magnetism and calcium metabolism changed significantly. It is concluded that the forces caused by muscle strain proper (which was decreased under conditions of hypokinesia) influence the state of bone metabolism. R.E.S.

N80-27985*# National Aeronautics and Space Administration, Washington, D. C.

BIOLOGICAL AND AERODYNAMIC PROBLEMS WITH THE FLIGHT OF ANIMALS

Erich V. Holst and Dietrich Kuchemann May 1980 37 p refs Transl. into ENGLISH from die Naturwissencchaften (Geottigen, West Germany), v. 24/25, 13 Jun. 1941 p 348-362 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-75337) Avail: NTIS HC A03/MF A01 CSCL 06C

Biological and aerodynamic considerations related to birds and insects are discussed. A wide field is open for comparative biological, physiological, and aerodynamic investigations. Considerable mathematics related to the flight of animals is presented, including 20 equations. The 15 figures included depict the design of bird and insect wings, diagrams of propulsion efficiency, thrust, lift, and angles of attack and photographs of flapping wing free flying wing only models which were built and flown. L.F.M.

N80-27986*# National Aeronautics and Space Administration, Washington, D. C.

THE GROWTH OF BIRDWINGS

K. Meunier May 1980 46 p refs Transl. into ENGLISH from Leipzig Abteilung, (East Germany), v. 161, no. 3-4, 1959 p 444-482 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by State Bird Protection Station, Schleswig-Holstein, West Germany
(Contract NASw-3199)
(NASA-TM-75821) Avail: NTIS HC A03/MF A01 CSCL 06C

Growth and order allometry is defined and applied to the growth of bird effects of negative wing allometry discussed with regard to body size and flight power. Transposition and evolutionary significance are explained. R.E.S.

N80-27987*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF IMMOBILIZATION ON THE EEG OF THE BABOON. COMPARISON WITH TELEMETRY RESULTS FROM UNRESTRICTED ANIMALS

J. Bert and H. Collomb Apr. 1980 5 p refs Transl. into ENGLISH from Compt. Rend. Soc. Biol. (France) v. 159, no. 5, 1965 p 1202-1204 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(NASA-TM-76137) Avail: NTIS HC A02/MF A01 CSCL 06C

The EEG of the baboon was studied under two very different sets of conditions: 37 were totally immobolized while 12 were studied in their free movements with 4 channel telemetry. For the immobilized, 3 stages were described: (1) activation, record desynchronized; (2) rest with 13-15 cm/sec rhythm, like the human alpha rhythm stage but with eyes open or closed; (3) relaxation with a decrease in 13-15 rhythm and the appearance of 5-7 cm/sec theta waves, eyelids closed, animal apparently sleeping. For the free animals the rest stage appeared when the animal's attention was not directed anywhere and there was no relaxation stage. It is concluded that the EEG pattern of the immobilized animal that was described as the 'relaxation' stage really represents a special functional state which one must distinguish clearly from the physiological stages of sleep. R.E.S.

N80-27988*# National Aeronautics and Space Administration, Washington, D. C.

CALORIGENIC EFFECT OF ADRENALINE IN RATS UNDER CONDITIONS OF RESTRICTED MOTOR ACTIVITY

L. Tomaszewska, H. Kaciuba-Uscilko, and S. Kozlowski Jun. 1980 8 p refs Transl. into ENGLISH from Artif. Satell. (Poland), 1/2, 1973 p 75-80 Presented at Symp. on Cosmic Biol. and Med., Warsaw, 12-17 Jun. 1972 Translation was announced as A74-20558 Transl. by Scientific Translation Service, Santa Barbara, Calif
(Contract NASw-3198)
(NASA-TM-76192) Avail: NTIS HC A02/MF A01 CSCL 06C

In previous studies, it was demonstrated that long term restricted motor activity in rats induces a decrease in body weight, an increase in release of adrenaline, and a decrease in the release of noradrenaline with the urine, as well as a reduction in activity of the thymus gland and level of thyroxin in the blood. At the same time, a decrease was found in the internal body temperature that was accompanied by an increase in the rate of metabolism in the state of rest. An investigation is presented which attempts to clarify whether the calorigenic effect of adrenaline under conditions of increased metabolism in the period of immobility is exposed to changes. R.E.S.

N80-27989*# National Aeronautics and Space Administration, Washington, D. C.

DISPLACEMENT OF PLASMA PROTEIN AND CONDUCTION VELOCITY IN RATS UNDER ACTION OF ACCELERATION FORCES AND HYPOKINESIA

S. Baranski, Z. Edelwejn, and M. Wojtkowiak Jun. 1980 10 p refs Transl. into ENGLISH from Postepy Astronautyki (Poland), v. 5, no. 2, 1972 p 61-70 Original language document annouced as A73-17769 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Military Academy of Aviation Medicine, Warsaw
(NASA-TM-76195) Avail: NTIS HC A02/MF A01 CSCL 06C

The permeability of capillary vessels was investigated in order to determine if acceleration alone or following prolonged hypokinesia would induce changes in the vascular wall leading to the penetration by I-albumins and/or proteins with larger molecules. In rats undergoing action of +5 Gz accelerations, no increase in vascular permeability, as tested with the use of (Cr-5k)-globulin, was demostrated. In rats immobilized for 4 weeks before centrifugation, rather weak migration of (Cr-51)-globulin from the vessels was observed. Immobilization resulted also in lowering of conduction velocity in the sciatic nerve. R.E.S.

N80-27990*# National Aeronautics and Space Administration, Washington, D. C.

EXPERIMENTAL CORONARY SCLEROSIS INDUCED BY IMMOBILIZATION OF RABBITS: A NEW MODEL OF ARTERIOSCLEROSIS

V. V. Tyavokin and W. W. Tjawokin Jun. 1980 19 p refs Transl. into ENGLISH from Virchows Arch., A. (West Germany), v. 346, 1969 p 29-45 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3198)
(NASA-TM-76196) Avail: NTIS HC A02/MF A01 CSCL 06C

A new method for producing arteriosclerosis with coronary insufficiency in rabbits by means of immobilization is described and discussed. The experimentally induced atherosclerosis develops due to hypodynamics imposed by the reduced muscular activity without overloading with exogenous cholesterol. The atherosclerosis and coronary insufficiency are associated. With variations in the duration and extent of immobilization, coronary insufficiency alone or with atherosclerosis can be produced. R.E.S.

N80-27991*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF PSYCHOTROPIC DRUGS ON GASTRIC ULCERS INDUCED BY IMMOBILIZATION: INCREASED PROTECTIVE EFFECT OF AMITRIPTYLINE CAUSED BY CHLORDIAZEPOXIDE

J. E. Blum and A. Huerlimann Jun. 1980 6 p refs Transl. into ENGLISH from Med. Pharmacol. Exp. (Switzerland), v. 15, no. 6, 1966 p 615-617 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by F. Hoffmann-La Roche and Co., Basel, Switzerland
(Contract NASw-3199)
(NASA-TM-76197) Avail: NTIS HC A02/MF A01 CSCL 06C

Amitriptyline, but not chlordiazepoxide, protects rats from the occurrence of gastric erosions and ulcers following immobilization. When, however, chlordiazepoxide is given together with amitriptyline the protective effect of the latter is markedly increased. Author

N80-27992*# National Aeronautics and Space Administration, Washington, D. C.

EFFECTS OF HYPODYNAMIA ON THE HEMOCOAGULATIVE PROPERTIES OF THE VASCULAR WALL AND MYOCARDIUM

V. I. Inchina Jun. 1980 9 p refs Transl. into ENGLISH from Kardiologiya (USSR),v. 18, no. 3, Mar 1978, p 126-129 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(NASA-TM-76199) Avail: NTIS HC A02/MF A01 CSCL 06C

The hemocoagulative properties of the aorta (laminar), myocardium, hollow veins, and fibrinolytic capacity of tissues were studied in 14 rabbits subjected to 7 days of restricted mobility and compared to those of 10 control animals. Two tables of results show that, as a result of hypodynamia, the thromboplastic activity of the inner and middle layers of the aorta together with the destruction of endothelium increases the hemocoagulative potential and creates the threat of thrombogenesis. There is also an increase in fibrin-stabilizing activity for all tissues. Author

N80-27993*# National Aeronautics and Space Administration, Washington, D. C.

EFFECTS OF IMMOBILIZATION ON SPERMIOGENESIS

E. R. Meitner 30 Jul. 1980 14 p refs Transl. into ENGLISH from Acta Anat. (Switzerland), no. 95, 1976 p 300-308 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Comenius Univ. of Bratislava, Czecholovakia
(Contract NASw-3199)
(NASA-TM-76282) Avail: NTIS HC A02/MF A01 CSCL 06C

The influence of immobilization stress on spermiogenesis in rats was investigated. After 96 hour immobilization, histological changes began to manifest themselves in the form of practically complete disappearance of cell population of the wall of seminiferous tubule as well as a markedly increased number of cells with pathologic mitoses. Enzymological investigations showed various changes of activity (of acid and alkaline phosphatase and nonspecific esterase) in the 24, 48, and 96 hour immobilization groups. R.E.S.

N80-27994# Joint Publications Research Service, Arlington, Va.

USSR REPORT: SPACE BIOLOGY AND AEROSPACE MEDICINE, VOLUME 14, NO. 3, 1980

27 Jun. 1980 158 p refs Transl. into ENGLISH of Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 158 p
(JPRS-75956) Avail: NTIS HC A08/MF A01

The effects of prolonged exposure to space flight factors are examined. Hemodynamic responses, physiological effects, biological effects as well as the effects of reduced motor activity and weightlessness are considered. Results of ground-based and spaceborne experiments on various laboratory animals are included.

N80-27995# Joint Publications Research Service, Arlington, Va.

BIOCHEMICAL BASES OF PATHOGENESIS OF HYPOKINESIA

I. V. Fedorov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 1-12 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 3-10

Avail: NTIS HC A08/MF A01

An attempt to gain an insight into pathogenetic mechanisms and sequence of reactions responsible for changes in the metabilism of proteins, carbohydrates, and fats of hypokinetic animals is described. J.M.S.

N80-27996# Joint Publications Research Service, Arlington, Va.

RESULTS OF STUDIES OF PULSED BLOOD FLOW AND REGIONAL VASCULAR TONUS DURING FLIGHTS IN THE FIRST AND SECOND EXPEDITIONS ABOARD THE SALYUT-6 - SOYUZ ORBITAL COMPLEX

V. F. Turchaninova and M. V. Domracheva *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 13-18 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 11-14

Avail: NTIS HC A08/MF A01

The dynamics of pulse blood filling and regional vascular tone was studied in the crewmembers of 96 and 140 day flights aboard the station Salyut-6 - Soyuz. Measurements were taken before, during and after flights, using a specially designed tetrapolar rheography. Rheograms of the torso, forearms, legs, and rheoencephalograms of the right and left hemispheres in the frontal-mastoidal lead were recorded. The results show that in zero-g the cosmonauts developed typical hemodynamic changes indicative of cephalad blood shifts. Author

N80-27997# Joint Publications Research Service, Arlington, Va.

CIRCULATION IN EXERCISING CREW MEMBERS OF THE FIRST MAIN EXPEDITION ABOARD SALYUT-6

V. S. Georgiyevskiy, N. A. Lapshina, L. Ya. Andriyako, L. C. Umnova, V. G. Doroshev, I. V. Alferova, V. N. Ragozin, and Ye. A. Kobzev *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 19-23 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 15-18

Avail: NTIS HC A08/MF A01

During the 96 day flight aboard the Salyut-6 station the crewmembers showed a satisfactory response to bicycle ergometry of moderate load. However, cardiovascular regulation during exercise declined, particularly by the end of the first and the begining of the second month. This was mainly associated with deconditioning due to an inadequate work load. Its increase helped to restore an initial level of circulation during exercise by the end of the mission. Author

N80-27998# Joint Publications Research Service, Arlington Va.

HEMODYNAMICS AND PHASE STRUCTURE OF THE CARDIAC CYCLE IN MEMBERS OF THE FIRST CREW OF SALYUT-5 AT REST

V. A. Degtyarev, V. G. Doroshev, N. A. Lapshina, V. N. Ragozin, Z. A. Kirillova, S. I. Ponamarev, and O. B. Kulikov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 24-28 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 18-21

Avail: NTIS HC A08/MF A01

In the Salyut-5 flight studies of circulatory functions were continued. Heart rate, arterial pressure, time intervals of the left and right ventricles were measured at rest. Peripheral resistance and cardiac output were calculated. At early flight stages cardiovascular changes occurred due to an increased blood inflow to the heart. During the second half of the mission cardiac output and arterial pressure remained elevated, as fatigue of the cosmonauts increased. Author

N80-27999# Joint Publications Research Service, Arlington, Va.

EFFECT OF WEIGHTLESSNESS AND ARTIFICIAL GRAVITY ON ION-REGULATING FUNCTION OF RAT KIDNEYS

Ye. A. Ilin, Yu. V. Natochin, N. A. Ilyushko, Yu. I. Kondratyev, V. T. Bakhteyeva, Ye. M. Gazhala, O. A. Gomcharevskaya, Ye. A. Lavroua, and Ye. I. Shakhmatova *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 29-34 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 21-25

Avail: NTIS HC A08/MF A01

Weightless rats showed greater changes in the fluid-electrolyte metabolism and ion regulatory function of the kidneys than centrifuged rats. During water loads they exhibited an increased sodium excretion. During potassium loads they displayed a higher potassium excretion. The study of electrolyte composition of different kidney segments demonstrated a reduced potassium content in the wet cortical and medullary matter due to elevated tissue hydration. Kidney microdissection did not reveal any structural differences in nephrons of the weightless and centrifuged rats. Author

N80-28000# Joint Publications Research Service, Arlington, Va.

ACTIVITY OF SOME HEPATIC ENZYMES AND LIPOGENETIC PROCESSES IN RAT AIPOSE TISSUE AFTER SPACE FLIGHT

L. Makho, Sh. Nemet, M. Palkovich, V. Shtrbak, and R. A. Tigranyan *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 35-40 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 26-29

Avail: NTIS HC A08/MF A01

The rats flown aboard Cosmos-782 showed a significant increase in the activity of tyrosine aminotransferase and tryptophan pyrolase, i.e., the enzymes whose activity depends on the corticosterone level. The synchronous rats displayed a small increase in the enzyme activity. The flight and synchronous animals exhibited a slight increase in the activity of gluconeogenetic enzymes and a decrease in the activity of glucose-6-phosphatase. Immediately after flight and, to a lesser extent, after the synchronous experiment the activity of lipogenetic enzymes decreased. On the R+25 day the enzyme activity remained unchanged. The study of lipogenesis in the epididymal fat, using C14-glucose incorporation into lipids, did not reveal any differences in the flight and synchronous rats. The findings demonstrated that changes in the enzyme activity induced by the flight and synchronous experiments returned to the normal during readaptation. Author

N80-28001# Joint Publications Research Service, Arlington, Va.

STATE OF RAT THYROID C CELLS FOLLOWING FLIGHTS ON THE COSMOS TYPE OF BIOSATELLITES (ACCORDING TO RESULTS OF A MORPHOLOGICAL STUDY)

G. I. Plakhuta-Plakutina *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 41-46 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 29-33

Avail: NTIS HC A08/MF A01

Calcitonin-secreting cells (C-cells) of the thyroid glands from 51 SPF Wistar rats flown for 18.5 to 22 days aboard biosatellites Cosmos-605, 782 and 936 and sacrificed 4.5-13 hours, 1-2 and 25-27 days after recovery were examined histologically and karyometrically. Vivarium (57) and synchronous (58) rats were used as controls. Variations in the nuclear volume of C-cells and their density were shown to depend on the experimental conditions and time interval elapsed after recovery. Morphological changes in C-cells were assumed to be associated with alterations in calcium metabolism during an exposure of rats to weightlessness, artificial gravity, and Earth gravity. Author

N80-28002# Joint Publications Research Service, Arlington, Va.

SOME ASPECTS OF APPLICATION OF THE SYSTEMIC APPROACH TO AVIATION ENGINEERING PSYCHOLOGY

V. A. Ponomarenko and N. D. Zavalova *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 47-52 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 33-37

Avail: NTIS HC A08/MF A01

The role of study and analysis of systemic properties of the equipment of cockpits for its optimization is examined. Pilot's errors caused by disadvantages of the total systemic quality of various components of the equipment are described. Methods for eliminating causes of some erroneous actions of pilots are discussed. J.M.S.

N80-28003# Joint Publications Research Service, Arlington, Va.

EFFECT OF PROLONGED +Gz ACCELERATIONS ON HUMAN PERFORMANCE

A. S. Barer, T. A. Sokolova, V. M. Tardov, and Yu. P. Yashin *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 53-59 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 37-40

Avail: NTIS HC A08/MF A01

With an increase in acceleration value, the accuracy of human performance decreases. This becomes very noticeable at +Gz > 5 g. In this situation work capacity can be raised by increasing an angle between the Gz vector and the long axis of the human body. Pilots need to be tested for acceleration clearance before they are allowed to fly at +Gz > or = 8 g. Author

N80-28004# Joint Publications Research Service, Arlington, Va.

HUMAN COLOR DISCRIMINATING FUNCTION WITH MUSCULAR TENSION DURING EXPOSURE TO VESTIBULAR STIMULI

Zh. M. Kudryashova and A. A. Shipov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 60-64 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 41-44

Avail: NTIS HC A08/MF A01

Human studies have demonstrated that arbitrary tension of muscle (back and legs) during repeated vestibular exposures not only delays the development of motion sickness but also contributes to the maintenance of color discriminative stability of the visual function. Author

N80-28005# Joint Publications Research Service, Arlington, Va.

EFFECT OF TRANSVERSE ACCELERATIONS ON INNERVATION OF THE GUINEA PIG'S CRURAL SKELETAL MUSCLES

V. Ya. Osaulenko *In its* USSR Rept.: Sapce Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 65-71 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 44-48

Avail: NTIS HC A08/MF A01

Guinea pigs were exposed to chest-to-back acceleration of 8 G for an hour. This exposure brought about significant morphological changes of a primary-reactive pattern in nerve elements of skeletal leg muscles. With time they enhanced: 6 hours and then 3 days after the experiment a small portion (1-1.5%) of nerve fibers underwent fragmentation and degradation. Motor nerve endings showed the highest resistance. The first signs of restitution of changes in the peripheral nervous system were seen 6 days after the exposure. Nerve fibers did not return to the normal 9 days after the beginning of the experiment. Author

N80-28006# Joint Publications Research Service, Arlington, Va.

STUDIES OF PROGNOSTIC SIGNIFICANCE OF ANTIORTHOSTATIC POSITION

Kh. Kh. Yarullin, V. A. Gornago, T. D. Vasilyeva, and M. Ye. Gugushvili *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 72-80 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 48-54

Avail: NTIS HC A08/MF A01

The prognostic significance of head-down tilt at -15 deg and -30 deg for 6 min at each step was assessed in 40 normal men, aged 22 to 39. The study of mean values of the maximal amplitude, relative duration of the anacrotic phase, dicrotic, and diastolic indices of hemispheric and bimastoidal rheoencephalography as well as of health condition helped to determine cerebral circulation in test subjects with good and moderate tolerance to head-down tilt and to define the criteria of tilt tolerance. The test subjects who showed good tolerance to head-down tilt displayed a simultaneous compensatory increase of the tone of large caliber arteries and arterioles that was accompanied by a noticeable increase in cerebral pulse blood filling at -15 deg and a moderate increase at -30 deg as well as the feeling of a slight blood rush to the head. The test subjects who displayed moderate tolerance to heat-down tilt showed only an increase in the tone of large caliber vessels; they also exhibited a marked decrease in the tone of arterioles, venules, and veins (especially at -30 deg) which was combined with a significant increase in the cerebral pulse blood filing and an appearance of marked venous waves on rheoencephalograms. Author

N80-28007# Joint Publications Research Service, Arlington, Va.

EVALUATION OF EFFICACY OF THE SET OF PREVENTIVE MEASURES REFERABLE TO THE HUMAN NEUROMUSCULAR SYSTEM UNDER HYPOKINETIC CONDITIONS

V. A. Tishler, V. I. Safonov, and Z. A. Krivitsina *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 81-85 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), no. 3, 1980 p 54-57

Avail: NTIS HC A08/MF A01

Excitability and lability of the musculus rectus femoris was studied to evaluate efficiency of exercises during bed rest. A combination of exercises with other countermeasures did not reduce their prophylactic effect. A.M.S.

N80-28008# Joint Publications Research Service, Arlington, Va.

THE STRESS REACTION TO HYPOKINESIA AND ITS EFFECT ON GENERAL RESISTANCE

I. P. Chernov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 86-90 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 57-60

Avail: NTIS HC A08/MF A01

Rat experiments demonstrated that the development of the hypokinetic syndrome involves occurrence of a three stage, stress reaction characterized by a change in the general health state, body mass, and activity of the hypothalamic-pituitary-adrenal system. The hypokinetic stress affects total resistance and ionizing radiation sensitivity of animals. At a certain stage of development the hypokinetic stress contributes to the state of elevated cross resistance. J.M.S.

N80-28009# Joint Publications Research Service, Arlington, Va.

REGIONAL REDISTRIBUTION OF RAT BLOOD AFTER 7 AND 30 DAYS OF HYPOKINESIA

O. A. Kovalev, V. F. Lysak, V. I. Severovostokova, and S. K. Sheremetevskaya *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 91-96 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 60-64

Avail: NTIS HC A08/MF A01

An exposure of rats to hypokinesia was accompanied by a significant increase in the total amount of circulating blood per unit body mass. The percentage blood content was increased in the myocardium, lungs, liver, kidneys, small intestine, muscles and bones of the chest. The percentage blood content was decreased in the skin of different body segments, muscles and bones (except of the chest), tail, viscera (large intestine, adrenals, spleen, bladder, testes). The major regional redistribution of blood was its displacement into the liver. Author

N80-28010# Joint Publications Research Service, Arlington, Va.

SECRETION, INCRETION AND RESECRETION OF PANCREATIC LIPASE DURING PROLONGED RESTRICTION OF MOTOR ACTIVITY

I. L. Medkova, N. M. Nikolayeva, and K. V. Smirnov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 97-103 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 64-67

Avail: NTIS HC A08/MF A01

The effect of 20, 60, 90 and 120 day hypokinesia on secretion, incretion, and recretion of pancreatic lipase of rats was examined. It was found that 60, 90 and 120 day hypokinesia induced significant and similar changes - lipase decrease in the pancreas and increase in blood, bile, salivary glands and stomach mucosa; 20 day hypokinesia did not produce any effect on the above parameters. Author

N80-28011# Joint Publications Research Service, Arlington, Va.

THEORETICAL ANALYSIS OF THE EFFECT OF STATE OF PULMONARY CIRCULATION ON DISTRIBUTION OF VENTILATION-PERFUSION RELATIONS AND GAS EXCHANGE IN THE LUNGS

A. I. Dyachenko and V. G. Shabelnikov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 104-109 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 68-71

Avail: NTIS HC A08/MF A01

Using a mathematical model of functionally nonuniform lungs, the effect of gravitational inequality of ventilation perfusion relations on gas exchange was studied. The dependence of tensions of respiratory gases in the mixed arterial blood and alveolar air upon pulmonary circulation pressure was demonstrated. The influence of changes in the tone of lung vessels on the distribution of ventilation perfusion relations and gas exchange was investigated. Author

N80-28012# Joint Publications Research Service, Arlington, Va.

METHOD FOR ASSESSING HEMODYNAMICS AND DETECTING LATENT INSUFFICIENCY OF CEREBRAL CIRCULATION IN COSMONAUT CANDIDATES

D. A. Alekseyev *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 110-116 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 71-74

Avail: NTIS HC A08/MF A01

Experience in screening cosmonaut candidates shows that many of them present osteochondrosis of the cervical spine. In some of the selected individuals, the signs of intervertebral osteochondrosis are progressing. Osteophytes in this region sometimes cause ischemic circulatory disturbances in the vertebrobasilar system as a result of reflex angiospasm of vertebral arteries and mechanical compression of the latter. For this reason, it is very important to assess blood flow in the systems of the vertebral arteries (basilar and internal carotid) and determine the functional capabilities of collaterals and latent circulatory disturbances in the corresponding vascular reservoirs. A functional test used for this purpose, involving rotation of the head and throwing it back to an angle of 45 deg is described. J.M.S.

N80-28013# Joint Publications Research Service, Arlington, Va.

ULTRASONIC METHOD OF RECORDING GAS BUBBLES IN ANIMAL VENOUS BLOOD IN A RAREFIED ATMOSPHERE

R. T. Kazakova *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 117-121 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 74-76

Avail: NTIS HC A08/MF A01

A method of recording [demonstrating] intravascular gas bubbles, which appear under the influence of decompression due to elevated pressure, with the use of ultrasonic equipment is described. The possibility of using the ultrasonic method to study the process of gas production in animals and man in a rarefied atmosphere is demonstrated. This method can be used in the system for monitoring the physiological condition of man at high altitudes. J.M.S.

N80-28014# Joint Publications Research Service, Arlington, Va.

ISOLATION AND GAS CHROMATOGRAPHIC DEMONSTRATION OF VOLATILE ORGANIC SUBSTANCES IN THIN-LAYER BIOLOGICAL SAMPLES

N. F. Sopikov and A. I. Gorshunova *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 3, 1980 (JPRS-75956) 27 Jun. 1980 p 122-127 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (Moscow), v. 14, no. 3, 1980 p 77-79

Avail: NTIS HC A08/MF A01

Gas chromatographic methods are used to demonstrate organic compounds in studies of the effects of space flight factors and conditions (for example, hypokinesia, radiation, hypoxia, etc.) on processes of accumulation, distribution and elimination of volatile chemicals from the human and animal organism. A simple and rapid method was developed for isolating volatile organic substances from biological media and tissues to be submitted to gas chromatographic analysis. This method was based on the principle of direct thermal evaporation of volatile compounds from thin layer biological samples, obtained by using a pyrolytic attachment with the chromatograph. J.M.S.

N80-28015# Joint Publications Research Service, Arlington, Va.

USSR REPORT. SPACE BIOLOGY AND AEROSPACE MEDICINE, VOLUME 14, NO. 2, 1980

O. G. Gazenko, ed. 8 May 1980 157 p refs Transl. into ENGLISH of Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 157 p
(JPRS-75654) Avail: NTIS HC A08/MF A01

The biological and physiological effects of long term space flight are examined. Hyperbaric conditions, hypokinesia, weightlessness, hypoxia, and hypercapnia are among the support systems are included.

N80-28016# Joint Publications Research Service, Arlington, Va.

RESPIRATION AND GAS EXCHANGE UNDER HYPERBARIC CONDITIONS

L. A. Bryantseva, I. S. Breslav, and A. G. Dianov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 1-14 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 3-10

Avail: NTIS HC A08/MF A01

The effects of hyperbaric environments on respiratory function are discussed. Respiratory mechanics, pulmonary ventilation, and oxygen and carbon dioxide transport are included. Particular attention is given to the respiratory system as a limiting factor for human performance in a hyperbaric environment. Optimization of gas mixtures used in undersea dives is discussed. J.M.S.

N80-28017# Joint Publications Research Service, Arlington, Va.

CIRCULATION AT REST IN CREW MEMBERS OF THE FIRST MAIN EXPEDITION ABOARD SALYUT 6

V. A. Degtyarev, V. G. Doroshev, V. M. Mikhaylov, V. S. Georgiyevskiy, S. A. Kobzev, Z. A. Kirillova, N. A. Lapshina, V. G. Savelyeva, and L. V. Umnova *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 15-19 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 11-14

Avail: NTIS HC A08/MF A01

Results of in-depth medical examinations of crew members who participated in the first expedition involving a 96 day space flight aboard the Salyut-6 orbital station are presented. Distinct variations of certain cardiovascular parameters exhibited an early stage, later returned to the normal. These changes are characteristics of individual processes of human adapatation to weightlessness. J.M.S.

N80-28018# Joint Publications Research Service, Arlington, Va.

STATE OF HUMAN BONE TISSUE PROTEIN FRACTION AFTER SPACE FLIGHTS

A. A. Prokhonchukov, V. K. Leontyev, N. A. Zhizhina, R. A. Tigranyan, A. G. Kolesnik, and N. A. Komissarova *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JRPS-75654) 8 May 1980 p 20-26 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 14-18

Avail: NTIS HC A08/MF A01

Amino acid composition and bone mineralization were studied qualitatively and qualititatively on autopsy of the three crewmembers after their 28 day space flight aboard the orbital station Salyut 1. Sixteen amino acids were detected in the bone protein fraction: cystine and cysteine, lysine histidine, arginine, aspartic acid, serine, glycine, glutamic acid, threonine, alanine, proline, valine, phenylalanine, leucine and isoleucine, oxyproline. No abnormalities in the amino acid composition or the bone organic content were found in the postflight analysis. The role of protein matrices of calcified tissues in mechanisms of bone resistance and adaptation to space flight effects is discussed. J.M.S.

N80-28019# Joint Publications Research Service, Arlington, Va.

RESEARCH HARDWARE AND HABITAT OF ANIMALS USED IN EXPERIMENT ABOARD COSMOS-936 BIOSATELLITE

B. A. Adamovich, Ye. A. Ilin, A. D. Noskin, V. I. Milyavskiy, G. N. Pliskovskaya, V. K. Golov, V. S. Poleshchuk, V. K. Ovcharov, and A. A. Shipov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 27-32 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 18-22

Avail: NTIS HC A08/MF A01

The hardware used to provide the support to experimental animals (rats) and to obtain information in-flight is described. The hardware includes two specially designed centrifuges to generate artificial gravity. The environmental parameters in the mock-up cabin and field laboratories used at the recovery site are also described. J.M.S.

N80-28020# Joint Publications Research Service, Arlington, Va.

PRINCIPAL RESULTS OF PHYSIOLOGICAL EXPERIMENTS WITH MAMMALS ABOARD THE COSMOS-936 BIOSATELLITE

O. G. Gazenko, Ye. A. Ilin, A. M. Genin, A. R. Kotovskaya, V. I. Korolkov, R. A. Tigranyan, and V. V. Portugalov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 33-37 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 22-25

Avail: NTIS HC A08/MF A01

The program of the 18.5 day flight of the biosatellite Cosmos-936 included studies of physiological effects of prolonged weightlessness (20 rats) and artificial gravity (10 rats). The latter produced a normalizing effect on the function of the myocardium, musculo-skeletal system, and excretory system. Simultaneously, artificial gravity exerted an adverse effect on the functions dependent on several sensors, primarily optic, vestibular, and motor sensors. It is postulated that the adverse effects are associated with a relatively high rate of rotation and a short arm of the centrifuge. Author

N80-28021# Joint Publications Research Service, Arlington, Va.

SEMICIRCULAR CANAL FUNCTION IN RATS AFTER FLIGHT ABOARD THE COSMOS-936 BIOSATELLITE

A. A. Shipov and V. G. Ovechkin *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 38-44 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 25-30

Avail: NTIS HC A08/MF A01

The nystagmic reflex, latent period, total and mean number of events, and their duration were measured in the rats flown for 18.5 days aboard the biosatellite Cosmos-936 under the conditions of weightlessness and artificial gravity. It is demonstrated that prolonged weightlessness did not influence the receptor formations and centers of semicircular canals. A long exposure to artificial gravity brought about a decrease in reactivity and sensitivity of semicircular canals. The mechanisms of these phenomena are discussed. J.M.S.

N80-28022# Joint Publications Research Service, Arlington, Va.

ROLE OF DYNAMIC SPACE FLIGHT FACTORS IN THE PATHOGENESIS OF INVOLUTION OF LYMPHATIC ORGANS (EXPERIMENTAL MORPHOLOGICAL STUDY)

A. S. Kaplanskiy and G. N. Durnova *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 45-52 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 30-35

Avail: NTIS HC A02/MF A01

The role of the dynamic factors in accidental involution of lymph organs was investigated in a ground based study simulating a 20 day space flight. It is inferred from the study that lymph organ involution observed in rats exposed to prolonged space flights is caused by chronic and acute stresses. Chronic stress is associated with weightlessness and leads to hypoplasia of lymphs organs; acute stress is connected with the transition from weightlessness to normal gravity (gravity stress), thus enhancing chronic stress induced lymph tissue hypoplasia. Spleens of both weightless and hypokinetic rats slow inhibition of erythropoiesis and accumulation of hemosiderine due to accelerated erythrocyte degradation caused by diminished motor activity. J.M.S.

N80-28023# Joint Publications Research Service, Arlington, Va.

EFFECT OF HIGH AMBIENT TEMPERATURE ON HUMAN PERFORMANCE

A. N. Azhayev, V. I. Zorile, and A. N. Koltsov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 53-57 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 20 Mar./Apr. 1980 p 35-38

Avail: NTIS HC A08/MF A01

Mental and physical capacity of men exposed to 30 to 35 deg at low humidity and to 25 to 30 deg at high humidity remained unaltered. The capacity of men exposed to 40 to 55 C at 10 to 25% of relative humidity and to 35 to 40 C at 85% of relative humidity declined. Author

N80-28024# Joint Publications Research Service, Arlington, Va.

DYNAMICS OF HUMAN EXTERNAL RESPIRATION AND BLOOD GASES UNDER THE COMBINED EFFECT OF HYPERCAPNIA AND HYPOXIA

L. Kh. Bragin, A. Ye. Severin, N. A. Agadzhanyan, G. A. Davydov, and Yu. A. Spasskiy *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 58-62 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 38-41

Avail: NTIS HC A08/MF A01

In manned experiments gas mixtures with a step-by-step increasing (p)CO2 and hypoxia of different levels were used. The experiments demonstrated variations in respiration, buffer systems, and gases of the blood. The studies emphasized an important physiological role of a constant (p)CO2 in blood, when breathing gas mixtures with a different O2 content. Author

N80-28025# Joint Publications Research Service, Arlington, Va.

FUNCTIONAL STATE OF THE CARDIOVASCULAR SYSTEM UNDER THE COMBINED EFFECT OF 28 DAY IMMERSION, ROTATION ON A SHORT-ARM CENTRIFUGE AND EXERCISE ON A BICYCLE ERGOMETER

I. F. Vil-Vilyams and Ye. B. Shulzhenko *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 63-68 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 42-45

Avail: NTIS HC A08/MF A01

The cardiovascular function of four test subjects exposed to 28 day dry immersion was examined before and after 6 day cycles of rotation in a short-arm centrifuge to provide 1 to 2 Gz, bicycle ergometer exercise, and their combination. An exposure to acceleration of 3 Gz in a 7.25 m arm centrifuge was used as a provocative test. The above countermeasures reduced but not eliminated entirely immersion-induced cardiovascular deconditioning. A combined use of acceleration of 1 to 2 Gz in a short-arm centrifuge and bicycle ergometer exercise can be recommended as a countermeasure against cardiovascular deconditioning in weightlessness. J.M.S.

N80-28026# Joint Publications Research Service, Arlington, Va.

PHARMACOLOGICAL ANALYSIS OF PHYSIOLOGICAL MECHANISMS OF ORTHOSTATIC HEMODYNAMIC STABILITY

L. I. Osadchiy *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 69-74 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 45-49

Avail: NTIS HC A08/MF A01

In urethane anesthesized cats, securinine brought about a distinct increase in compensatory reactions of arterial pressure and cardiac output during an upright tilt at 45 deg. The experiments also showed a substantial increase in compensatory recovery of the volume velocity of circulation in the posterior vena cava. Myorelaxant induced arrest of contractile function of skeletal muscles prior to securinine administration reversed compensatory reactions of arterial pressure and cardiac output during tilt test.
Author

N80-28027# Joint Publications Research Service, Arlington, Va.

BIOELECTRIC ACTIVITY OF THE HUMAN BRAIN DURING AND AFTER 182-DAY ANITORTHOSATIC HYPOKINESIA

T. N. Krupina, Kh. Kh. Yarullin, and D. A. Alekseyev *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 75-83 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 49-54

Avail: NTIS HC A08/MF A01

Cerebral bioelectric activity of 18 healthy test subjects, aged 31 to 40, was examined during and after their 182 day head-down tilting. The test subjects were divided into a group that performed countermeasures (exercise, muscle stimulation) against hypokinesia-induced disorders and a control group. During the study EEG changes were most pronounced in the controls: alpha-rhythm amplitude, frequency, and index decreased; slow wave frequency reduced; index of zonal differences and amplitude beta and slow waves increased. Phasic changes in the central nervous system excitability in response to a flickering light of 6 to 25 cps were found. Typical changes in spontaneous EEG during a 3 min pulmonary hyperventilation test were enhanced. The study gives evidence that the dynamics of spontaneous EEG as well as cerebral bioelectric activity in response to flickering light and pulmonary hyperventilation are important indicators of the cerebral function, especially of the cortical activity decrease.
Author

N80-28028# Joint Publications Research Service, Arlington, Va.

MORPHOMETRIC ANALYSIS OF GLOMERULES AND JUXTAGLOMERULA SYSTEM OF THE RAT KIDNEY IN THE COURSE OF EXPERIMENTAL HYPOKINESIA

I. P. Chernov and A. G. Gaffarov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 84-89 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2 Mar./Apr. 1980 p 54-47

Avail: NTIS HC A08/MF A01

A certain correlation between variations in the means of the volume of cortical and juxtamedullary glomerules and the function of the juxtaglomerular apparatus was established. It is hypothesized that at early hypokinesia renal vascular changes are nonspecific. The phenomenon of renal excretion of fluids and electrolytes is explained in terms of a simultaneous increase in the reninangiotensin activity and 11-hydroxycorticosteroid content in plasma.
J.M.S.

N80-28029# Joint Publications Research Service, Arlington, Va.

EFFECT OF HYPOKINESIA ON CHANGES IN CARBOHYDRATE AND LIPID METABOLISM IN THE HEART AND LIVER

Yu. P. Rylnikov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 90-96 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2 Mar./Apr. 1980 p 57-62

Avail: NTIS HC A08/MF A01

The rate of assimilation of carbohydrates via glycolysis and the pentose-phosphate pathway, as well as changes in B bile in hypokinetic rabbits were studied. Results indicate that rigid immobilization of rabbits is accompanied by a reduction of glycolysis rate in the liver and, particularly, in the heart, and a simultaneous increase of the fraction of carbohydrate utilization in the pentose phosphate pathway. It is also followed by cholesterol accumulation in the blood and tissues in spite of an accelerated bile excretion of cholesterol and its derivatives, biles acids.
J.M.S.

N80-28030# Joint Publications Research Service, Arlington, Va.

EFFECT OF CONDITIONING FOR HYPOXIA ON FERTILITY OF WHITE MICE

V. B. Malkin and Ye. A. Stroganora *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 97-102 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 62-66

Avail: NTIS HC A08/MF A01

A prolonged effect of hypoxia on the reproductive function and development of pups of white mice was investigated. Beginning with the age of 2 months the animals were exposed to an altitude of 5500 m for 6 hours a day during 9 months: The mice that were so adapted to and mated in hypoxia did not deliver any offspring. The animals that were adapted to hypoxia during intrauterine and postnatal development and mated at 5500 m delivered normal although much smaller litters.
J.M.S.

N80-28031# Joint Publications Research Service, Arlington, Va.

THE QUESTION OF USING DEHYDRATED FOODS DURING LONG-TERM SPACE FLIGHTS

V. P. Bychkov and M. V. Markaryan *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 103-109 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 66-70

Avail: NTIS HC A08/MF A01

The results of five studies on 35 test subjects conducted to test diets of dehydrated products to be used in prolonged space flights are discussed. It is demonstrated that a diet consisting of only dehydrated food products can be used for a prolonged time (up to 1 year). Dehydrated foods after a 2 year storage and proton irradiation at a dose of 24,000 rad retain their biological value and assure and adequate nutritional status. On this basis a space diet composed of dehydrated foods developed. J.M.S.

N80-28033# Joint Publications Research Service, Arlington, Va.

STUDY OF COMPATILIBITY OF CERTAIN HIGHER PLANTS AND CHLORELLA AS RELATED TO A BIOREGENERATIVE HUMAN LIFE SUPPORT SYSTEM

Yu. I. Shaydorov, B. N. Shebalin, and G. I. Meleshko *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 116-122 refs Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 74-78

Avail: NTIS HC A08/MF A01

Mutual effects of Chlorella and higher plants cultivated together in a closed atmosphere are discussed. It can be inferred that gaseous products of Chlorella did not exert a significant effect on the carbon dioxide consumption by wheat and radish plants or on their biomass increment. In turn, gaseous products of higher plants did not or influence Chlorella growth. It can, therefore, be concluded that Chlorella and the above higher plants, when cultivated in a common atmosphere, do not inhibit each other and can be regarded as biologically compatible constituents of the photoautotrophic component of future bioregenerative life support systems.
J.M.S.

N80-28034# Joint Publications Research Service, Arlington, Va.

GENERALIZED NYSTAGMOMETRIC CHARACTERISTICS FOR DIAGNOSTIC PURPOSES

M. M. Leuashov and A. I. Tumakov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 123-129 refs Transl. into ENGLISH from

Kosm. Biol. Aviakosm. Med. (USSR), v. 14, no. 2, Mar./Apr. 1980 p 78-82
Avail: NTIS HC A08/MF A01

The optokinetic reactions of children ranging in age from three to seven years who were not suffering from vestibular dysfunctions were recorded at three stimulus rates. The results of statistical processing for the parameters of right and left optokinetic reactions are reported. A distinct difference in behavior of two parameters of nystagmus, RSC and frequency, is noted. J.M.S.

N80-28035# Joint Publications Research Service, Arlington, Va.

UPGRADING EFFICACY OF MEMBRANE TECHNIQUES FOR REGENERATING WATER FROM URINE

B. A. Adamovich, V. D. Volgin, N. M. Nazarov, Yu. Ye. Sinyak, and S. V. Chizhov *In its* USSR Rept.: Space Biol. and Aerospace Med., Vol. 14, No. 2, 1980 (JPRS-75654) 8 May 1980 p 130-113 ref Transl. into ENGLISH from Kosm. Biol. Aviakosm. Med. (USSR), V. 14, no. 2 Mar./Apr. 1980 p 82-83

Avail: NTIS HC A08/MF A01

A method of regenerating water from urine involving evaporation through membranes and reverse osmosis is described. The effectiveness of the process was tested on a laboratory unit with an evaporator made of porous cermet. The productivity of the process was found to be stable over a long period of time. J.M.S.

N80-28037 Johns Hopkins Univ., Baltimore, Md.

NONLINEARITIES IN AUDITORY-NERVE FIBER RESPONSES TO BANDLIMITED NOISE: AN EXPERIMENTAL STUDY AND A MODEL Ph.D. Thesis

Thomas Barton Schalk 1980 222 p
Avail: Univ. Microfilms Order No. 8014270

Discharge rate was measured as a function of spectral level for noise bursts of one bandwidth and center frequency. Such rate level functions were measured for a number of bandwidths; either the low or high cutoff frequencies were set at fiber characteristic frequency (CF). Rate level functions were also measured, simultaneously, for single tones at CF. Dynamic range is defined as the range, in dB, over which rate increases from 10 percent to 80 percent of the maximum driven rate to CF tones. When pooling data across CF in single cats, dynamic range is an increasing function of fiber threshold for CF tones and noise stimuli. Narrow bands of noise produce rate-level functions that are similar to those for CF tones. For noise bands centered above CF, rate-level functions became less steep as bandwidth is increased, and are always monotonic. For wide bands of noise centered below CF, rate-level functions can be nonmonotonic or appear to plateau at rates less than the saturation rate to CF tones. Thus, wide bands of noise centered above or below CF can produce lower discharge rates than do narrowbands at the same spectral level. Dissert. Abstr.

N80-28038# Naval Medical Research Inst., Bethesda, Md.

MEASUREMENT OF LUNG FUNCTION USING MAGNETOMETERS. 1: PRINCIPLES AND MATHEMATICAL MODELING Progress Report

Donald L. Vawter Nov. 1979 54 p refs
(AD-A083910; MNRI-79-78; Rept-2) Avail: NTIS HC A04/MF A01 CSCL 06/16

The use of magnetometer systems to predict pulmonary air volumes was studied. The sensitivity of the system to angular rotations was found to be small because magnetometers are normally mounted to the subject. Seven mathematical models for predicing volume were investigated, with the finding that two parameter models are adequate for quiet breathing. For complicated maneuvers, a three-parameter model is necessary, and for predictive usefulness, the model must be calibrated using a complex maneuver. Results of studies of the dimensional changes, and the correlation between the dimensional changes, that occur during normal breathing are presented. Author

N80-28039*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF HYPOKINESIA ON INVERTASE ACTIVITY OF THE MUCOSA OF THE SMALL INTESTINE

A. Abdusattarov Jun. 1980 5 p refs Transl. into ENGLISH from Uzb. Biol. Zh. (USSR), no. 1, 1978 p 61-62 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prepared by Academy of Sciences (USSR)
(NASA-TM-76191) Avail: NTIS HC A02/MF A01 CSCL 06P

The effect of prolonged hypokinesia on the enzyme activity of the middle portion of the small intestine was investigated. Eighty-four mongrel white male rats weighing 170-180 g were divided into two equal groups. The experimental group were maintained in single cages under 30 days of hypokinetic conditions and the control animals were maintained under ordinary laboratory conditions. It is concluded that rates of invertase formation and its inclusion in the composition if the cellular membrane, if judged by the enzyme activity studied in sections of the small intestine, are subject to phase changes in the course of prolonged hypokinesia. R.E.S.

N80-28040*# National Aeronautics and Space Administration, Washington, D. C.

MORPHOFUNCTIONAL CORRELATIONS IN THE EXPERIMENTAL STUDY OF MYOCARDIOPATHIES UNDER THE STRESS OF FORCED RESTRAINT. NOTE 2: THE INFLUENCE OF ADRENAL IMBALANCE

M. Dinu, S. Dolinescu, and A. Sneer May 1980 12 p refs Transl. into ENGLISH from Rev. Med.-Chir. (Iasi) (Romania), no. 1, 1978 p 87-91 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Orginal doc. prepared by Inst. of Med. and Pharmacy
(Contract NASw-3199)
(NASA-TM-76138) Avail: NTIS HC A02/MF A01 CSCL 06S

Tests were performed with 70 rats to determine the effects of restraint on the functions and structure of the myocardium under varying conditions of adrenal inbalance. Results showed that in rats with adrenal imbalance, fasting and restraint produced the same biochemical alterations as in the controls. The morphologic alteractions, as well as their electric expression, were more varied and evident in the animals with adrenal imbalance. Persistence of the microscopic and electrocardiographic alterations after 72 hours restraint in the animals subjected to unilateral adrenalectomy suggests chronic evolution of the myocardial lesions. This proves the necessity of intact adrenals for a good adaptability to stress. L.F.M.

N80-28041*# National Aeronautics and Space Administration, Washington, D. C.

CHANGES OF THE BODY FUNCTIONS DURING LONG-TERM HYPOKINESIA

Ye. A. Kovalenko, V. L. Popkov, Yu. I. Kondratev, E. S. Mailyan, Yu. S. Galushko, A. A. Prokhonchukov, V. A. Kazaryan, R. S. Morozova, L. V. Serova, A. N. Potapov et al May 1980 13 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), no. 6, 1970 p 3-9 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76166) Avail: NTIS HC A02/MF A01 CSCL 06S

Prolonged hypokinesis (100-170 days) studied in 2000 rats kept in cages limiting their mobility provoked considerable changes in the gaseous and energetic metabolism: an elevation of the total gaseous metabolism and of the rate of O2 requirement by the muscles (in the late periods of hypokinesis) and a change in the intensity of tissue respiration of the liver and myocardium. There also proved to be a reduction in the level of phosphorylation and separation of oxidative phosphorylation in the myocardium, liver, and partially in the skeletal muscle. Prolonged hypokinesia led to changes in tissue metabolism: a disturbance of development of the animals, a marked delay and an increase in the weight of the organism and the muscular system, and disturbances of the mineral and protein metabolism. Prolonged hypokinesis also lead to exhaustion of the hypothalamus-hypophysis-adrenal cortex system. R.E.S.

N80-28042*# National Aeronautics and Space Administration, Washington, D. C.

THE RELATION BETWEEN TILT TABLE AND ACCELERATION-TOLERANCE AND THEIR DEPENDENCE ON STATURE AND PHYSICAL FITNESS

K. E. Klein, F. Backhausen, H. Bruner, J Eichhorn, D. Jovy, J. Schotte, L Vogt, and H. M. Wegman Apr. 1980 30 p refs Transl. into ENGLISH from Intern. A. Angew. Physiol. (West Germany), v. 26, 1968 p 205-226 Original language document announced as A69-21304 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75796) Avail: NTIS HC A03/MF A01 CSCL 06S

A group of 12 highly trained athletes and a group of 12 untrained students were subjected to passive changes of position on a tilt table and positive accelerations in a centrifuge. During a 20 min tilt, including two additional respiratory maneuvers, the number of faints and average cardiovascular responses did not differ significantly between the groups. During linear increase of acceleration, the average blackout level was almost identical in both groups. Statistically significant coefficients of product-moment correlation for various relations were obtained. The coefficient of multiple determination computed for the dependence of acceleration tolerance on heart-eye distance and systolic blood pressure at rest allows the explanation of almost 50% of the variation of acceleration tolerance. The maximum oxygen uptake showed the expected significant correlation to the heart rate at rest, but not the acceleration tolerance, or to the cardiovascular responses to tilting. L.F.M.

N80-28043*# National Aeronautics and Space Administration, Washington, D. C.

VERTEBRAL PAIN IN HELICOPTER PILOTS

R. Auffret, R. P. Delahaye, P. J. Metges, and Vicens Jun. 1980 19 p transl. into ENGLISH of "Les Algies Vertebrales des Pilotes d'Helicopteres", Rept. AGARD-CP-255, AGARD, Paris, Dec. 1978 7 p Translation was announced as N79-19656 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-75792) Avail: NTIS HC A02/MF A01 CSCL 06P

Pathological forms of spinal pain engendered by piloting helicopters were clinically studied. Lumbalgie and pathology of the dorsal and cervical spine are discussed along with their clinical and radiological signs and origins. R.E.S.

N80-28044*# National Aeronautics and Space Administration, Washington, D. C.

THE CONTENT OF CATECHOLAMINES IN THE ADRENAL GLANDS AND SECTIONS OF THE BRAIN UNDER HYPOKINESIA AND INJECTION OF SOME NEUROTROPIC AGENTS

B. E. Melnik and E. S. Paladiy Mar. 1980 10 p refs Transl. into ENGLISH from Biol. Nauki (USSR), v. 15, no. 11, 1972 p 45-49 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by V. I. Lenin Kishinev State Univ. USSR
(Contract NASw-3199)
(NASA-TM-76010) Avail: NTIS HC A02/MF A01 CSCL 06S

The dynamics of catecholamine content were studied in the adrenal glands and in various region of the brain of white rats under hypokinesia and injections of neurotropic agents. Profound changes in body catecholamine balance occured as a result of prolonged acute restriction of motor activity. Adrenalin retention increased and noradrenanalin retention decreased in the adrenal glands, hypothalamus, cerebral hemispheres, cerebellum and medulla oblongata. Observed alterations in catecholamine retention varied depending upon the type of neurotropic substance utilized. Mellipramine increased catecholamine retention in the tissues under observation while spasmolytin brought about an increase in adrenalin concentration in the adrenals and a decrease in the brain. R.E.S.

N80-28045*# National Aeronautics and Space Administration, Washington, D. C.

MECHANISM OF SELECTIVE LESION OF THE CARDIOVASCULAR SYSTEM IN PSYCHO-EMOTIONAL STRESS

Yu. M. Repin and V. G. Startsev Apr. 1979 14 p refs Transl. into ENGLISH from Vestn. Akad. Nauk SSSR (USSR), v. 8, 1975 p 71-76 Translation was announced as N76-12713 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by USSR Acad. of Med. Sci. Inst. for Pathology and Therapy
(Contract NASw-3199)
(NASA-TM-76035) Avail: NTIS HC A02/MF A01 CSCL 06S

A species predisposition to hypertensive and ischemic heart disease occurs in mammals only at the level of primates, and is associated with social regulation of biological reactions. The specific physiological mechanism giving rise to psychonerogenic pathology may be an inhibition of the motor component of the agressive-defensive response. Repeated combination of pursuit with subsequenct immobilization resulted in four out of five experimental baboons developing serious arterial hypertension and ischemic lesion of the heart which lasted many years. Author

N80-28046*# National Aeronautics and Space Administration, Washington, D. C.

RESULTS OF THE INVESTIGATION OF THE OTOLITH FUNCTION IN MANNED SPACE FLIGHTS

L. N. Kornilova, G. D. Syrykh, I. K. Tarasov, and I. Ya. Yakovleva Jun. 1980 9 p refs Transl. into ENGLISH from Vestn. Otorino-Laringol. (USSR), no. 6, 1979 p 21-24 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by USSR Ministry of Health, Moscow
(Contract NASw-3198)
(NASA-TM-76103) Avail: NTIS HC A02/MF A01 CSCL 06P

The effects of conditions of long term and short term space flights on the otolith function of cosmonauts were investigated via pre and post examinations. The results show that after long term flight, the intensity of the otolith reflex increased and asymmetry occurred in the indicators of the otolith function. Large changes in terms of expression and duration in the indicators of the otolith function after long term flight as compared with short term flight were also noted. R.E.S.

N80-28047*# National Aeronautics and Space Administration, Washington, D. C.

CHARACTERISTICS OF ENZYMATIC INDUCTION PROVOKED BY CHLORDANE

A. Denys, E. Guilbert-Ber, and Jeanne Levy Jun. 1980 18 p refs Transl. into ENGLISH from Therapie (France), v. 30, 1975 p 277-288 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by Inst. of Pharmacology, Paris
(Contract NASw-3198)
(NASA-TM-76194) Avail: NTIS HC A02/MF A01 CSCL 06P

The effects of various stresses, such as restraint and lowering or raising of environmental temperature, in mice pretreated with chlordane were investigated. (Chlordane is an inhibitor of protein synthesis.) It was found that restraint or exposure to a cold environment for three hours mobilized the chlordane stored in the adipose tissue of mice. R.E.S.

N80-28048*# National Aeronautics and Space Administration, Washington, D. C.

CARDIOVASCULAR AND RESPIRATORY PHYSIOPATHOLOGICAL ASPECTS OF HYPOKINESIA

A. Dagianti Jun. 1980 26 p refs Transl. into ENGLISH from Recenti Progr. Med. (Italy), v. 52, no. 4, 1972 p 323-344 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76198) Avail: NTIS HC A03/MF A01 CSCL 06S

The many effects of hypokinesia on the human organism are described. The differences in normally mobile subjects and hypokinetic subjects as relates to heart rate, average humeral pressure, cardiac capacity, cardia index, systolic range, and large cycle resistances are discussed. It is concluded that further studies must be carried out in seven specific areas of cardiocirculatory damage due to hypokinesia. R.E.S.

N80-28049# Federal Aviation Administration, Washington, D. C. Office of Aviation Medicine.

EFFECTS OF OZONE ON EXERCISING AND SEDENTARY ADULT MEN AND WOMEN REPRESENTATIVE OF THE FLIGHT ATTENDANT POPULATION

E. A. Higgins, M. T. Lategola, J. M. McKenzie, C. E. Melton, and J. A. Vaughan Oct. 1979 106 p refs
(AD-A080045; FAA-AM-79-20) Avail: NTIS HC A06/MF A01 CSCL 06/16

Three studies at two ozone concentrations have been carried out in an attempt to define the effect level for ozone under simulated flight conditions. All experiments were carried out in an altitude chamber held at 6,000 feet MSL; relative humidity was kept at 10-12 percent and temperature at 68 - 74 F. Subjects paid were nonsmoking men and women in their third decade who had the anthropomorphic characteristics of airline flight attendants. All subjects were exposed to ozone in one experiment and to air only in another. Order of presentation of the experiments was balanced, and sessions were separated by 1 week. Study 1 consisted of exposure of 15 men and 12 women to 0.20 parts per million by volume (ppmv) ozone for 4 h with treadmill exercise for the last 10 min of each hour. In the second study 14 men and 14 women were exposed to 0.30 ppmv ozone for 3 h with 10 min exercise at the end of each hour. The third study consisted of exposure of 14 men and 14 women to 0.30 ppmv without exercise. Cardiopulmonary, performance, visual, and symptoms assessments were made. GRA

N80-28050# National Technical Information Service, Springfield, Va.

BIOLOGICAL EFFECTS OF MICROWAVES. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1978 - Apr. 1980

Elizabeth A. Harrison Apr. 1980 95 p Supersedes NTIS/PS-79/0433; NTIS/PS-78/0432
(PB80-808256; NTIS/PS-79/0433; NTIS/PS-78/0432) Copyright. Avail: NTIS HC $30.00/MF $30.00 CSCL 06R

The selected abstracts cover the biological effects on man and animals from exposure to microwaves. In addition to dosages and tolerances, regulations, and standards are included. This bibliography contains 88 abstracts, 43 of which are new entries to the previous edition. GRA

N80-28051# National Technical Information Service, Springfield, Va.

TOXICITY OF VINYL CHLORIDE. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1969 - Mar. 1980

Elizabeth A. Harrison Apr. 1980 102 p Supersedes NTIS/PS-79/0419; NTIS/PS-78/0442
(PB80-807662; NTIS/PS-79/0419; NTIS/PS-78/0442) Copyright. Avail: NTIS HC $30.00/MF $30.00 CSCL 06T

Research is cited on the health hazards from exposure to vinyl chloride and vinyl chloride resins. Studies are included on the epidemiology of industrial and public exposures to the compound and its degradation and combustion products. This updated bibliography contains 90 abstracts, 8 of which are new entries to the previous edition. GRA

N80-28052# National Technical Information Service, Springfield, Va.

ALTITUDE HYPOXIA. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1978 - Mar. 1980

Elizabeth A. Harrison Apr. 1980 47 p
(PB80-807696; NTIS/PS-79/0428; NTIS/PS-78/0443) Copyright. Avail: NTIS HC $30.00/MF $30.00 CSCL 06S

The selected abstracts of research reports cover stress physiology, narcosis, acceleration tolerance, adaptation (physiology), psychophysiology, respiration, metabolism, and cardiovascular system as applied to altitude hypoxia. This updated bibliography contains 40 abstracts, 23 of which are new entries to the previous edition. GRA

N80-28053 New York Univ., N. Y.

RESPONSE TIME, OPERATOR PRODUCTIVITY AND JOB SATISFACTION Ph.D. Thesis

Raymond Earle Barber 1979 117 p
Avail: Univ. Microfilms Order No. 8014200

The impact is examined of on-line system response time on operator productivity and job satisfaction. A user organization in Cincinnati, Ohio and its five on-line systems provided the environment for the study. The impact of response time on productivity suggests that all or nearly all (e.g., 98%) transactions should be completed in 12 seconds or less. Beyond this level, the user organization suffers severe penalties in lost productivity. When response times are less than six seconds, productivity is relatively flat. That is, the impact of response time on productivity is not as great when average response time is less than six seconds as it is when average response time is greater than six seconds. It is concluded that the normal operating range of the systems studied should be in the four to six second range. It was predicted, prior to the study, that all categories of job satisfaction would be adversely affected by longer response times. The results, however, indicate that response time has a mixed impact on job satisfaction. Some categories showed decreased satisfaction as predicted. Others, however, demonstrated an improvement in job satisfaction as response time increased. These were mainly categories dealing with interpersonal relationships. Based upon the results the implications of response time on system operation and system design are discussed. A method is suggested that would allow the response time models to be applied to other online systems. Desirable directions for future research are discussed in depth. Dissert. Abstr.

N80-28054# Perceptronics, Inc., Woodland Hills, Calif.

A CONCEPT FOR DEVELOPING HUMAN PERFORMANCE SPECIFICATIONS Final Report

Jonathan D. Kaplan and William H. Crooks Aberdeen Proving Ground, Md. Human Eng. Labs. Apr. 1980 47 p refs
(Contract DAAK11-79-C-0115)
(AD-A084617; PTR-2020-80-3; HEL-TM-7-80) Avail: NTIS HC A03/MF A01 CSCL 15/5

OMB Circular A-109 emphasizes the front end of systems acquisition with the intent of (1) expressing needs and program objectives in 'mission' terms rather than 'equipment' terms, and (2) allowing competitive exploration of alternative methods of meeting those needs. For human factors specialists to comply with these requirements, it will be necessary for them to produce explicit specifications for the critical human performance which is required for system performance. This paper presents a concept for producing these required human performance specifications prior to the initial design of a system. It also presents an example of a detailed human performance specification as well as Appendices containing material used to produce human performance specifications for various kinds of systems. GRA

N80-28055# National Bureau of Standards, Washington, D.C. Product Safety Technology Div.

A MATHEMATICAL MODEL FOR USE IN EVALUATING AND DEVELOPING IMPACT TEST METHODS FOR PROTECTIVE HEADGEAR

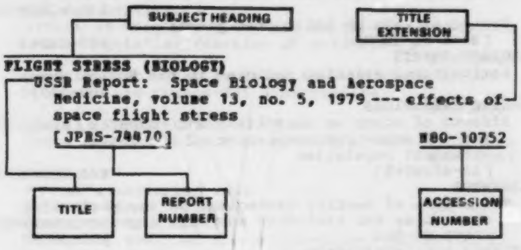
Robert E. Berger Oct. 1979 79 p
(PB80-164957; NBSIR-80-1987) Avail: NTIS HC A05/MF A01 CSCL 06Q

A lumped parameter mathematical model was developed to connect injury parameters in real life head impact environments to output parameters of test methods for evaluating protective headgear. Analytical/experimental schemes were developed for mathematically representing the parameters that characterize each of the three distinct elements of the model: the head or headform, the impact surface, and the helmet. The model was shown to be useful in determining test method pass/fail criteria which corresponds to the threshold of injury in the real life situation. GRA

SUBJECT INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 211)* OCTOBER 1980

Typical Subject Index Listing



The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

A-10 AIRCRAFT
Catecholamine excretion in A-10 pilots
A80-42007

ABSORBENTS
Molecular sieve generation of aviator's oxygen - Performance of a prototype system under simulated flight conditions
A80-42008

ACCELERATION STRESSES (PHYSIOLOGY)
Cardiovascular responses of man exposed to plus Gz accelerations in a centrifuge
A80-41885
Acceleration effects on pulmonary blood flow distribution using perfusion scintigraphy
A80-41985
The effect of sustained +Gz acceleration on extravascular lung water content in domestic fowl
A80-41999
Frank orthogonal vectorcardiograms in humans during and after exposure to +Gz acceleration stress
A80-42006
The architecture of the avian retina following exposure to chronic 2 G
A80-42013
Displacement of plasma protein and conduction velocity in rats under action of acceleration forces and hypokinesia
[NASA-TM-76195] N80-27989
Effect of transverse accelerations on innervation of the guinea pig's crural skeletal muscles
N80-28005

ACCELERATION TOLERANCE
Human tolerance to aerial combat maneuvers
A80-42005
Effect of prolonged +Gz accelerations on human performance
N80-28003
Functional state of the cardiovascular system under the combined effect of 28 day immersion, rotation on a short-arm centrifuge and exercise on a bicycle ergometer
N80-28025
The relation between tilt table and acceleration-tolerance and their dependence on stature and physical fitness
[NASA-TM-75796] N80-28042

ACTIVITY CYCLES (BIOLOGY)
Effect of an altered rest-activity or feeding schedule on the shift of motor activity rhythm of mice
A80-41884

ADAPTATION
Some problems of human adaptation and ecology under the aspect of general pathology
[NASA-TM-76095] N80-27076

ADRENAL GLAND
Effect of central neurotropic substances on the hypophysisadrenal cortex system during immobilization of animals
[NASA-TM-76158] N80-27982
Morphofunctional correlations in the experimental study of myocardiopathies under the stress of forced restraint. Note 2: The influence of adrenal imbalance
[NASA-TM-76138] N80-28040

ADRENAL METABOLISM
Morphofunctional correlations in the experimental study of myocardiopathies under the stress of forced restraint. Note 2: The influence of adrenal imbalance
[NASA-TM-76138] N80-28040

ADRENERGICS
Changes in the adrenergic regulation of thermogenesis during the long-term adaptation of rats to the cold
A80-41321

AERODYNAMIC CONFIGURATIONS
Biological and aerodynamic problems with the flight of animals
[NASA-TM-75337] N80-27985

AERODYNAMICS
Biological and aerodynamic problems with the flight of animals
[NASA-TM-75337] N80-27985

AEROSPACE ENVIRONMENTS
Space victualling
A80-41750

AEROSPACE MEDICINE
Electroencephalographic recordings during parachute jump sessions
A80-41877
Psychomotor performance during ozone exposure - Spectral and discriminant function analysis of EEG
A80-41879
Visual search performance during simulated radar observation with and without a sweepline
A80-41882
Cardiovascular responses of man exposed to plus Gz accelerations in a centrifuge
A80-41885
Identification of the minimum noise level capable of producing an asymptotic temporary threshold shift
[AMRL-TR-79-106] A80-41887
Effect of direction and rate of change of deep body and skin temperatures on performance of a rotary pursuit task
A80-41978
Respiratory gas exchange during positive pressure breathing and rapid decompression to simulated altitudes of 18.3 and 24.4 km
A80-41979
Combined effect of hypoxia and cold on the phospholipid composition of lung surfactant in rats
A80-41980
Agricultural aviation medicine in the Soviet Union
A80-41990
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995

Piracetam and fish orientation during parabolic aircraft flight
A80-41997

The effect of sustained +Gz acceleration on extravascular lung water content in domestic fowl
A80-41999

Human tolerance to aerial combat maneuvers
A80-42005

The classification of spinal column deformities resulting from aircraft ejection forces
[ASME PAPER 80-ENAS-44] A80-43218

USSR Report: Space Biology and Aerospace Medicine, volume 14, no. 3, 1980
[JPRS-75956] N80-27994

USSR Report. Space Biology and Aerospace medicine, volume 14, no. 2, 1980
[JPRS-75654] N80-28015

Results of the investigation of the otolith function in manned space flights
[NASA-TM-76103] N80-28046

AGRICULTURE

Agricultural aviation medicine in the Soviet Union
A80-41990

AIR POLLUTION

Effects of ozone on exercising and sedentary adult men and women representative of the flight attendant population
[AD-A080045] N80-28049

AIR PURIFICATION

A history of the Naval Research Laboratory contributions to submarine life support systems
[ASME PAPER 80-ENAS-29] A80-43205

AIR QUALITY

The factors influencing the formation of Li2CO3 from LiOH and CO2
[ASME PAPER 80-ENAS-45] A80-43219

AIR SAMPLING

Atmospheric monitoring in submersibles
[ASME PAPER 80-ENAS-31] A80-43206

A monitor for atmospheric composition and contaminants in closed environments
[ASME PAPER 80-ENAS-35] A80-43210

AIR TRAFFIC CONTROL

Air traffic control stress and its effects - An investigation at Manchester airport
A80-40978

NASA TLA workload analysis support. Volume 2: Metering and spacing studies validation data
[NASA-CR-3239] N80-27091

NASA TLA workload analysis support. Volume 3: FFD autopilot scenario validation data
[NASA-CR-3240] N80-27093

AIR TRAFFIC CONTROLLERS (PERSONNEL)

Air traffic control stress and its effects - An investigation at Manchester airport
A80-40978

Toward the development of a new aptitude selection test battery for air traffic control specialists
A80-42011

AIR TRANSPORTATION

Aeromedical transportation of psychiatric patients - Historical review and present management
A80-42014

Air transport of the man who needs everything
A80-42015

AIRCRAFT CONTROL

Optimal control model predictions of system performance and attention allocation and their experimental validation in a display design study
A80-40899

An analytical evaluation method of manual control system utilizing human pilot model
A80-41051

Mathematical model for evaluating human operator activity in solving the problem of limiting controllability in an ergatic control and monitoring system
A80-42349

AIRCRAFT INSTRUMENTS

Some aspects of application of the systemic approach to aviation engineering psychology
N80-28002

AIRCRAFT NOISE

Community reactions to aircraft noise in the vicinity of airport: A comparative study of the social surveys using interview method
[NASA-TM-75439] N80-27090

AIRCRAFT PILOTS

Agricultural aviation medicine in the Soviet Union
A80-41990

Thresholds for detection of constant rotary acceleration during vibratory rotary acceleration
A80-42003

Catecholamine excretion in A-10 pilots
A80-42007

Molecular sieve generation of aviator's oxygen - Performance of a prototype system under simulated flight conditions
A80-42008

Vertebral pain in helicopter pilots
[NASA-TM-75792] N80-28043

AIRCRAFT SAFETY

Agricultural aviation medicine in the Soviet Union
A80-41990

AIRLINE OPERATIONS

Effects of ozone on exercising and sedentary adult men and women representative of the flight attendant population
[AD-A080045] N80-28049

ALERTNESS

The effect of hearing protectors on the perception of warning and indicator sounds: A general review
[ISVR-TR-98] N80-27087

ALTITUDE ACCLIMATIZATION

Changes in pulmonary PV characteristics of human subjects at an altitude of 5,366 m
A80-43153

ALTITUDE SICKNESS

Evaluation of an acute mountain sickness questionnaire - Effects of intermediate-altitude staging upon subjective symptomatology
A80-41886

Relation of breathing oxygen-argon gas mixtures to altitude decompression sickness
A80-41992

ALTITUDE SIMULATION

Performance effects of alcohol intoxication and hangover at ground level and at simulated altitude
A80-41876

Absolute and relative work capacity in women at 758, 586, and 523 torr barometric pressure
A80-41977

Respiratory gas exchange during positive pressure breathing and rapid decompression to simulated altitudes of 18.3 and 24.4 km
A80-41979

ALTITUDE TOLERANCE

Altitude hypoxia. Citations from the NTIS data base
[PB80-807696] N80-28052

ALVEOLI

Ambiguous response of lung lamellar bodies to sauna-like heat stress in two age groups of adult male rats
A80-41993

Alveolar macrophages and pulmonary surfactant of altitude-raised rats
A80-42012

AMINO ACIDS

State of human bone tissue protein fraction after space flights
N80-28018

ANGULAR ACCELERATION

Thresholds for detection of constant rotary acceleration during vibratory rotary acceleration
A80-42003

ANIMALS

The development of a Space Shuttle Research Animal Holding Facility
[ASME PAPER 80-ENAS-39] A80-43213

ANTIGRAVITY

The use of antigravity suits in the treatment of idiopathic orthostatic hypotension
[NASA-TM-75804] N80-27077

APTITUDE

Toward the development of a new aptitude selection test battery for air traffic control specialists
A80-42011

ARGON-OXYGEN ATMOSPHERES

Relation of breathing oxygen-argon gas mixtures to altitude decompression sickness
A80-41992

ARRHYTHMIA
Electrocardiographic exercise testing and ambulatory monitoring to identify patients with ischemic heart disease at high risk of sudden death A80-40546
ARTERIOSCLEROSIS
Experimental coronary sclerosis induced by immobilization of rabbits: A new model of arteriosclerosis [NASA-TM-76196] N80-27990
ARTIFICIAL GRAVITY
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys N80-27999
Semicircular canal function in rats after flight aboard the Cosmos-936 biosatellite N80-28021
ARTIFICIAL INTELLIGENCE
The ergatic intellect of electrical energy systems A80-42347
ASTRIONICS
Manned maneuvering unit [DGLR PAPER 80-081] A80-41761
ASTRONOMICAL TELESCOPES
Exemplary model of an eye-telescope system for the detection of manned spacecraft on a background of stars A80-42344
ATHLETES
Myocardial dystrophy in athletes --- Russian book A80-42935
ATMOSPHERIC COMPOSITION
Atmospheric monitoring for submarine applications [ASME PAPER 80-ENAS-33] A80-43208
A monitor for atmospheric composition and contaminants in closed environments [ASME PAPER 80-ENAS-35] A80-43210
ATMOSPHERIC PRESSURE
Absolute and relative work capacity in women at 758, 586, and 523 torr barometric pressure A80-41977
ATTACKING (ASSAULTING)
Catecholamine excretion in A-10 pilots A80-42007
AUDITORY PERCEPTION
The effect of hearing protectors on the perception of warning and indicator sounds: A general review [ISVR-TR-98] N80-27087
AUDITORY STIMULI
Nonlinearities in auditory-nerve fiber responses to bandlimited noise: An experimental study and a model N80-28037
AUTOMATIC PILOTS
NASA TLA workload analysis support. Volume 3: FFD autopilot scenario validation data [NASA-CR-3240] N80-27093
AVIONICS
Some aspects of application of the systemic approach to aviation engineering psychology N80-28002

B

BACTERIA
The intracellular Na/+/ and K/+/ composition of the moderately halophilic bacterium, Paracoccus halodenitrificans A80-41250
BANDWIDTH
Nonlinearities in auditory-nerve fiber responses to bandlimited noise: An experimental study and a model N80-28037
BIBLIOGRAPHIES
Biological effects of microwaves. Citations from the NTIS data base [PB80-808256] N80-28050
Toxicity of vinyl chloride. Citations from the NTIS data base [PB80-807662] N80-28051
Altitude hypoxia. Citations from the NTIS data base [PB80-807696] N80-28052
BIOACOUSTICS
The effect of hearing protectors on the perception of warning and indicator sounds: A general review [ISVR-TR-98] N80-27087
BIOASSAY
Isolation and gas chromatographic demonstration of volatile organic substances in thin-layer biological samples N80-28014
BIOASTRONAUTICS
Postflight studies on fungal phenotypes irradiated in space A80-43011
Evaluation of biological models using Spacelab [ASME PAPER 80-ENAS-38] A80-43212
The development of a Space Shuttle Research Animal Holding Facility [ASME PAPER 80-ENAS-39] A80-43213
Experiment operations in Spacelab --- for life study in space environment [ASME PAPER 80-ENAS-40] A80-43214
BIOCHEMISTRY
Evaluation of biological models using Spacelab [ASME PAPER 80-ENAS-38] A80-43212
Countercurrent distribution of biological cells [NASA-CR-161487] N80-27069
Biochemical bases of pathogenesis of hypokinesia N80-27995
BIODYNAMICS
A technique for estimating the contribution of photomechanical responses to visual adaptation A80-41645
Active muscle torques about long-bone axes of major human joints A80-41994
BIOELECTRICITY
Bioelectric activity of the human brain during and after 182-day anitorthosatic hypokinesia N80-28027
BIOINSTRUMENTATION
Method and automated apparatus for detecting coliform organisms [NASA-CASE-MSC-16777-1] N80-27067
Simultaneous muscle force and displacement transducer [NASA-CASE-NPO-14212-1] N80-27072
An implantable electrical device [NASA-CASE-GSC-12560-1] N80-27073
BIOLOGICAL EFFECTS
Magnetic field on humans: Epidemiological study design, part 2 [LBL-9357-PT-2] N80-27081
Community reactions to aircraft noise in the vicinity of airport: A comparative study of the social surveys using interview method [NASA-TM-75439] N80-27090
USSR Report: Space Biology and Aerospace Medicine, volume 14, no. 3, 1980 [JPRS-75956] N80-27994
USSR Report. Space Biology and Aerospace medicine, volume 14, no. 2, 1980 [JPRS-75654] N80-28015
Research hardware and habitat of animals used in experiment aboard Cosmos-936 biosatellite N80-28019
Biological effects of microwaves. Citations from the NTIS data base [PB80-808256] N80-28050
BIOLOGICAL EVOLUTION
Life sciences experiments on Spacelab 1 [ASME PAPER 80-ENAS-36] A80-43211
Evaluation of biological models using Spacelab [ASME PAPER 80-ENAS-38] A80-43212
BIOMASS
Study of compatilibity of certain higher plants and chlorella as related to a bioregenerative human life support system N80-28033
BIOMEDICAL DATA
Adaptive delta modulation for telephone biotelemetry of ECG (electrocardiograph) [PB80-160773] N80-27089
BIOMETRICS
Simultaneous muscle force and displacement transducer [NASA-CASE-NPO-14212-1] N80-27072
Error analysis and corrections to pupil diameter measurements with Langley Research Center's oculometer [NASA-TM-81806] N80-27075

Effect of immobilization on the EEG of the baboon. Comparison with telemetry results from unrestricted animals [NASA-TM-76137] N80-27987

BIONICS
Evaluation of biological models using Spacelab [ASME PAPER 80-ENAS-38] A80-43212

BIOTELEMETRY
Adaptive delta modulation for telephone biotelemetry of ECG (electrocardiograph) [PB80-160773] N80-27089

BIRDS
The growth of birdwings [NASA-TM-75821] N80-27986

BIRTH
An attempted validation study of the birthdate-based biorhythm /BBB/ hypothesis A80-42000

BLOOD CIRCULATION
Circulation in exercising crew members of the first main expedition aboard Salyut-6 N80-27997
Hemodynamics and phase structure of the cardiac cycle in members of the first crew of Salyut-5 at rest --- effects of hypokinesia and weightlessness N80-27998
Effect of prolonged +Gz accelerations on human performance N80-28003
Studies of prognostic significance of antiorthostatic position N80-28006
Regional redistribution of rat blood after 7 and 30 days of hypokinesia N80-28009
Method for assessing hemodynamics and detecting latent insufficiency of cerebral circulation in cosmonaut candidates N80-28012
Circulation at rest in crew members of the first main expedition aboard Salyut 6 N80-28017

BLOOD COAGULATION
Effects of hypodynamia on the hemocoagulative properties of the vascular wall and myocardium [NASA-TM-76199] N80-27992

BLOOD FLOW
Review - The role of pulse oscillations of intravascular pressure in the regulation of blood circulation A80-41318
Comparison of reactive hyperemia in warm and cool human forearms over a range of ischemic periods A80-41982
Results of studies of pulsed blood flow and regional vascular tonus during flights in the first and second expeditions aboard the Salyut-6-Soyuz orbital complex --- effects of weightlessness N80-27996

BLOOD PLASMA
Na+ and Ca2+ ingestion - Plasma volume-electrolyte distribution at rest and exercise A80-41661
The behavior of fatty acids in the blood plasma of monkeys following exposure to short term stresses [NASA-TM-76151] N80-27079

BLOOD PRESSURE
Review - The role of pulse oscillations of intravascular pressure in the regulation of blood circulation A80-41318

BLOOD VESSELS
Displacement of plasma protein and conduction velocity in rats under action of acceleration forces and hypokinesia [NASA-TM-76195] N80-27989
Effects of hypodynamia on the hemocoagulative properties of the vascular wall and myocardium [NASA-TM-76199] N80-27992

BLOOD VOLUME
Red blood cell count /RCC/ and volume /MCV/ of three subjects in a hypobaric chamber A80-41998
Regional redistribution of rat blood after 7 and 30 days of hypokinesia N80-28009

BODY FLUIDS
Is the weight loss of hyperbaric habitation a disorder of osmoregulation A80-41888
The effect of sustained +Gz acceleration on extravascular lung water content in domestic fowl A80-41999
Instrumentation for the measurement of viscosity and flow of biological fluids --- neuclear magnetic resonance N80-27980
Mechanisms of water-salt metabolism disturbances in dogs subjected to six month hypokinesia [NASA-TM-76170] N80-27984

BODY KINEMATICS
Imitation of locomotion under conditions of weightlessness A80-40846
The stress reaction to hypokinesia and its effect on general resistance N80-28008

BODY MEASUREMENT (BIOLOGY)
The growth of birdwings [NASA-TM-75821] N80-27986

BODY TEMPERATURE
Changes in the adrenergic regulation of thermogenesis during the long-term adaptation of rats to the cold A80-41321
Effect of induced cyclic changes of deep body temperature on performance in a flight simulator A80-41881
Effect of direction and rate of change of deep body and skin temperatures on performance of a rotary pursuit task A80-41978

BODY WEIGHT
Is the weight loss of hyperbaric habitation a disorder of osmoregulation A80-41888

BONE MINERAL CONTENT
State of human bone tissue protein fraction after space flights N80-28018

BONES
Active muscle torques about long-bone axes of major human joints A80-41994

BRAIN
Rhesus brain gas tension and learned task performance responses to normoxic and hyperoxic breathing [AMRL-TR-105] A80-41880
Studies of prognostic significance of antiorthostatic position N80-28006

BRAIN CIRCULATION
Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period A80-41320
The effect of the acute ischemia of the brain on the permeability of the hemato-ophthalmic barrier A80-42051
Method for assessing hemodynamics and detecting latent insufficiency of cerebral circulation in cosmonaut candidates N80-28012

BURNS (INJURIES)
Rocket plume burn hazard A80-41984

C

C-135 AIRCRAFT
Piracetam and fish orientation during parabolic aircraft flight A80-41997

CADMIUM TELLURIDES
CdTe ambulatory ventricular function monitor [CONF-791037-26] N80-27083

CALCIFICATION
The effect of hypodynamia on mineral and protein metabolism in calcified tissues of the maxillodental system (experimental radioisotope study) [NASA-TM-75998] N80-27078

CALCIUM
- Na+ and Ca2+ ingestion - Plasma volume-electrolyte distribution at rest and exercise A80-41661

CALCIUM METABOLISM
- State of rat thyroid C cells following flights on the Cosmos type of biosatellites (according to results of a morphological study) --- effects of weightlessness N80-28001

CALIBRATING
- Development of a method for the traceable calibration of defibrillator energy meters [NPL-DES-55] N80-27085

CALORIMETERS
- Development of a method for the traceable calibration of defibrillator energy meters [NPL-DES-55] N80-27085

CARBOHYDRATE METABOLISM
- Effect of hypokinesia on changes in carbohydrate and lipid metabolism in the heart and liver N80-28029

CARBON DIOXIDE
- The factors influencing the formation of Li2CO3 from LiOH and CO2 [ASME PAPER 80-ENAS-45] A80-43219

CARBON DIOXIDE CONCENTRATION
- Carbon dioxide effects on submarines [ASME PAPER 80-ENAS-32] A80-43207

CARDIOLOGY
- Absolute and relative work capacity in women at 758, 586, and 523 torr barometric pressure A80-41977

CARDIOVASCULAR SYSTEM
- Cardiovascular responses of man exposed to plus Gz accelerations in a centrifuge A80-41885
- Interactions between surface cooling and LBNP-induced central hypovolemia --- Lower Body Negative Pressure A80-41987
- Circulation at rest in crew members of the first main expedition aboard Salyut 6 N80-28017
- Functional state of the cardiovascular system under the combined effect of 28 day immersion, rotation on a short-arm centrifuge and exercise on a bicycle ergometer N80-28025
- Cardiovascular and respiratory physiopathological aspects of hypokinesia [NASA-TM-76198] N80-28048

CAROTID SINUS BODY
- Interaction of dopamine and haloperidol with O2 and CO2 chemoreception in carotid body A80-43152

CATALYSIS
- Water recovery by catalytic treatment of urine vapor [ASME PAPER 80-ENAS-16] A80-43192

CATECHOLAMINE
- Changes in the adrenergic regulation of thermogenesis during the long-term adaptation of rats to the cold A80-41321
- Catecholamine excretion in A-10 pilots A80-42007
- Interaction of dopamine and haloperidol with O2 and CO2 chemoreception in carotid body A80-43152
- The content of catecholamines in the adrenal glands and sections of the brain under hypokinesia and injection of some neurotropic agents [NASA-TM-76010] N80-28044

CELLS (BIOLOGY)
- Postflight studies on fungal phenotypes irradiated in space A80-43011
- Countercurrent distribution of biological cells [NASA-CR-161487] N80-27069

CENTRAL NERVOUS SYSTEM
- Bioelectric activity of the human brain during and after 182-day anitorthosatic hypokinesia N80-28027

CENTRAL NERVOUS SYSTEM DEPRESSANTS
- Effect of central neurotropic substances on the hypophysisadrenal cortex system during immobilization of animals [NASA-TM-76158] N80-27982

CENTRIFUGING STRESS
- Effects of chronic centrifugation on skeletal muscle fibers in young developing rats A80-41983
- Functional state of the cardiovascular system under the combined effect of 28 day immersion, rotation on a short-arm centrifuge and exercise on a bicycle ergometer N80-28025

CHEMICAL REACTIONS
- The factors influencing the formation of Li2CO3 from LiOH and CO2 [ASME PAPER 80-ENAS-45] A80-43219

CHEMORECEPTORS
- Interaction of dopamine and haloperidol with O2 and CO2 chemoreception in carotid body A80-43152

CHLORELLA
- Study of compatilibity of certain higher plants and chlorella as related to a bioregenerative human life support system N80-28033

CHRONIC CONDITIONS
- Effects of chronic centrifugation on skeletal muscle fibers in young developing rats A80-41983

CIRCADIAN RHYTHMS
- Effect of an altered rest-activity or feeding schedule on the shift of motor activity rhythm of mice A80-41884

CIRCULATORY SYSTEM
- Review - The role of pulse oscillations of intravascular pressure in the regulation of blood circulation A80-41318
- Circulation at rest in crew members of the first main expedition aboard Salyut 6 N80-28017

CIVIL AVIATION
- Agricultural aviation medicine in the Soviet Union A80-41990
- Disorders of the menstrual cycle in airline stewardesses A80-41991

CLINICAL MEDICINE
- Review - The role of pulse oscillations of intravascular pressure in the regulation of blood circulation A80-41318
- Evaluation of an acute mountain sickness questionnaire - Effects of intermediate-altitude staging upon subjective symptomatology A80-41886
- Minimizing the psychological effects of a wartime disaster on an individual A80-41890
- Red blood cell count /RCC/ and volume /MCV/ of three subjects in a hypobaric chamber A80-41998
- Frank orthogonal vectorcardiograms in humans during and after exposure to +Gz acceleration stress A80-42006
- Aeromedical transportation of psychiatric patients - Historical review and present management A80-42014
- Air transport of the man who needs everything A80-42015
- The use of antigravity suits in the treatment of idiopathic orthostatic hypotension [NASA-TM-75804] N80-27077
- Modified conjugate counting technique for quantitative measurement of radioactivity in vivo [CONF-790782-1] N80-27084
- Vertebral pain in helicopter pilots [NASA-TM-75792] N80-28043

CLOSED ECOLOGICAL SYSTEMS
- Postflight studies on fungal phenotypes irradiated in space A80-43011
- Study of compatilibity of certain higher plants and chlorella as related to a bioregenerative human life support system N80-28033

COCKPIT SIMULATORS
Pickup of visual information by the pilot during a ground control approach in a fighter aircraft simulator
A80-41981
COLD ACCLIMATIZATION
Changes in the adrenergic regulation of thermogenesis during the long-term adaptation of rats to the cold
A80-41321
COLD TOLERANCE
Combined effect of hypoxia and cold on the phospholipid composition of lung surfactant in rats
A80-41980
COLD WEATHER
Physiological effects of cold air inhalation during exercise
A80-42001
COLOR VISION
Human color discriminating function with muscular tension during exposure to vestibular stimuli
N80-28004
COMBAT
Human tolerance to aerial combat maneuvers
A80-42005
COMETS
Comets - A matter of life and death /Milne Lecture/
A80-41002
COMPLEX SYSTEMS
The ergatic intellect of electrical energy systems
A80-42347
COMPUTER GRAPHICS
Dynamic decisions and work load in multitask supervisory control
A80-40898
CONTACT LENSES
Transient diffusion in multi-layer biological tissue
N80-27979
CONTROL STABILITY
An analytical evaluation method of manual control system utilizing human pilot model
A80-41051
CONTROL STICKS
Performance effects of alcohol intoxication and hangover at ground level and at simulated altitude
A80-41876
CONTROL THEORY
Mathematical model for evaluating human operator activity in solving the problem of limiting controllability in an ergatic control and monitoring system
A80-42349
CONTROL VALVES
Maintainable maintenance disconnect valve /MMDV/ for on-orbit component replacement
[ASME PAPER 80-ENAS-42] A80-43216
CONTROLLABILITY
Mathematical model for evaluating human operator activity in solving the problem of limiting controllability in an ergatic control and monitoring system
A80-42349
CONTROLLED ATMOSPHERES
A history of the Naval Research Laboratory contributions to submarine life support systems
[ASME PAPER 80-ENAS-29] A80-43205
Atmospheric monitoring in submersibles
[ASME PAPER 80-ENAS-31] A80-43206
Atmospheric monitoring for submarine applications
[ASME PAPER 80-ENAS-33] A80-43208
A monitor for atmospheric composition and contaminants in closed environments
[ASME PAPER 80-ENAS-35] A80-43210
O2 sensing for environmental control and monitoring systems
[ASME PAPER 80-ENAS-41] A80-43215
COOLING
Effect of direction and rate of change of deep body and skin temperatures on performance of a rotary pursuit task
A80-41978
COORDINATION
Device for measuring the precision of eye-hand coordination while tracking changing size
A80-42010
CORONARY ARTERY DISEASE
Diagnosis of coronary artery disease with exercise radionuclide imaging - State of the art
A80-40547
Use of the multivariate approach to enhance the diagnostic accuracy of the treadmill stress test
A80-42098
Experimental coronary sclerosis induced by immobilization of rabbits: A new model of arteriosclerosis
[NASA-TM-76196] N80-27990
Morphofunctional correlations in the experimental study of myocardiopathies under the stress of forced restraint. Note 2: The influence of adrenal imbalance
[NASA-TM-76138] N80-28040
Mechanism of selective lesion of the cardiovascular system in psycho-emotional stress
[NASA-TM-76035] N80-28045
COSMIC RAYS
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995
COSMONAUTS
Method for assessing hemodynamics and detecting latent insufficiency of cerebral circulation in cosmonaut candidates
N80-28012
COSMOS SATELLITES
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995
CREATIVITY
Some problems in pattern detection --- human creativity
A80-42346
CREWS
The morale climate of the crew (from observations of a submarine doctor)
[NASA-TM-76094] N80-27092
CYTOLOGY
Energy status and oxidation reduction status in rat liver at high altitude /3.8 km/
A80-42002

D

DARK ADAPTATION
Brightness exponent as a function of retinal eccentricity in the peripheral visual field - Effects of dark and light adaptation
A80-41139
DATA PROCESSING
On-line analysis of eye movements using a digital computer
A80-41996
DECISION MAKING
Dynamic decisions and work load in multitask supervisory control
A80-40898
DECOMPRESSION SICKNESS
Relation of breathing oxygen-argon gas mixtures to altitude decompression sickness
A80-41992
DECONDITIONING
Dynamics of human external respiration and blood gases under the combined effect of hypercapnia and hypoxia
N80-28024
DEHYDRATED FOOD
The question of using dehydrated foods during long-term space flights
N80-28031
DELTA MODULATION
Adaptive delta modulation for telephone biotelemetry of ECG (electrocardiograph)
[PB80-160773] N80-27089
DIAGNOSIS
Diagnosis of coronary artery disease with exercise radionuclide imaging - State of the art
A80-40547
DIETS
The question of using dehydrated foods during long-term space flights
N80-28031
DIGITAL TECHNIQUES
On-line analysis of eye movements using a digital computer
A80-41996

DISCONNECT DEVICES
Maintainable maintenance disconnect valve /MMDV/ for on-orbit component replacement
[ASME PAPER 80-ENAS-42] A80-43216

DISPLACEMENT MEASUREMENT
Simultaneous muscle force and displacement transducer
[NASA-CASE-NPO-14212-1] N80-27072

DISPLAY DEVICES
Optimal control model predictions of system performance and attention allocation and their experimental validation in a display design study
A80-40899
Pickup of visual information by the pilot during a ground control approach in a fighter aircraft simulator
A80-41981
Overview of human engineering considerations for electro-optical displays
A80-42846

DIURNAL VARIATIONS
The organization of the sleep-wakefulness cycle according to data obtained by the continuous daily monitoring of heart rhythm and motor activity
A80-41319

DIVING (UNDERWATER)
Respiration and gas exchange under hyperbaric conditions
N80-28016

DRINKING
Na^+ and Ca^{2+} ingestion - Plasma volume-electrolyte distribution at rest and exercise
A80-41661

DRUGS
Effect of psychotropic drugs on gastric ulcers induced by immobilization: Increased protective effect of amitriptyline caused by chlordiazepoxide
[NASA-TM-76197] N80-27991

DRY HEAT
Physiological responses of men and women to humid and dry heat
A80-43151

DYNAMIC CONTROL
Imitation of locomotion under conditions of weightlessness
A80-40846

E

EAR PROTECTORS
The effect of hearing protectors on the perception of warning and indicator sounds: A general review
[ISVR-TR-98] N80-27087

EARTH (PLANET)
Comets - A matter of life and death /Milne Lecture/
A80-41002

ECOLOGY
Some problems of human adaptation and ecology under the aspect of general pathology
[NASA-TM-76095] N80-27076
Primary productivity, heterotrophy, metabolic indicators of stress and interactions in algal-bacterial mat communities affected by a fluctuating thermal regime
[DP-MS-80-14] N80-27082
The growth of birdwings
[NASA-TM-75821] N80-27986

EFFERENT NERVOUS SYSTEMS
The organization of the sleep-wakefulness cycle according to data obtained by the continuous daily monitoring of heart rhythm and motor activity
A80-41319

EJECTION INJURIES
The classification of spinal column deformities resulting from aircraft ejection forces
[ASME PAPER 80-ENAS-44] A80-43218

EJECTION SEATS
Rocket plume burn hazard
A80-41984

ELECTRIC POWER SUPPLIES
The ergatic intellect of electrical energy systems
A80-42347

ELECTRO-OPTICS
Overview of human engineering considerations for electro-optical displays
A80-42846

ELECTROCARDIOGRAPHY
Electrocardiographic exercise testing and ambulatory monitoring to identify patients with ischemic heart disease at high risk of sudden death
A80-40546
CdTe ambulatory ventricular function monitor
[CONF-791037-26] N80-27083

ELECTROENCEPHALOGRAPHY
Electroencephalographic recordings during parachute jump sessions
A80-41877
Psychomotor performance during ozone exposure - Spectral and discriminant function analysis of EEG
A80-41879

ELECTROLYTE METABOLISM
Na^+ and Ca^{2+} ingestion - Plasma volume-electrolyte distribution at rest and exercise
A80-41661
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys
N80-27999
Morphometric analysis of glomerules and juxtaglomerula system of the rat kidney in the course of experimental hypokinesia
N80-28028

ELECTRONIC EQUIPMENT
Environmental control of a pressurized equipment container for Shuttle flights - The Spacelab Igloo
[ASME PAPER 80-ENAS-19] A80-43195
An evaluation of microwave emissions from sensormatic electronic security systems
[PB80-155385] N80-27088

ELECTRONYSTAGMOGRAPHY
On-line analysis of eye movements using a digital computer
A80-41996
Generalized nystagmometric characteristics for diagnostic purposes
N80-28034

ELECTROPHORESIS
Countercurrent distribution of biological cells
[NASA-CR-161487] N80-27069

ELECTROPHYSIOLOGY
Effect of immobilization on the EEG of the baboon. Comparison with telemetry results from unrestricted animals
[NASA-TM-76137] N80-27987

EMERGENCY LIFE SUSTAINING SYSTEMS
A Portable Oxygen Subsystem - Description and preliminary thermal performance prediction
[ASME PAPER 80-ENAS-7] A80-43184
Anti-exposure suits in the VP community --- for fixed wing patrol aircraft
[ASME PAPER 80-ENAS-43] A80-43217

ENCLOSURES
The development of a Space Shuttle Research Animal Holding Facility
[ASME PAPER 80-ENAS-39] A80-43213

ENDOCRINOLOGY
Effect of sharply lowered muscular activity on the thyroid gland of the white rat
[NASA-TM-76114] N80-27070

ENVIRONMENT EFFECTS
Primary productivity, heterotrophy, metabolic indicators of stress and interactions in algal-bacterial mat communities affected by a fluctuating thermal regime
[DP-MS-80-14] N80-27082

ENVIRONMENTAL CONTROL
Environmental control of a pressurized equipment container for Shuttle flights - The Spacelab Igloo
[ASME PAPER 80-ENAS-19] A80-43195
O_2 sensing for environmental control and monitoring systems
[ASME PAPER 80-ENAS-41] A80-43215
The factors influencing the formation of Li_2CO_3 from LiOH and CO_2
[ASME PAPER 80-ENAS-45] A80-43219
Research hardware and habitat of animals used in experiment aboard Cosmos-936 biosatellite
N80-28019
Principal results of physiological experiments with mammals aboard the Cosmos-936 biosatellite
N80-28020
Semicircular canal function in rats after flight aboard the Cosmos-936 biosatellite
N80-28021

ENVIRONMENTAL MONITORING
Atmospheric monitoring in submersibles [ASME PAPER 80-ENAS-31] A80-43206
Atmospheric monitoring for submarine applications [ASME PAPER 80-ENAS-33] A80-43208
A monitor for atmospheric composition and contaminants in closed environments [ASME PAPER 80-ENAS-35] A80-43210
O2 sensing for environmental control and monitoring systems [ASME PAPER 80-ENAS-41] A80-43215

ENZYME ACTIVITY
Activity of some hepatic enzymes and lipogenetic processes in rat aipose tissue after space flight --- effects of weightlessness N80-28000
Secretion, incretion and resecretion of pancreatic lipase during prolonged restriction of motor activity N80-28010
Effect of hypokinesia on invertase activity of the mucosa of the small intestine [NASA-TM-76191] N80-28039
Characteristics of enzymatic induction provoked by chlordane [NASA-TM-76194] N80-28047

ENZYMOLOGY
Energy status and oxidation reduction status in rat liver at high altitude /3.8 km/ A80-42002

EPINEPHRINE
Calorigenic effect of adrenaline in rats under conditions of restricted motor activity [NASA-TM-76192] N80-27988

ERYTHROCYTES
Red blood cell count /RCC/ and volume /MCV/ of three subjects in a hypobaric chamber A80-41998

ETHYL ALCOHOL
Performance effects of alcohol intoxication and hangover at ground level and at simulated altitude A80-41876

EUROPEAN SPACE PROGRAMS
Life sciences experiments on Spacelab 1 [ASME PAPER 80-ENAS-36] A80-43211

EXOBIOLOGY
USSR Report: Space Biology and Aerospace Medicine, volume 14, no. 3, 1980 [JPRS-75956] N80-27994
USSR Report. Space Biology and Aerospace medicine, volume 14, no. 2, 1980 [JPRS-75654] N80-28015

EXPOSURE
Magnetic field on humans: Epidemiological study design, part 2 [LBL-9357-PT-2] N80-27081

EXTRAVEHICULAR ACTIVITY
Manned maneuvering unit [DGLR PAPER 80-081] A80-41761

EXTRAVEHICULAR MOBILITY UNITS
Manned maneuvering unit [DGLR PAPER 80-081] A80-41761

EYE (ANATOMY)
The effect of the acute ischemia of the brain on the permeability of the hemato-ophthalmic barrier A80-42051
Transient diffusion in multi-layer biological tissue N80-27979

EYE MOVEMENTS
Target position and velocity - The stimuli for smooth pursuit eye movements A80-41646
Visual search performance during simulated radar observation with and without a sweepline A80-41882
Device for measuring the precision of eye-hand coordination while tracking changing size A80-42010
Generalized nystagmometric characteristics for diagnostic purposes N80-28034

F

F-15 AIRCRAFT
Development, test, and evaluation of an advanced anti-G valve for the F-15 A80-41988

FATTY ACIDS
The behavior of fatty acids in the blood plasma of monkeys following exposure to short term stresses [NASA-TM-76151] N80-27079

FEEDBACK CONTROL
An analytical evaluation method of manual control system utilizing human pilot model A80-41051

FEMALES
Absolute and relative work capacity in women at 758, 586, and 523 torr barometric pressure A80-41977
Aerobic power and body fat of men and women during army basic training A80-41986
Disorders of the menstrual cycle in airline stewardesses A80-41991
Physiological responses of men and women to humid and dry heat A80-43151

FIGHTER AIRCRAFT
Pickup of visual information by the pilot during a ground control approach in a fighter aircraft simulator A80-41981
Human tolerance to aerial combat maneuvers A80-42005
Molecular sieve generation of aviator's oxygen - Performance of a prototype system under simulated flight conditions A80-42008

FLIGHT CONDITIONS
Human color discriminating function with muscular tension during exposure to vestibular stimuli N80-28004

FLIGHT CREWS
Effect of induced cyclic changes of deep body temperature on performance in a flight simulator A80-41881
Disorders of the menstrual cycle in airline stewardesses A80-41991

FLIGHT HAZARDS
Rocket plume burn hazard A80-41984

FLIGHT MECHANICS
Biological and aerodynamic problems with the flight of animals [NASA-TM-75337] N80-27985

FLIGHT SIMULATORS
Effect of induced cyclic changes of deep body temperature on performance in a flight simulator A80-41881
Thresholds for detection of constant rotary acceleration during vibratory rotary acceleration A80-42003

FLIGHT STRESS (BIOLOGY)
Acceleration effects on pulmonary blood flow distribution using perfusion scintigraphy A80-41985
Disorders of the menstrual cycle in airline stewardesses A80-41991
Catecholamine excretion in A-10 pilots A80-42007

FLIGHT TRAINING
The effect of psychic self-regulation /autogenous training/ on the maintenance of the professional skill of pilots A80-42345
Applied behavior analysis in flying research [AD-A081750] N80-27094

FLUID FLOW
Instrumentation for the measurement of viscosity and flow of biological fluids --- neuclear magnetic resonance N80-27980

FLYING PERSONNEL
Identification of the minimum noise level capable of producing an asymptotic temporary threshold shift [AMRL-TR-79-106] A80-41887

FOREARM
Comparison of reactive hyperemia in warm and cool human forearms over a range of ischemic periods A80-41982

FUNGI
Postflight studies on fungal phenotypes irradiated in space
A80-43011

G

GAS CHROMATOGRAPHY
Isolation and gas chromatographic demonstration of volatile organic substances in thin-layer biological samples
N80-28014

GAS COMPOSITION
Atmospheric monitoring for submarine applications
[ASME PAPER 80-ENAS-33] A80-43208

GAS EVOLUTION
Ultrasonic method of recording gas bubbles in animal venous blood in a rarefied atmosphere
N80-28013

GAS EXCHANGE
Respiratory gas exchange during positive pressure breathing and rapid decompression to simulated altitudes of 18.3 and 24.4 km
A80-41979

GAS MIXTURES
Relation of breathing oxygen-argon gas mixtures to altitude decompression sickness
A80-41992

GAS PRESSURE
O2 sensing for environmental control and monitoring systems
[ASME PAPER 80-ENAS-41] A80-43215

GAS TRANSPORT
Theoretical analysis of the effect of state of pulmonary circulation on distribution of ventilation-perfusion relations and gas exchange in the lungs
N80-28011

Respiration and gas exchange under hyperbaric conditions
N80-28016

GAS VALVES
Development, test, and evaluation of an advanced anti-G valve for the F-15
A80-41908

GASTROINTESTINAL SYSTEM
The effect produced by phenobarbital, sex hormone and by castration on the development of gastric mucosa destruction due to electrization of immobilized rats
[NASA-TM-76156] N80-27071

Experimental gastric ulcers induced by immobilization and electric shock of rats and their pharmacotherapy
[NASA-TM-76157] N80-27981

GENERAL AVIATION AIRCRAFT
NASA TLA workload analysis support. Volume 2: Metering and spacing studies validation data
[NASA-CR-3239] N80-27091

GLANDS (ANATOMY)
Role of dynamic space flight factors in the pathogenesis of involution of lymphatic organs (experimental morphological study)
N80-28023

GRAVITATIONAL EFFECTS
Scale effects in the musculoskeletal system, viscera and skin of small terrestrial mammals
A80-40625

The architecture of the avian retina following exposure to chronic 2 G
A80-42013

Evaluation of biological models using Spacelab
[ASME PAPER 80-ENAS-38] A80-43212

Experiment operations in Spacelab --- for life study in space environment
[ASME PAPER 80-ENAS-40] A80-43214

The relation between tilt table and acceleration-tolerance and their dependence on stature and physical fitness
[NASA-TM-75796] N80-28042

GROUP DYNAMICS
Minimizing the psychological effects of a wartime disaster on an individual
A80-41890

The morale climate of the crew (from observations of a submarine doctor)
[NASA-TM-76094] N80-27092

GROWTH
The growth of birdwings
[NASA-TM-75821] N80-27986

H

HABITATS
Primary productivity, heterotrophy, metabolic indicators of stress and interactions in algal-bacterial mat communities affected by a fluctuating thermal regime
[DP-MS-80-14] N80-27082

HAND (ANATOMY)
Device for measuring the precision of eye-hand coordination while tracking changing size
A80-42010

HEALTH PHYSICS
Modified conjugate counting technique for quantitative measurement of radioactivity in vivo
[CONF-790782-1] N80-27084

HEARING
The effect of hearing protectors on the perception of warning and indicator sounds: A general review
[ISVR-TR-98] N80-27087

HEART
Effect of hypokinesia on changes in carbohydrate and lipid metabolism in the heart and liver
N80-28029

HEART DISEASES
Electrocardiographic exercise testing and ambulatory monitoring to identify patients with ischemic heart disease at high risk of sudden death
A80-40546

Prevalence of coronary heart disease risk factors in a young military population
A80-41989

Myocardial dystrophy in athletes --- Russian book
A80-42935

HEART FUNCTION
Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period
A80-41320

CdTe ambulatory ventricular function monitor
[CONF-791037-26] N80-27083

HEART RATE
The organization of the sleep-wakefulness cycle according to data obtained by the continuous daily monitoring of heart rhythm and motor activity
A80-41319

Heart rate variability, pilot workload, task difficulty, tracking
[DFVLR-FB-79-33] N80-27086

HEAT TOLERANCE
Interactions between surface cooling and LBNP-induced central hypovolemia --- Lower Body Negative Pressure
A80-41987

Physiological responses of men and women to humid and dry heat
A80-43151

HELICOPTERS
Vertebral pain in helicopter pilots
[NASA-TM-75792] N80-28043

HELIUM-OXYGEN ATMOSPHERES
Is the weight loss of hyperbaric habitation a disorder of osmoregulation
A80-41888

HELMETS
A mathematical model for use in evaluating and developing impact test methods for protective headgear
[PB80-164957] N80-28055

HEMODYNAMIC RESPONSES
Myocardial dystrophy in athletes --- Russian book
A80-42935

Human response to hypoxia-motion sickness stress as a predictor of the space sickness syndrome
[AD-A080306] N80-27080

Results of studies of pulsed blood flow and regional vascular tonus during flights in the first and second expeditions aboard the Salyut-6-Soyuz orbital complex --- effects of weightlessness
N80-27996

Circulation in exercising crew members of the first main expedition aboard Salyut-6
N80-27997
Hemodynamics and phase structure of the cardiac cycle in members of the first crew of Salyut-5 at rest --- effects of hypokinesia and weightlessness
N80-27998
Studies of prognostic significance of antiorthostatic position
N80-28006
Regional redistribution of rat blood after 7 and 30 days of hypokinesia
N80-28009
Pharmacological analysis of physiological mechanisms of orthostatic hemodynamic stability
N80-28026

HEMODYNAMICS
Acceleration effects on pulmonary blood flow distribution using perfusion scintigraphy
A80-41985
Method for assessing hemodynamics and detecting latent insufficiency of cerebral circulation in cosmonaut candidates
N80-28012

HIGH ALTITUDE
Alveolar macrophages and pulmonary surfactant of altitude-raised rats
A80-42012
Effect of conditioning for hypoxia on fertility of white mice
N80-28030

HIGH ALTITUDE BREATHING
Respiratory gas exchange during positive pressure breathing and rapid decompression to simulated altitudes of 18.3 and 24.4 km
A80-41979
Relation of breathing oxygen-argon gas mixtures to altitude decompression sickness
A80-41992

HIGH ALTITUDE ENVIRONMENTS
Energy status and oxidation reduction status in rat liver at high altitude /3.8 km/
A80-42002
Changes in pulmonary PV characteristics of human subjects at an altitude of 5,366 m
A80-43153

HIGH PRESSURE
Ultrasonic method of recording gas bubbles in animal venous blood in a rarefied atmosphere
N80-28013
Respiration and gas exchange under hyperbaric conditions
N80-28016

HIGH TEMPERATURE
Effect of high ambient temperature on human performance
N80-28023

HIGH TEMPERATURE ENVIRONMENTS
Ambiguous response of lung lamellar bodies to sauna-like heat stress in two age groups of adult male rats
A80-41993

HISTOLOGY
The architecture of the avian retina following exposure to chronic 2 G
A80-42013

HORMONE METABOLISMS
The content of catecholamines in the adrenal glands and sections of the brain under hypokinesia and injection of some neurotropic agents
[NASA-TM-76010] N80-28044

HORMONES
The effect produced by phenobarbital, sex hormone and by castration on the development of gastric mucosa destruction due to electrization of immobilized rats
[NASA-TM-76156] N80-27071

HUMAN BEHAVIOR
Applied behavior analysis in flying research
[AD-A081750] N80-27094

HUMAN BODY
Comparison of reactive hyperemia in warm and cool human forearms over a range of ischemic periods
A80-41982
Interactions between surface cooling and LBNP-induced central hypovolemia --- Lower Body Negative Pressure
A80-41987
Active muscle torques about long-bone axes of major human joints
A80-41994

HUMAN CENTRIFUGES
Cardiovascular responses of man exposed to plus Gz accelerations in a centrifuge
A80-41885

HUMAN FACTORS ENGINEERING
Dynamic decisions and work load in multitask supervisory control
A80-40898
Optimal control model predictions of system performance and attention allocation and their experimental validation in a display design study
A80-40899
Overview of human engineering considerations for electro-optical displays
A80-42846
Anti-exposure suits in the VP community --- for fixed wing patrol aircraft
[ASME PAPER 80-ENAS-43] A80-43217
Heart rate variability, pilot workload, task difficulty, tracking
[DFVLR-FB-79-33] N80-27086
Applied behavior analysis in flying research
[AD-A081750] N80-27094
The influence of the flight altitude and the limitation of the field of view on the visibility of targets on the ground and the maximum visibility flight altitude
[DFVLR-FB-79-35] N80-27095
Some aspects of application of the systemic approach to aviation engineering psychology
N80-28002

HUMAN PATHOLOGY
Use of the multivariate approach to enhance the diagnostic accuracy of the treadmill stress test
A80-42098
Myocardial dystrophy in athletes --- Russian book
A80-42935
Carbon dioxide effects on submarines
[ASME PAPER 80-ENAS-32] A80-43207

HUMAN PERFORMANCE
Visual search performance during simulated radar observation with and without a sweepline
A80-41882
An attempted validation study of the birthdate-based biorhythm /BBB/ hypothesis
A80-42000
Psychomotor deterioration during exposure to heat
A80-42004
Effect of high ambient temperature on human performance
N80-28023
A concept for developing human performance specifications
[AD-A084617] N80-28054

HUMAN REACTIONS
Psychomotor performance during ozone exposure - Spectral and discriminant function analysis of EEG
A80-41879
Minimizing the psychological effects of a wartime disaster on an individual
A80-41890
Frank orthogonal vectorcardiograms in humans during and after exposure to +Gz acceleration stress
A80-42006
Some problems in pattern detection --- human creativity
A80-42346
Changes in pulmonary PV characteristics of human subjects at an altitude of 5,366 m
A80-43153
Life sciences experiments on Spacelab 1
[ASME PAPER 80-ENAS-36] A80-43211
Human response to hypoxia-motion sickness stress as a predictor of the space sickness syndrome
[AD-A080306] N80-27080
Community reactions to aircraft noise in the vicinity of airport: A comparative study of the social surveys using interview method
[NASA-TM-75439] N80-27090

HUMAN TOLERANCES

Human tolerance to aerial combat maneuvers A80-42005

HUMAN WASTES

Development of a preprototype thermoelectric integrated membrane evaporation subsystem for water recovery [ASME PAPER 80-ENAS-46] A80-43220

HUMIDITY

Physiological responses of men and women to humid and dry heat A80-43151

HYDROGEN

Method and automated apparatus for detecting coliform organisms [NASA-CASE-MSC-16777-1] N80-27067

HYPERBARIC CHAMBERS

Is the weight loss of hyperbaric habitation a disorder of osmoregulation A80-41888

HYPERCAPNIA

Interaction of dopamine and haloperidol with O2 and CO2 chemoreception in carotid body A80-43152

Dynamics of human external respiration and blood gases under the combined effect of hypercapnia and hypoxia N80-28024

HYPEROXIA

Rhesus brain gas tension and learned task performance responses to normoxic and hyperoxic breathing [AMRL-TR-105] A80-41880

HYPERTENSION

Mechanism of selective lesion of the cardiovascular system in psycho-emotional stress [NASA-TM-76035] N80-28045

HYPOBARIC ATMOSPHERES

Red blood cell count /RCC/ and volume /MCV/ of three subjects in a hypobaric chamber A80-41998

HYPODYNAMIA

The effect of hypodynamia on mineral and protein metabolism in calcified tissues of the maxillodental system (experimental radioisotope study) [NASA-TM-75998] N80-27078

Effect of psychotropic drugs on gastric ulcers induced by immobilization: Increased protective effect of amitriptyline caused by chlordiazepoxide [NASA-TM-76197] N80-27991

Effects of hypodynamia on the hemocoagulative properties of the vascular wall and myocardium [NASA-TM-76199] N80-27992

Pharmacological analysis of physiological mechanisms of orthostatic hemodynamic stability N80-28026

Morphofunctional correlations in the experimental study of myocardiopathies under the stress of forced restraint. Note 2: The influence of adrenal imbalance [NASA-TM-76138] N80-28040

Mechanism of selective lesion of the cardiovascular system in psycho-emotional stress [NASA-TM-76035] N80-28045

HYPOKINESIA

Change in radiosensitivity of rats during hypokinetic stress [NASA-TM-75968] N80-27068

Effect of sharply lowered muscular activity on the thyroid gland of the white rat [NASA-TM-76114] N80-27070

Changes in leukocyte stability in hypodynamia [NASA-TM-75944] N80-27074

Oxygen consumption of animals under conditions of hypokinesia [NASA-TM-76167] N80-27983

Mechanisms of water-salt metabolism disturbances in dogs subjected to six month hypokinesia [NASA-TM-76170] N80-27984

Calorigenic effect of adrenaline in rats under conditions of restricted motor activity [NASA-TM-76192] N80-27988

Displacement of plasma protein and conduction velocity in rats under action of acceleration forces and hypokinesia [NASA-TM-76195] N80-27989

Effects of immobilization on spermiogenesis [NASA-TM-76282] N80-27993

Biochemical bases of pathogenesis of hypokinesia N80-27995

Circulation in exercising crew members of the first main expedition aboard Salyut-6 N80-27997

Hemodynamics and phase structure of the cardiac cycle in members of the first crew of Salyut-5 at rest --- effects of hypokinesia and weightlessness N80-27998

Evaluation of efficacy of the set of preventive measures referable to the human neuromuscular system under hypokinetic conditions N80-28007

The stress reaction to hypokinesia and its effect on general resistance N80-28008

Regional redistribution of rat blood after 7 and 30 days of hypokinesia N80-28009

Secretion, incretion and resecretion of pancreatic lipase during prolonged restriction of motor activity N80-28010

Isolation and gas chromatographic demonstration of volatile organic substances in thin-layer biological samples N80-28014

Role of dynamic space flight factors in the pathogenesis of involution of lymphatic organs (experimental morphological study) N80-28022

Bioelectric activity of the human brain during and after 182-day anitorthosatic hypokinesia N80-28027

Morphometric analysis of glomerules and juxtaglomerula system of the rat kidney in the course of experimental hypokinesia N80-28028

Effect of hypokinesia on changes in carbohydrate and lipid metabolism in the heart and liver N80-28029

Effect of hypokinesia on invertase activity of the mucosa of the small intestine [NASA-TM-76191] N80-28039

Changes of the body functions during long-term hypokinesia [NASA-TM-76166] N80-28041

The content of catecholamines in the adrenal glands and sections of the brain under hypokinesia and injection of some neurotropic agents [NASA-TM-76010] N80-28044

Cardiovascular and respiratory physiopathological aspects of hypokinesia [NASA-TM-76198] N80-28048

HYPOTENSION

The use of antigravity suits in the treatment of idiopathic orthostatic hypotension [NASA-TM-75804] N80-27077

HYPOTHERMIA

The thermal properties of a survival bag incorporating metallised plastic sheeting A80-41883

HYPOVOLEMIA

Interactions between surface cooling and LBNP-induced central hypovolemia --- Lower Body Negative Pressure A80-41987

HYPOXIA

Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period A80-41320

Combined effect of hypoxia and cold on the phospholipid composition of lung surfactant in rats A80-41980

Energy status and oxidation reduction status in rat liver at high altitude /3.8 km/ A80-42002

Interaction of dopamine and haloperidol with O2 and CO2 chemoreception in carotid body A80-43152

Human response to hypoxia-motion sickness stress as a predictor of the space sickness syndrome [AD-A080306] N80-27080

Dynamics of human external respiration and blood gases under the combined effect of hypercapnia and hypoxia
N80-28024
Effect of conditioning for hypoxia on fertility of white mice
N80-28030
Altitude hypoxia. Citations from the NTIS data base
[PB80-807696] N80-28052

I

IMAGE PROCESSING
Two-channel model of image processing in the human retina
A80-42849
IMAGE RESOLUTION
Two-dimensional spatial frequency content and confusions among dot matrix characters
A80-42847
IMAGING TECHNIQUES
Diagnosis of coronary artery disease with exercise radionuclide imaging - State of the art
A80-40547
IMMOBILIZATION
Experimental gastric ulcers induced by immobilization and electric shock of rats and their pharmacotherapy
[NASA-TM-76157] N80-27981
Effect of central neurotropic substances on the hypophysisadrenal cortex system during immobilization of animals
[NASA-TM-76158] N80-27982
Effect of immobilization on the EEG of the baboon. Comparison with telemetry results from unrestricted animals
[NASA-TM-76137] N80-27987
Experimental coronary sclerosis induced by immobilization of rabbits: A new model of arteriosclerosis
[NASA-TM-76196] N80-27990
Effects of immobilization on spermiogenesis
[NASA-TM-76282] N80-27993
IMPACT TESTS
A mathematical model for use in evaluating and developing impact test methods for protective headgear
[PB80-164957] N80-28055
IMPLANTED ELECTRODES (BIOLOGY)
An implantable electrical device
[NASA-CASE-GSC-12560-1] N80-27073
INTESTINES
Effect of hypokinesia on invertase activity of the mucosa of the small intestine
[NASA-TM-76191] N80-28039
INTOXICATION
Performance effects of alcohol intoxication and hangover at ground level and at simulated altitude
A80-41876
INTRAVASCULAR SYSTEM
Review - The role of pulse oscillations of intravascular pressure in the regulation of blood circulation
A80-41318
Ultrasonic method of recording gas bubbles in animal venous blood in a rarefied atmosphere
N80-28013
INVESTIGATION
Morphofunctional correlations in the experimental study of myocardiopathies under the stress of forced restraint. Note 2: The influence of adrenal imbalance
[NASA-TM-76138] N80-28040
Mechanism of selective lesion of the cardiovascular system in psycho-emotional stress
[NASA-TM-76035] N80-28045
ION CONCENTRATION
The intracellular Na/+/ and K/+/ composition of the moderately halophilic bacterium, Paracoccus halodenitrificans
A80-41250
ISCHEMIA
Electrocardiographic exercise testing and ambulatory monitoring to identify patients with ischemic heart disease at high risk of sudden death
A80-40546
Comparison of reactive hyperemia in warm and cool human forearms over a range of ischemic periods
A80-41982
The effect of the acute ischemia of the brain on the permeability of the hemato-ophthalmic barrier
A80-42051
Mechanism of selective lesion of the cardiovascular system in psycho-emotional stress
[NASA-TM-76035] N80-28045

J

JET LAG
Effect of an altered rest-activity or feeding schedule on the shift of motor activity rhythm of mice
A80-41884
JOINTS (ANATOMY)
Active muscle torques about long-bone axes of major human joints
A80-41994

K

KIDNEYS
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys
N80-27959
Morphometric analysis of glomerules and juxtaglomerula system of the rat kidney in the course of experimental hypokinesia
N80-28028

L

LABORATORY EQUIPMENT
The development of a Space Shuttle Research Animal Holding Facility
[ASME PAPER 80-ENAS-39] A80-43213
LAMELLA
Ambiguous response of lung lamellar bodies to sauna-like heat stress in two age groups of adult male rats
A80-41993
LEARNING THEORY
Applied behavior analysis in flying research
[AD-A081750] N80-27094
LEUKOCYTES
Changes in leukocyte stability in hypodynamia
[NASA-TM-75944] N80-27074
LIFE SCIENCES
Comets - A matter of life and death /Milne Lecture/
A80-41002
The intracellular Na/+/ and K/+/ composition of the moderately halophilic bacterium, Paracoccus halodenitrificans
A80-41250
NASA-Ames Life Sciences Flight Experiments program - 1980 status report
[ASME PAPER 80-ENAS-34] A80-43209
Life sciences experiments on Spacelab 1
[ASME PAPER 80-ENAS-36] A80-43211
LIFE SUPPORT SYSTEMS
A history of the Naval Research Laboratory contributions to submarine life support systems
[ASME PAPER 80-ENAS-29] A80-43205
Atmospheric monitoring in submersibles
[ASME PAPER 80-ENAS-31] A80-43206
Study of compatilibity of certain higher plants and chlorella as related to a bioregenerative human life support system
N80-28033
LIGHT ADAPTATION
Brightness exponent as a function of retinal eccentricity in the peripheral visual field - Effects of dark and light adaptation
A80-41139
LIPID METABOLISM
Activity of some hepatic enzymes and lipogenetic processes in rat aipose tissue after space flight --- effects of weightlessness
N80-28000
Secretion, incretion and resecretion of pancreatic lipase during prolonged restriction of motor activity
N80-28010
Effect of hypokinesia on changes in carbohydrate and lipid metabolism in the heart and liver
N80-28029

LIPIDS
Combined effect of hypoxia and cold on the phospholipid composition of lung surfactant in rats
A80-41980
LIQUID WASTES
Development of a preprototype thermoelectric integrated membrane evaporation subsystem for water recovery
[ASME PAPER 80-ENAS-46] A80-43220
LITHIUM HYDROXIDES
The factors influencing the formation of Li2CO3 from LiOH and CO2
[ASME PAPER 80-ENAS-45] A80-43219
LIVER
Energy status and oxidation reduction status in rat liver at high altitude /3.8 km/
A80-42002
Activity of some hepatic enzymes and lipogenetic processes in rat aipose tissue after space flight --- effects of weightlessness
N80-28000
Effect of hypokinesia on changes in carbohydrate and lipid metabolism in the heart and liver
N80-28029
LONG DURATION SPACE FLIGHT
Maintainable maintenance disconnect valve /MMDV/ for on-orbit component replacement
[ASME PAPER 80-ENAS-42] A80-43216
LONG TERM EFFECTS
Changes in the adrenergic regulation of thermogenesis during the long-term adaptation of rats to the cold
A80-41321
USSR Report: Space Biology and Aerospace Medicine, volume 14, no. 3, 1980
[JPRS-75956] N80-27994
LOW PRESSURE
Red blood cell count /RCC/ and volume /MCV/ of three subjects in a hypobaric chamber
A80-41998
LOW TEMPERATURE ENVIRONMENTS
Physiological effects of cold air inhalation during exercise
A80-42001
LUMINANCE
Brightness exponent as a function of retinal eccentricity in the peripheral visual field - Effects of dark and light adaptation
A80-41139
LUMINOUS INTENSITY
A technique for estimating the contribution of photomechanical responses to visual adaptation
A80-41645
LUNAR ENVIRONMENT
Postflight studies on fungal phenotypes irradiated in space
A80-43011
LUNG MORPHOLOGY
Combined effect of hypoxia and cold on the phospholipid composition of lung surfactant in rats
A80-41980
Ambiguous response of lung lamellar bodies to sauna-like heat stress in two age groups of adult male rats
A80-41993
LUNGS
The effect of sustained +Gz acceleration on extravascular lung water content in domestic fowl
A80-41999
Changes in pulmonary PV characteristics of human subjects at an altitude of 5,366 m
A80-43153
Theoretical analysis of the effect of state of pulmonary circulation on distribution of ventilation-perfusion relations and gas exchange in the lungs
N80-28011
Measurement of lung function using magnetometers. 1: Principles and mathematical modeling
[AD-A083910] N80-28038
LYMPH
Role of dynamic space flight factors in the pathogenesis of involution of lymphatic organs (experimental morphological study)
N80-28022

M

MACROPHAGES
Alveolar macrophages and pulmonary surfactant of altitude-raised rats
A80-42012
MAGNETIC FIELDS
Magnetic field on humans: Epidemiological study design, part 2
[LBL-9357-PT-2] N80-27081
MAGNETOMETERS
Measurement of lung function using magnetometers. 1: Principles and mathematical modeling
[AD-A083910] N80-28038
MALES
Cardiovascular responses of man exposed to plus Gz accelerations in a centrifuge
A80-41885
Aerobic power and body fat of men and women during army basic training
A80-41986
Prevalence of coronary heart disease risk factors in a young military population
A80-41989
Physiological responses of men and women to humid and dry heat
A80-43151
MAN ENVIRONMENT INTERACTIONS
Some problems of human adaptation and ecology under the aspect of general pathology
[NASA-TM-76095] N80-27076
MAN MACHINE SYSTEMS
An analytical evaluation method of manual control system utilizing human pilot model
A80-41051
Predicting the effects of vertical vibration frequency, combinations of frequencies and viewing distance on the reading of numeric displays
A80-41690
The Shuttle's remote manipulator system - Status and operation
[DGLR PAPER 80-075] A80-41757
Exemplary model of an eye-telescope system for the detection of manned spacecraft on a background of stars
A80-42344
The ergatic intellect of electrical energy systems
A80-42347
Heart rate variability, pilot workload, task difficulty, tracking
[DFVLR-FB-79-33] N80-27086
NASA TLA workload analysis support. Volume 2: Metering and spacing studies validation data
[NASA-CR-3239] N80-27091
NASA TLA workload analysis support. Volume 3: FFD autopilot scenario validation data
[NASA-CR-3240] N80-27093
Some aspects of application of the systemic approach to aviation engineering psychology
N80-28002
MANNED SPACE FLIGHT
Manned maneuvering unit
[DGLR PAPER 80-081] A80-41761
Results of the investigation of the otolith function in manned space flights
[NASA-TM-76103] N80-28046
MANNED SPACECRAFT
Exemplary model of an eye-telescope system for the detection of manned spacecraft on a background of stars
A80-42344
MANUAL CONTROL
Dynamic decisions and work load in multitask supervisory control
A80-40898
Optimal control model predictions of system performance and attention allocation and their experimental validation in a display design study
A80-40899
An analytical evaluation method of manual control system utilizing human pilot model
A80-41051
MATHEMATICAL MODELS
Measurement of lung function using magnetometers. 1: Principles and mathematical modeling
[AD-A083910] N80-28038

A mathematical model for use in evaluating and developing impact test methods for protective headgear
[PB80-164957] N80-28055

MEASURING INSTRUMENTS
Method and automated apparatus for detecting coliform organisms
[NASA-CASE-MSC-16777-1] N80-27067

MEDICAL EQUIPMENT
Development of a method for the traceable calibration of defibrillator energy meters
[NPL-DES-55] N80-27085

MEDICAL SERVICES
Air transport of the man who needs everything
A80-42015

MEMBRANE STRUCTURES
Upgrading efficacy of membrane techniques for regenerating water from urine
N80-28035

MENSTRUATION
Disorders of the menstrual cycle in airline stewardesses
A80-41991

MENTAL PERFORMANCE
An attempted validation study of the birthdate-based biorhythm /BBB/ hypothesis
A80-42000

METABOLIC WASTES
Method and automated apparatus for detecting coliform organisms
[NASA-CASE-MSC-16777-1] N80-27067

METABOLISM
The behavior of fatty acids in the blood plasma of monkeys following exposure to short term stresses
[NASA-TM-76151] N80-27079
Calorigenic effect of adrenaline in rats under conditions of restricted motor activity
[NASA-TM-76192] N80-27988
Changes of the body functions during long-term hypokinesia
[NASA-TM-76166] N80-28041

METALLIZING
The thermal properties of a survival bag incorporating metallised plastic sheeting
A80-41883

MICROBIOLOGY
Postflight studies on fungal phenotypes irradiated in space
A80-43011

MICROCOMPUTERS
On-line analysis of eye movements using a digital computer
A80-41996

MICROORGANISMS
Postflight studies on fungal phenotypes irradiated in space
A80-43011

MICROWAVE EMISSION
An evaluation of microwave emissions from sensormatic electronic security systems
[PB80-155385] N80-27088

MICROWAVES
Biological effects of microwaves. Citations from the NTIS data base
[PB80-808256] N80-28050

MINERAL METABOLISM
The effect of hypodynamia on mineral and protein metabolism in calcified tissues of the maxillodental system (experimental radioisotope study)
[NASA-TM-75998] N80-27078

MISSION PLANNING
NASA-Ames Life Sciences Flight Experiments program - 1980 status report
[ASME PAPER 80-ENAS-34] A80-43209
A concept for developing human performance specifications
[AD-A084617] N80-28054

MITOCHONDRIA
Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period
A80-41320

MODELS
Nonlinearities in auditory-nerve fiber responses to bandlimited noise: An experimental study and a model
N80-28037

MOTION SICKNESS
Human response to hypoxia-motion sickness stress as a predictor of the space sickness syndrome
[AD-A080306] N80-27080

MOTION SICKNESS DRUGS
Piracetam and fish orientation during parabolic aircraft flight
A80-41997

MULTIVARIATE STATISTICAL ANALYSIS
Use of the multivariate approach to enhance the diagnostic accuracy of the treadmill stress test
A80-42098

MUSCULAR FUNCTION
Active muscle torques about long-bone axes of major human joints
A80-41994
Simultaneous muscle force and displacement transducer
[NASA-CASE-NPO-14212-1] N80-27072

MUSCULAR TONUS
Effects of chronic centrifugation on skeletal muscle fibers in young developing rats
A80-41983

MUSCULOSKELETAL SYSTEM
Scale effects in the musculoskeletal system, viscera and skin of small terrestrial mammals
A80-40625
Effects of chronic centrifugation on skeletal muscle fibers in young developing rats
A80-41983
Mechanisms of water-salt metabolism disturbances in dogs subjected to six month hypokinesia
[NASA-TM-76170] N80-27984
Effect of transverse accelerations on innervation of the guinea pig's crural skeletal muscles
N80-28005
Evaluation of efficacy of the set of preventive measures referable to the human neuromuscular system under hypokinetic conditions
N80-28007

MYOCARDIUM
Myocardial dystrophy in athletes --- Russian book
A80-42935
Simultaneous muscle force and displacement transducer
[NASA-CASE-NPO-14212-1] N80-27072

N

NASA PROGRAMS
NASA-Ames Life Sciences Flight Experiments program - 1980 status report
[ASME PAPER 80-ENAS-34] A80-43209
Life sciences experiments on Spacelab 1
[ASME PAPER 80-ENAS-36] A80-43211

NEUROLOGY
An implantable electrical device
[NASA-CASE-GSC-12560-1] N80-27073

NEUROMUSCULAR TRANSMISSION
Effect of transverse accelerations on innervation of the guinea pig's crural skeletal muscles
N80-28005
Evaluation of efficacy of the set of preventive measures referable to the human neuromuscular system under hypokinetic conditions
N80-28007

NEUROTROPISM
Experimental gastric ulcers induced by immobilization and electric shock of rats and their pharmacotherapy
[NASA-TM-76157] N80-27981
Effect of central neurotropic substances on the hypophysisadrenal cortex system during immobilization of animals
[NASA-TM-76158] N80-27982
The content of catecholamines in the adrenal glands and sections of the brain under hypokinesia and injection of some neurotropic agents
[NASA-TM-76010] N80-28044

NOISE (SOUND)
Nonlinearities in auditory-nerve fiber responses to bandlimited noise: An experimental study and a model
N80-28037

NOISE INTENSITY
Identification of the minimum noise level capable of producing an asymptotic temporary threshold shift
[AMRL-TR-79-106] A80-41887

NOISE POLLUTION
Community reactions to aircraft noise in the vicinity of airport: A comparative study of the social surveys using interview method
[NASA-TM-75439] N80-27090

NOISE THRESHOLD
Identification of the minimum noise level capable of producing an asymptotic temporary threshold shift
[AMRL-TR-79-106] A80-41887

NONLINEARITY
Nonlinearities in auditory-nerve fiber responses to bandlimited noise: An experimental study and a model
N80-28037

NUCLEAR MAGNETIC RESONANCE
Instrumentation for the measurement of viscosity and flow of biological fluids --- neuclear magnetic resonance
N80-27980

NUCLEAR WARFARE
Minimizing the psychological effects of a wartime disaster on an individual
A80-41890

NUTRITIONAL REQUIREMENTS
The question of using dehydrated foods during long-term space flights
N80-28031

NYSTAGMUS
On-line analysis of eye movements using a digital computer
A80-41996
Generalized nystagmometric characteristics for diagnostic purposes
N80-28034

O

OBESITY
Aerobic power and body fat of men and women during army basic training
A80-41986

OCULOMETERS
Error analysis and corrections to pupil diameter measurements with Langley Research Center's oculometer
[NASA-TM-81806] N80-27075

ONBOARD EQUIPMENT
Environmental control of a pressurized equipment container for Shuttle flights - The Spacelab Igloo
[ASME PAPER 80-ENAS-19] A80-43195

OPERATOR PERFORMANCE
The Shuttle's remote manipulator system - Status and operation
[DGLR PAPER 80-075] A80-41757
Investigation of the operation of eye-telescope systems
A80-42341
Mathematical model for evaluating human operator activity in solving the problem of limiting controllability in an ergatic control and monitoring system
A80-42349
Response time, operator productivity and job satisfaction
N80-28053

OPTICAL TRACKING
Device for measuring the precision of eye-hand coordination while tracking changing size
A80-42010

OPTIMAL CONTROL
Optimal control model predictions of system performance and attention allocation and their experimental validation in a display design study
A80-40899

ORGANIC COMPOUNDS
Comets - A matter of life and death /Milne Lecture/
A80-41002
Isolation and gas chromatographic demonstration of volatile organic substances in thin-layer biological samples
N80-28014

ORGANS
Regional redistribution of rat blood after 7 and 30 days of hypokinesia
N80-28009

ORTHOSTATIC TOLERANCE
Studies of prognostic significance of antiorthostatic position
N80-28006
Pharmacological analysis of physiological mechanisms of orthostatic hemodynamic stability
N80-28026
Bioelectric activity of the human brain during and after 182-day anitorthosatic hypokinesia
N80-28027

OSMOSIS
Is the weight loss of hyperbaric habitation a disorder of osmoregulation
A80-41888

OTOLITH ORGANS
Results of the investigation of the otolith function in manned space flights
[NASA-TM-76103] N80-28046

OXIDATION-REDUCTION REACTIONS
Energy status and oxidation reduction status in rat liver at high altitude /3.8 km/
A80-42002

OXYGEN ANALYZERS
O2 sensing for environmental control and monitoring systems
[ASME PAPER 80-ENAS-41] A80-43215

OXYGEN BREATHING
Rhesus brain gas tension and learned task performance responses to normoxic and hyperoxic breathing
[AMRL-TR-105] A80-41880
Relation of breathing oxygen-argon gas mixtures to altitude decompression sickness
A80-41992

OXYGEN CONSUMPTION
Changes in the adrenergic regulation of thermogenesis during the long-term adaptation of rats to the cold
A80-41321
Aerobic power and body fat of men and women during army basic training
A80-41986
Oxygen consumption of animals under conditions of hypokinesia
[NASA-TM-76167] N80-27983

OXYGEN PRODUCTION
Relation of breathing oxygen-argon gas mixtures to altitude decompression sickness
A80-41992
Molecular sieve generation of aviator's oxygen - Performance of a prototype system under simulated flight conditions
A80-42008

OXYGEN SUPPLY EQUIPMENT
A Portable Oxygen Subsystem - Description and preliminary thermal performance prediction
[ASME PAPER 80-ENAS-7] A80-43184

OXYGEN TENSION
Transient diffusion in multi-layer biological tissue
N80-27979

OZONE
Psychomotor performance during ozone exposure - Spectral and discriminant function analysis of EEG
A80-41879
Effects of ozone on exercising and sedentary adult men and women representative of the flight attendant population
[AD-A080045] N80-28049

P

P-3 AIRCRAFT
Anti-exposure suits in the VP community --- for fixed wing patrol aircraft
[ASME PAPER 80-ENAS-43] A80-43217

PANCREAS
Secretion, incretion and resecretion of pancreatic lipase during prolonged restriction of motor activity
N80-28010

PARABOLIC FLIGHT
Piracetam and fish orientation during parabolic aircraft flight
A80-41997

PARACHUTE DESCENT
Electroencephalographic recordings during parachute jump sessions
A80-41877
PARTIAL PRESSURE
Rhesus brain gas tension and learned task performance responses to normoxic and hyperoxic breathing
[AMRL-TR-105] A80-41880
PATHOGENESIS
Biochemical bases of pathogenesis of hypokinesia
N80-27995
Role of dynamic space flight factors in the pathogenesis of involution of lymphatic organs (experimental morphological study)
N80-28022
PATHOLOGICAL EFFECTS
The effect of the acute ischemia of the brain on the permeability of the hemato-ophthalmic barrier
A80-42051
Cardiovascular and respiratory physiopathological aspects of hypokinesia
[NASA-TM-76198] N80-28048
PATHOLOGY
Some problems of human adaptation and ecology under the aspect of general pathology
[NASA-TM-76095] N80-27076
Vertebral pain in helicopter pilots
[NASA-TM-75792] N80-28043
PATIENTS
Aeromedical transportation of psychiatric patients - Historical review and present management
A80-42014
Air transport of the man who needs everything
A80-42015
PATTERN RECOGNITION
Some problems in pattern detection --- human creativity
A80-42346
PERFORMANCE PREDICTION
Optimal control model predictions of system performance and attention allocation and their experimental validation in a display design study
A80-40899
An attempted validation study of the birthdate-based biorhythm /BBB/ hypothesis
A80-42000
PERFORMANCE TESTS
Molecular sieve generation of aviator's oxygen - Performance of a prototype system under simulated flight conditions
A80-42008
PERIODIC VARIATIONS
Effect of induced cyclic changes of deep body temperature on performance in a flight simulator
A80-41881
PERIPHERAL VISION
Brightness exponent as a function of retinal eccentricity in the peripheral visual field - Effects of dark and light adaptation
A80-41139
PERMEABILITY
Displacement of plasma protein and conduction velocity in rats under action of acceleration forces and hypokinesia
[NASA-TM-76195] N80-27989
PERSONNEL MANAGEMENT
Response time, operator productivity and job satisfaction
N80-28053
PERSONNEL SELECTION
Toward the development of a new aptitude selection test battery for air traffic control specialists
A80-42011
PESTICIDES
Characteristics of enzymatic induction provoked by chlordane
[NASA-TM-76194] N80-28047
PHARMACOLOGY
Experimental gastric ulcers induced by immobilization and electric shock of rats and their pharmacotherapy
[NASA-TM-76157] N80-27981
Effect of central neurotropic substances on the hypophysisadrenal cortex system during immobilization of animals
[NASA-TM-76158] N80-27982
PHENOBARBITAL
The effect produced by phenobarbital, sex hormone and by castration on the development of gastric mucosa destruction due to electrization of immobilized rats
[NASA-TM-76156] N80-27071
PHOSPHORYLATION
Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period
A80-41320
PHOTOMECHANICAL EFFECT
A technique for estimating the contribution of photomechanical responses to visual adaptation
A80-41645
PHOTOMETRY
Two-dimensional spatial frequency content and confusions among dot matrix characters
A80-42847
PHYSICAL EXAMINATIONS
Agricultural aviation medicine in the Soviet Union
A80-41930
PHYSICAL EXERCISE
Electrocardiographic exercise testing and ambulatory monitoring to identify patients with ischemic heart disease at high risk of sudden death
A80-40546
Na+ and Ca2+ ingestion - Plasma volume-electrolyte distribution at rest and exercise
A80-41661
Absolute and relative work capacity in women at 758, 586, and 523 torr barometric pressure
A80-41977
Physiological effects of cold air inhalation during exercise
A80-42001
Circulation in exercising crew members of the first main expedition aboard Salyut-6
N80-27997
Evaluation of efficacy of the set of preventive measures referable to the human neuromuscular system under hypokinetic conditions
N80-28007
Effects of ozone on exercising and sedentary adult men and women representative of the flight attendant population
[AD-A080045] N80-28049
PHYSICAL FITNESS
Aerobic power and body fat of men and women during army basic training
A80-41986
Prevalence of coronary heart disease risk factors in a young military population
A80-41989
The relation between tilt table and acceleration-tolerance and their dependence on stature and physical fitness
[NASA-TM-75796] N80-28042
PHYSIOLOGICAL EFFECTS
Physiological effects of cold air inhalation during exercise
A80-42001
The architecture of the avian retina following exposure to chronic 2 G
A80-42013
Change in radiosensitivity of rats during hypokinetic stress
[NASA-TM-75968] N80-27068
Effect of sharply lowered muscular activity on the thyroid gland of the white rat
[NASA-TM-76114] N80-27070
The effect produced by phenobarbital, sex hormone and by castration on the development of gastric mucosa destruction due to electrization of immobilized rats
[NASA-TM-76156] N80-27071
Changes in leukocyte stability in hypodynamia
[NASA-TM-75944] N80-27074
The behavior of fatty acids in the blood plasma of monkeys following exposure to short term stresses
[NASA-TM-76151] N80-27079
Experimental gastric ulcers induced by immobilization and electric shock of rats and their pharmacotherapy
[NASA-TM-76157] N80-27981

Effect of central neurotropic substances on the hypophysisadrenal cortex system during immobilization of animals
[NASA-TM-76158] N80-27982
Oxygen consumption of animals under conditions of hypokinesia
[NASA-TM-76167] N80-27983
Mechanisms of water-salt metabolism disturbances in dogs subjected to six month hypokinesia
[NASA-TM-76170] N80-27984
Effect of immobilization on the EEG of the baboon. Comparison with telemetry results from unrestricted animals
[NASA-TM-76137] N80-27987
Calorigenic effect of adrenaline in rats under conditions of restricted motor activity
[NASA-TM-76192] N80-27988
Displacement of plasma protein and conduction velocity in rats under action of acceleration forces and hypokinesia
[NASA-TM-76195] N80-27989
Experimental coronary sclerosis induced by immobilization of rabbits: A new model of arteriosclerosis
[NASA-TM-76196] N80-27990
Effects of immobilization on spermiogenesis
[NASA-TM-76282] N80-27993
USSR Report: Space Biology and Aerospace Medicine, volume 14, no. 3, 1980
[JPRS-75956] N80-27994
USSR Report. Space Biology and Aerospace medicine, volume 14, no. 2, 1980
[JPRS-75654] N80-28015
Principal results of physiological experiments with mammals aboard the Cosmos-936 biosatellite
N80-28020
Effect of hypokinesia on invertase activity of the mucosa of the small intestine
[NASA-TM-76191] N80-28039
Changes of the body functions during long-term hypokinesia
[NASA-TM-76166] N80-28041
The content of catecholamines in the adrenal glands and sections of the brain under hypokinesia and injection of some neurotropic agents
[NASA-TM-76010] N80-28044
Characteristics of enzymatic induction provoked by chlordane
[NASA-TM-76194] N80-28047
Cardiovascular and respiratory physiopathological aspects of hypokinesia
[NASA-TM-76198] N80-28048
Effects of ozone on exercising and sedentary adult men and women representative of the flight attendant population
[AD-A080045] N80-28049
Altitude hypoxia. Citations from the NTIS data base
[PB80-807696] N80-28052

PHYSIOLOGICAL RESPONSES
Cardiovascular responses of man exposed to plus Gz accelerations in a centrifuge
A80-41885
Interactions between surface cooling and LBNP-induced central hypovolemia --- Lower Body Negative Pressure
A80-41987
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995
Physiological responses of men and women to humid and dry heat
A80-43151

PHYSIOLOGICAL TESTS
Electrocardiographic exercise testing and ambulatory monitoring to identify patients with ischemic heart disease at high risk of sudden death
A80-40546
Prevalence of coronary heart disease risk factors in a young military population
A80-41989
Psychomotor deterioration during exposure to heat
A80-42004
Interaction of dopamine and haloperidol with O2 and CO2 chemoreception in carotid body
A80-43152

Method for assessing hemodynamics and detecting latent insufficiency of cerebral circulation in cosmonaut candidates
N80-28012
Ultrasonic method of recording gas bubbles in animal venous blood in a rarefied atmosphere
N80-28013
The relation between tilt table and acceleration-tolerance and their dependence on stature and physical fitness
[NASA-TM-75796] N80-28042

PILOT PERFORMANCE
An analytical evaluation method of manual control system utilizing human pilot model
A80-41051
Predicting the effects of vertical vibration frequency, combinations of frequencies and viewing distance on the reading of numeric displays
A80-41690
Performance effects of alcohol intoxication and hangover at ground level and at simulated altitude
A80-41876
Effect of induced cyclic changes of deep body temperature on performance in a flight simulator
A80-41881
Pickup of visual information by the pilot during a ground control approach in a fighter aircraft simulator
A80-41981
The effect of psychic self-regulation /autogenous training/ on the maintenance of the professional skill of pilots
A80-42345
Mathematical model for evaluating human operator activity in solving the problem of limiting controllability in an ergatic control and monitoring system
A80-42349
Heart rate variability, pilot workload, task difficulty, tracking
[DFVLR-FB-79-33] N80-27086
Effect of prolonged +Gz accelerations on human performance
N80-28003

PILOT SELECTION
Method for assessing hemodynamics and detecting latent insufficiency of cerebral circulation in cosmonaut candidates
N80-28012

PILOT TRAINING
Catecholamine excretion in A-10 pilots
A80-42007

PLANTS (BOTANY)
Primary productivity, heterotrophy, metabolic indicators of stress and interactions in algal-bacterial mat communities affected by a fluctuating thermal regime
[DP-MS-80-14] N80-27082
Study of compatilibity of certain higher plants and chlorella as related to a bioregenerative human life support system
N80-28033

PLASTICS
The thermal properties of a survival bag incorporating metallised plastic sheeting
A80-41883

POLYVINYL CHLORIDE
Toxicity of vinyl chloride. Citations from the NTIS data base
[PB80-807662] N80-28051

PORTABLE EQUIPMENT
A Portable Oxygen Subsystem - Description and preliminary thermal performance prediction
[ASME PAPER 80-ENAS-7] A80-43184

POSITION (LOCATION)
Target position and velocity - The stimuli for smooth pursuit eye movements
A80-41646

POSITIVE IONS
The intracellular Na/+/ and K/+/ composition of the moderately halophilic bacterium, Paracoccus halodenitrificans
A80-41250

POTASSIUM
The intracellular Na/+/ and K/+/ composition of the moderately halophilic bacterium, Paracoccus halodenitrificans
A80-41250

PRESSURE BREATHING
Respiratory gas exchange during positive pressure breathing and rapid decompression to simulated altitudes of 18.3 and 24.4 km
A80-41979
Respiration and gas exchange under hyperbaric conditions
N80-28016

PRESSURE CHAMBERS
Red blood cell count /RCC/ and volume /MCV/ of three subjects in a hypobaric chamber
A80-41998

PRESSURE REGULATORS
Development, test, and evaluation of an advanced anti-G valve for the F-15
A80-41988

PRESSURE SUITS
Development, test, and evaluation of an advanced anti-G valve for the F-15
A80-41988
The use of antigravity suits in the treatment of idiopathic orthostatic hypotension
[NASA-TM-75804] N80-27077

PRESSURIZED CABINS
Environmental control of a pressurized equipment container for Shuttle flights - The Spacelab Igloo
[ASME PAPER 80-ENAS-19] A80-43195

PROBLEM SOLVING
Mathematical model for evaluating human operator activity in solving the problem of limiting controllability in an ergatic control and monitoring system
A80-42349

PRODUCTION ENGINEERING
Response time, operator productivity and job satisfaction
N80-28053

PROPULSIVE EFFICIENCY
Biological and aerodynamic problems with the flight of animals
[NASA-TM-75337] N80-27985

PROTECTIVE CLOTHING
The thermal properties of a survival bag incorporating metallised plastic sheeting
A80-41883
Anti-exposure suits in the VP community --- for fixed wing patrol aircraft
[ASME PAPER 80-ENAS-43] A80-43217

PROTEIN METABOLISM
The effect of hypodynamia on mineral and protein metabolism in calcified tissues of the maxillodental system (experimental radioisotope study)
[NASA-TM-75998] N80-27078
Characteristics of enzymatic induction provoked by chlordane
[NASA-TM-76194] N80-28047

PHOTOBIOLOGY
Comets - A matter of life and death /Milne Lecture/
A80-41002

PROTOTYPES
Molecular sieve generation of aviator's oxygen - Performance of a prototype system under simulated flight conditions
A80-42008

PSYCHIATRY
Aeromedical transportation of psychiatric patients - Historical review and present management
A80-42014

PSYCHOACOUSTICS
The effect of hearing protectors on the perception of warning and indicator sounds: A general review
[ISVR-TR-98] N80-27087

PSYCHOLOGICAL EFFECTS
Air traffic control stress and its effects - An investigation at Manchester airport
A80-40978
Minimizing the psychological effects of a wartime disaster on an individual
A80-41890

PSYCHOLOGICAL FACTORS
The effect of psychic self-regulation /autogenous training/ on the maintenance of the professional skill of pilots
A80-42345

PSYCHOLOGY
Applied behavior analysis in flying research
[AD-A081750] N80-27094

PSYCHOMOTOR PERFORMANCE
Psychomotor performance during ozone exposure - Spectral and discriminant function analysis of EEG
A80-41879
Rhesus brain gas tension and learned task performance responses to normoxic and hyperoxic breathing
[AMRL-TR-105] A80-41880
Psychomotor deterioration during exposure to heat
A80-42004
Device for measuring the precision of eye-hand coordination while tracking changing size
A80-42010

PSYCHOPHYSICS
Device for measuring the precision of eye-hand coordination while tracking changing size
A80-42010

PSYCHOPHYSIOLOGY
Two-channel model of image processing in the human retina
A80-42849
Effect of psychotropic drugs on gastric ulcers induced by immobilization: Increased protective effect of amitriptyline caused by chlordiazepoxide
[NASA-TM-76197] N80-27991

PUBLIC HEALTH
Air transport of the man who needs everything
A80-42015

PULMONARY CIRCULATION
Acceleration effects on pulmonary blood flow distribution using perfusion scintigraphy
A80-41985
The effect of sustained +Gz acceleration on extravascular lung water content in domestic fowl
A80-41999
Theoretical analysis of the effect of state of pulmonary circulation on distribution of ventilation-perfusion relations and gas exchange in the lungs
N80-28011

PULMONARY FUNCTIONS
Alveolar macrophages and pulmonary surfactant of altitude-raised rats
A80-42012
Changes in pulmonary PV characteristics of human subjects at an altitude of 5,366 m
A80-43153
Measurement of lung function using magnetometers. 1: Principles and mathematical modeling
[AD-A083910] N80-28038

PUPIL SIZE
Error analysis and corrections to pupil diameter measurements with Langley Research Center's oculometer
[NASA-TM-81806] N80-27075

PUPILLOMETRY
Error analysis and corrections to pupil diameter measurements with Langley Research Center's oculometer
[NASA-TM-81806] N80-27075

PUPILS
A technique for estimating the contribution of photomechanical responses to visual adaptation
A80-41645

PURSUIT TRACKING
Target position and velocity - The stimuli for smooth pursuit eye movements
A80-41646
Effect of direction and rate of change of deep body and skin temperatures on performance of a rotary pursuit task
A80-41978

Q

QUANTITATIVE ANALYSIS
Modified conjugate counting technique for quantitative measurement of radioactivity in vivo
[CONF-790782-1] N80-27084

QUEUEING THEORY
Dynamic decisions and work load in multitask supervisory control
A80-40898

R

RADAR TRACKING
Visual search performance during simulated radar observation with and without a sweepline
A80-41882

RADIATION EFFECTS
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995

RADIATION HAZARDS
An evaluation of microwave emissions from sensormatic electronic security systems
[PB80-155385] N80-27088

RADIATION MEASUREMENT
Modified conjugate counting technique for quantitative measurement of radioactivity in vivo
[CONF-790782-1] N80-27084

RADIATION SICKNESS
Change in radiosensitivity of rats during hypokinetic stress
[NASA-TM-75968] N80-27068

RADIOBIOLOGY
Change in radiosensitivity of rats during hypokinetic stress
[NASA-TM-75968] N80-27068
Modified conjugate counting technique for quantitative measurement of radioactivity in vivo
[CONF-790782-1] N80-27084

REACTION KINETICS
The factors influencing the formation of Li2CO3 from LiOH and CO2
[ASME PAPER 80-ENAS-45] A80-43219

READING
Predicting the effects of vertical vibration frequency, combinations of frequencies and viewing distance on the reading of numeric displays
A80-41690

REBREATHING
A Portable Oxygen Subsystem - Description and preliminary thermal performance prediction
[ASME PAPER 80-ENAS-7] A80-43184

REGENERATION (PHYSIOLOGY)
An implantable electrical device
[NASA-CASE-GSC-12560-1] N80-27073

REGRESSION ANALYSIS
An attempted validation study of the birthdate-based biorhythm /BBB/ hypothesis
A80-42000

RELIABILITY ENGINEERING
A monitor for atmospheric composition and contaminants in closed environments
[ASME PAPER 80-ENAS-35] A80-43210

REMOTE MANIPULATOR SYSTEM
The Shuttle's remote manipulator system - Status and operation
[DGLR PAPER 80-075] A80-41757

RENAL FUNCTION
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys
N80-27999
Morphometric analysis of glomerules and juxtaglomerula system of the rat kidney in the course of experimental hypokinesia
N80-28028

REPRODUCTION (BIOLOGY)
Effect of conditioning for hypoxia on fertility of white mice
N80-28030

RESEARCH AND DEVELOPMENT
Toward the development of a new aptitude selection test battery for air traffic control specialists
A80-42011

RESPIRATION
Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period
A80-41320
Physiological effects of cold air inhalation during exercise
A80-42001

RESPIRATORY PHYSIOLOGY
Dynamics of human external respiration and blood gases under the combined effect of hypercapnia and hypoxia
N80-28024

RESPIRATORY RATE
Respiratory gas exchange during positive pressure breathing and rapid decompression to simulated altitudes of 18.3 and 24.4 km
A80-41979

RESPIRATORY SYSTEM
Respiration and gas exchange under hyperbaric conditions
N80-28016
Cardiovascular and respiratory physiopathological aspects of hypokinesia
[NASA-TM-76198] N80-28048

RETINA
Brightness exponent as a function of retinal eccentricity in the peripheral visual field - Effects of dark and light adaptation
A80-41139
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995
The architecture of the avian retina following exposure to chronic 2 G
A80-42013

RETINAL IMAGES
Two-channel model of image processing in the human retina
A80-42849

REVERSE OSMOSIS
Upgrading efficacy of membrane techniques for regenerating water from urine
N80-28035

RHYTHM (BIOLOGY)
An attempted validation study of the birthdate-based biorhythm /BBB/ hypothesis
A80-42000

RISK
Prevalence of coronary heart disease risk factors in a young military population
A80-41989

ROBOTS
Imitation of locomotion under conditions of weightlessness
A80-40846

ROCKET EXHAUST
Rocket plume burn hazard
A80-41984

ROTATION
Thresholds for detection of constant rotary acceleration during vibratory rotary acceleration
A80-42003

S

SACCADIC EYE MOVEMENTS
On-line analysis of eye movements using a digital computer
A80-41996

SALINITY
Mechanisms of water-salt metabolism disturbances in dogs subjected to six month hypokinesia
[NASA-TM-76170] N80-27984

SCALE EFFECT
Scale effects in the musculoskeletal system, viscera and skin of small terrestrial mammals
A80-40625

SECURITY
An evaluation of microwave emissions from sensormatic electronic security systems
[PB80-155385] N80-27088

SEMICIRCULAR CANALS
Semicircular canal function in rats after flight aboard the Cosmos-936 biosatellite
N80-28021

SIGNAL PROCESSING
Adaptive delta modulation for telephone biotelemetry of ECG (electrocardiograph)
[PB80-160773] N80-27089

SKIN (ANATOMY)
Scale effects in the musculoskeletal system, viscera and skin of small terrestrial mammals
A80-40625

SKIN TEMPERATURE (BIOLOGY)
Effect of direction and rate of change of deep body and skin temperatures on performance of a rotary pursuit task
A80-41978

Interactions between surface cooling and LBNP-induced central hypovolemia --- Lower Body Negative Pressure
A80-41987

SLEEP
The organization of the sleep-wakefulness cycle according to data obtained by the continuous daily monitoring of heart rhythm and motor activity
A80-41319

SOCIAL PSYCHIATRY
The morale climate of the crew (from observations of a submarine doctor)
[NASA-TM-76094] N80-27092

SODIUM
The intracellular Na/+/ and K/+/ composition of the moderately halophilic bacterium, Paracoccus halodenitrificans
A80-41250
Na+ and Ca2+ ingestion - Plasma volume-electrolyte distribution at rest and exercise
A80-41661

SPACE FLIGHT
Human response to hypoxia-motion sickness stress as a predictor of the space sickness syndrome
[AD-A080306] N80-27080

SPACE FLIGHT FEEDING
Space victualling
A80-41750
The question of using dehydrated foods during long-term space flights
N80-28031

SPACE FLIGHT STRESS
Investigation of the operation of eye-telescope systems
A80-42341
USSR Report: Space Biology and Aerospace Medicine, volume 14, no. 3, 1980
[JPRS-75956] N80-27994
USSR Report. Space Biology and Aerospace medicine, volume 14, no. 2, 1980
[JPRS-75654] N80-28015
Role of dynamic space flight factors in the pathogenesis of involution of lymphatic organs (experimental morphological study)
N80-28022

SPACE MAINTENANCE
Maintainable maintenance disconnect valve /MMDV/ for on-orbit component replacement
[ASME PAPER 80-ENAS-42] A80-43216

SPACE MISSIONS
O2 sensing for environmental control and monitoring systems
[ASME PAPER 80-ENAS-41] A80-43215

SPACE OBSERVATIONS (FROM EARTH)
Exemplary model of an eye-telescope system for the detection of manned spacecraft on a background of stars
A80-42344

SPACE SHUTTLE PAYLOADS
The Shuttle's remote manipulator system - Status and operation
[DGLR PAPER 80-075] A80-41757
Manned maneuvering unit
[DGLR PAPER 80-081] A80-41761

SPACE SUITS
Manned maneuvering unit
[DGLR PAPER 80-081] A80-41761

SPACEBORNE EXPERIMENTS
Postflight studies on fungal phenotypes irradiated in space
A80-43011
NASA-Ames Life Sciences Flight Experiments program - 1980 status report
[ASME PAPER 80-ENAS-34] A80-43209
Life sciences experiments on Spacelab 1
[ASME PAPER 80-ENAS-36] A80-43211
The development of a Space Shuttle Research Animal Holding Facility
[ASME PAPER 80-ENAS-39] A80-43213
Experiment operations in Spacelab --- for life study in space environment
[ASME PAPER 80-ENAS-40] A80-43214
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys
N80-27999
Activity of some hepatic enzymes and lipogenetic processes in rat aipose tissue after space flight --- effects of weightlessness
N80-28000
State of rat thyroid C cells following flights on the Cosmos type of biosatellites (according to results of a morphological study) --- effects of weightlessness
N80-28001
Research hardware and habitat of animals used in experiment aboard Cosmos-936 biosatellite
N80-28019
Principal results of physiological experiments with mammals aboard the Cosmos-936 biosatellite
N80-28020
Semicircular canal function in rats after flight aboard the Cosmos-936 biosatellite
N80-28021

SPACEBORNE TELESCOPES
Investigation of the operation of eye-telescope systems
A80-42341

SPACECRAFT COMPONENTS
Maintainable maintenance disconnect valve /MMDV/ for on-orbit component replacement
[ASME PAPER 80-ENAS-42] A80-43216

SPACECRAFT TRACKING
Exemplary model of an eye-telescope system for the detection of manned spacecraft on a background of stars
A80-42344

SPACECREWS
Space victualling
A80-41750

SPACELAB
Life sciences experiments on Spacelab 1
[ASME PAPER 80-ENAS-36] A80-43211
Evaluation of biological models using Spacelab
[ASME PAPER 80-ENAS-38] A80-43212

SPACELAB PAYLOADS
The Shuttle's remote manipulator system - Status and operation
[DGLR PAPER 80-075] A80-41757
Environmental control of a pressurized equipment container for Shuttle flights - The Spacelab Igloo
[ASME PAPER 80-ENAS-19] A80-43195
NASA-Ames Life Sciences Flight Experiments program - 1980 status report
[ASME PAPER 80-ENAS-34] A80-43209
The development of a Space Shuttle Research Animal Holding Facility
[ASME PAPER 80-ENAS-39] A80-43213
Experiment operations in Spacelab --- for life study in space environment
[ASME PAPER 80-ENAS-40] A80-43214

SPATIAL DISTRIBUTION
Two-dimensional spatial frequency content and confusions among dot matrix characters
A80-42847

SPERMATOGENESIS
Effects of immobilization on spermiogenesis
[NASA-TM-76282] N80-27993

STRESS (PHYSIOLOGY)
Ambiguous response of lung lamellar bodies to sauna-like heat stress in two age groups of adult male rats
A80-41993
Use of the multivariate approach to enhance the diagnostic accuracy of the treadmill stress test
A80-42098
Myocardial dystrophy in athletes --- Russian book
A80-42935
Change in radiosensitivity of rats during hypokinetic stress
[NASA-TM-75968] N80-27068
Effect of sharply lowered muscular activity on the thyroid gland of the white rat
[NASA-TM-76114] N80-27070
The effect produced by phenobarbital, sex hormone and by castration on the development of gastric mucosa destruction due to electrization of immobilized rats
[NASA-TM-76156] N80-27071
Changes in leukocyte stability in hypodynamia
[NASA-TM- 5944] N80-27074
The behavior of fatty acids in the blood plasma of monkeys following exposure to short term stresses
[NASA-TM-76151] N80-27079

- Human response to hypoxia-motion sickness stress as a predictor of the space sickness syndrome [AD-A080306] N80-27080
- Experimental gastric ulcers induced by immobilization and electric shock of rats and their pharmacotherapy [NASA-TM-76157] N80-27981
- Effect of central neurotropic substances on the hypophysisadrenal cortex system during immobilization of animals [NASA-TM-76158] N80-27982
- Oxygen consumption of animals under conditions of hypokinesia [NASA-TM-76167] N80-27983
- Mechanisms of water-salt metabolism disturbances in dogs subjected to six month hypokinesia [NASA-TM-76170] N80-27984
- Effect of immobilization on the EEG of the baboon. Comparison with telemetry results from unrestricted animals [NASA-TM-76137] N80-27987
- Calorigenic effect of adrenaline in rats under conditions of restricted motor activity [NASA-TM-76192] N80-27988
- Displacement of plasma protein and conduction velocity in rats under action of acceleration forces and hypokinesia [NASA-TM-76195] N80-27989
- Experimental coronary sclerosis induced by immobilization of rabbits: A new model of arteriosclerosis [NASA-TM-76196] N80-27990
- Effects of immobilization on spermiogenesis [NASA-TM-76282] N80-27993
- The stress reaction to hypokinesia and its effect on general resistance N80-28008
- Effect of hypokinesia on invertase activity of the mucosa of the small intestine [NASA-TM-76191] N80-28039
- Morphofunctional correlations in the experimental study of myocardiopathies under the stress of forced restraint. Note 2: The influence of adrenal imbalance [NASA-TM-76138] N80-28040
- Changes of the body functions during long-term hypokinesia [NASA-TM-76166] N80-28041
- The content of catecholamines in the adrenal glands and sections of the brain under hypokinesia and injection of some neurotropic agents [NASA-TM-76010] N80-28044
- Mechanism of selective lesion of the cardiovascular system in psycho-emotional stress [NASA-TM-76035] N80-28045
- Characteristics of enzymatic induction provoked by chlordane [NASA-TM-76194] N80-28047
- Cardiovascular and respiratory physiopathological aspects of hypokinesia [NASA-TM-76198] N80-28048

STRESS (PSYCHOLOGY)
- Air traffic control stress and its effects - An investigation at Manchester airport A80-40978
- The behavior of fatty acids in the blood plasma of monkeys following exposure to short term stresses [NASA-TM-76151] N80-27079

SUBMARINES
- A history of the Naval Research Laboratory contributions to submarine life support systems [ASME PAPER 80-ENAS-29] A80-43205
- Atmospheric monitoring in submersibles [ASME PAPER 80-ENAS-31] A80-43206
- Carbon dioxide effects on submarines [ASME PAPER 80-ENAS-32] A80-43207
- Atmospheric monitoring for submarine applications [ASME PAPER 80-ENAS-33] A80-43208
- A monitor for atmospheric composition and contaminants in closed environments [ASME PAPER 80-ENAS-35] A80-43210

SURFACE COOLING
- Interactions between surface cooling and LBNP-induced central hypovolemia --- Lower Body Negative Pressure A80-41987

SURFACTANTS
- Combined effect of hypoxia and cold on the phospholipid composition of lung surfactant in rats A80-41980
- Alveolar macrophages and pulmonary surfactant of altitude-raised rats A80-42012

SURVIVAL EQUIPMENT
- The thermal properties of a survival bag incorporating metallised plastic sheeting A80-41883

SYMPTOMOLOGY
- Evaluation of an acute mountain sickness questionnaire - Effects of intermediate-altitude staging upon subjective symptomatology A80-41886

SYSTEMS ANALYSIS
- Some problems in pattern detection --- human creativity A80-42346
- A concept for developing human performance specifications [AD-A084617] N80-28054

T

TARGET RECOGNITION
- The influence of the flight altitude and the limitation of the field of view on the visibility of targets on the ground and the maximum visibility flight altitude [DFVLR-FB-79-35] N80-27095

TARGETS
- Target position and velocity - The stimuli for smooth pursuit eye movements A80-41646

TASK COMPLEXITY
- Dynamic decisions and work load in multitask supervisory control A80-40898

TECHNOLOGY UTILIZATION
- Adaptive delta modulation for telephone biotelemetry of ECG (electrocardiograph) [PB80-160773] N80-27089

TELEOPERATORS
- The Shuttle's remote manipulator system - Status and operation [DGLR PAPER 80-075] A80-41757

TEMPERATURE EFFECTS
- Effect of induced cyclic changes of deep body temperature on performance in a flight simulator A80-41881
- Effect of direction and rate of change of deep body and skin temperatures on performance of a rotary pursuit task A80-41978
- Ambiguous response of lung lamellar bodies to sauna-like heat stress in two age groups of adult male rats A80-41993
- Psychomotor deterioration during exposure to heat A80-42004
- Primary productivity, heterotrophy, metabolic indicators of stress and interactions in algal-bacterial mat communities affected by a fluctuating thermal regime [DP-MS-80-14] N80-27082
- Effect of high ambient temperature on human performance N80-28023

TERMINAL CONFIGURED VEHICLE PROGRAM
- NASA TLA workload analysis support. Volume 2: Metering and spacing studies validation data [NASA-CR-3239] N80-27091
- NASA TLA workload analysis support. Volume 3: FFD autopilot scenario validation data [NASA-CR-3240] N80-27093

TESTS
- Toward the development of a new aptitude selection test battery for air traffic control specialists A80-42011

THALLIUM ISOTOPES
- Diagnosis of coronary artery disease with exercise radionuclide imaging - State of the art A80-40547

THERMAL INSULATION
The thermal properties of a survival bag incorporating metallised plastic sheeting
A80-41883

THERMODYNAMIC PROPERTIES
The thermal properties of a survival bag incorporating metallised plastic sheeting
A80-41883

THRESHOLDS (PERCEPTION)
Thresholds for detection of constant rotary acceleration during vibratory rotary acceleration
A80-42003

THROMBOSIS
Effects of hypodynamia on the hemocoagulative properties of the vascular wall and myocardium
[NASA-TM-76199] N80-27992

THYROID GLAND
Effect of sharply lowered muscular activity on the thyroid gland of the white rat
[NASA-TM-76114] N80-27070
State of rat thyroid C cells following flights on the Cosmos type of biosatellites (according to results of a morphological study) --- effects of weightlessness
N80-28001

TISSUES (BIOLOGY)
The architecture of the avian retina following exposure to chronic 2 G
A80-42013
The effect of hypodynamia on mineral and protein metabolism in calcified tissues of the maxillodental system (experimental radioisotope study)
[NASA-TM-75998] N80-27078
Isolation and gas chromatographic demonstration of volatile organic substances in thin-layer biological samples
N80-28014
State of human bone tissue protein fraction after space flights
N80-28018

TORQUE
Active muscle torques about long-bone axes of major human joints
A80-41994

TOXIC HAZARDS
Carbon dioxide effects on submarines
[ASME PAPER 80-ENAS-32] A80-43207
Characteristics of enzymatic induction provoked by chlordane
[NASA-TM-76194] N80-28047

TOXICITY
Toxicity of vinyl chloride. Citations from the NTIS data base
[PB80-807662] N80-28051

TRACE CONTAMINANTS
Atmospheric monitoring for submarine applications
[ASME PAPER 80-ENAS-33] A80-43208

TRACKING (POSITION)
Performance effects of alcohol intoxication and hangover at ground level and at simulated altitude
A80-41876

TRANSDUCERS
Simultaneous muscle force and displacement transducer
[NASA-CASE-NPO-14212-1] N80-27072

TRANSFER ORBITS
Maintainable maintenance disconnect valve /MMDV/ for on-orbit component replacement
[ASME PAPER 80-ENAS-42] A80-43216

TRANSIENT RESPONSE
Transient diffusion in multi-layer biological tissue
N80-27979

TRANSVERSE ACCELERATION
Effect of transverse accelerations on innervation of the guinea pig's crural skeletal muscles
N80-28005

TREADMILLS
Use of the multivariate approach to enhance the diagnostic accuracy of the treadmill stress test
A80-42098

U

U.S.S.R. SPACE PROGRAM
Results of the investigation of the otolith function in manned space flights
[NASA-TM-76103] N80-28046

ULCERS
The effect produced by phenobarbital, sex hormone and by castration on the development of gastric mucosa destruction due to electrization of immobilized rats
[NASA-TM-76156] N80-27071
Experimental gastric ulcers induced by immobilization and electric shock of rats and their pharmacotherapy
[NASA-TM-76157] N80-27981
Effect of psychotropic drugs on gastric ulcers induced by immobilization: Increased protective effect of amitriptyline caused by chlordiazepoxide
[NASA-TM-76197] N80-27991

ULTRASONIC TESTS
Ultrasonic method of recording gas bubbles in animal venous blood in a rarefied atmosphere
N80-28013

URINE
Water recovery by catalytic treatment of urine vapor
[ASME PAPER 80-ENAS-16] A80-43192
Development of a preprototype thermoelectric integrated membrane evaporation subsystem for water recovery
[ASME PAPER 80-ENAS-46] A80-43220
Upgrading efficacy of membrane techniques for regenerating water from urine
N80-28035

V

VAPORS
Water recovery by catalytic treatment of urine vapor
[ASME PAPER 80-ENAS-16] A80-43192

VASCULAR SYSTEM
Effects of hypodynamia on the hemocoagulative properties of the vascular wall and myocardium
[NASA-TM-76199] N80-27992

VECTORCARDIOGRAPHY
Frank orthogonal vectorcardiograms in humans during and after exposure to +Gz acceleration stress
A80-42006

VELOCITY
Target position and velocity - The stimuli for smooth pursuit eye movements
A80-41646

VENTILATION
Theoretical analysis of the effect of state of pulmonary circulation on distribution of ventilation-perfusion relations and gas exchange in the lungs
N80-28011

VERTEBRAL COLUMN
The classification of spinal column deformities resulting from aircraft ejection forces
[ASME PAPER 80-ENAS-44] A80-43218
Vertebral pain in helicopter pilots
[NASA-TM-75792] N80-28083

VERTICAL MOTION
Predicting the effects of vertical vibration frequency, combinations of frequencies and viewing distance on the reading of numeric displays
A80-41690

VERTICAL ORIENTATION
Piracetam and fish orientation during parabolic aircraft flight
A80-41997

VESTIBULAR TESTS
Human color discriminating function with muscular tension during exposure to vestibular stimuli
N80-28004

VIBRATION EFFECTS
Predicting the effects of vertical vibration frequency, combinations of frequencies and viewing distance on the reading of numeric displays
A80-41690
Thresholds for detection of constant rotary acceleration during vibratory rotary acceleration
A80-42003

VISCERA
Scale effects in the musculoskeletal system, viscera and skin of small terrestrial mammals
A80-40625

VISCOSITY
Instrumentation for the measurement of viscosity and flow of biological fluids --- nuclear magnetic resonance
N80-27980

VISIBILITY
The influence of the flight altitude and the limitation of the field of view on the visibility of targets on the ground and the maximum visibility flight altitude
[DFVLR-FB-79-35] N80-27095

VISUAL ACCOMMODATION
A technique for estimating the contribution of photomechanical responses to visual adaptation
A80-41645

VISUAL ACUITY
Predicting the effects of vertical vibration frequency, combinations of frequencies and viewing distance on the reading of numeric displays
A80-41690

VISUAL DISCRIMINATION
Human color discriminating function with muscular tension during exposure to vestibular stimuli
N80-28004

VISUAL FIELDS
Brightness exponent as a function of retinal eccentricity in the peripheral visual field - Effects of dark and light adaptation
A80-41139

VISUAL OBSERVATION
Investigation of the operation of eye-telescope systems
A80-42341

VISUAL PERCEPTION
Pickup of visual information by the pilot during a ground control approach in a fighter aircraft simulator
A80-41981

Two-dimensional spatial frequency content and confusions among dot matrix characters
A80-42847

The influence of the flight altitude and the limitation of the field of view on the visibility of targets on the ground and the maximum visibility flight altitude
[DFVLR-FB-79-35] N80-27095

VISUAL STIMULI
Target position and velocity - The stimuli for smooth pursuit eye movements
A80-41646

Visual search performance during simulated radar observation with and without a sweepline
A80-41882

Device for measuring the precision of eye-hand coordination while tracking changing size
A80-42010

VISUAL TASKS
Visual search performance during simulated radar observation with and without a sweepline
A80-41882

W

WAKEFULNESS
The organization of the sleep-wakefulness cycle according to data obtained by the continuous daily monitoring of heart rhythm and motor activity
A80-41319

WALKING
Imitation of locomotion under conditions of weightlessness
A80-40846

WARNING SYSTEMS
The effect of hearing protectors on the perception of warning and indicator sounds: A general review
[ISVR-TR-98] N80-27087

WASTE TREATMENT
Water recovery by catalytic treatment of urine vapor
[ASME PAPER 80-ENAS-16] A80-43192
Development of a preprototype thermoelectric integrated membrane evaporation subsystem for water recovery
[ASME PAPER 80-ENAS-46] A80-43220

WATER CONSUMPTION
Space victualling
A80-41750

WATER POLLUTION
Method and automated apparatus for detecting coliform organisms
[NASA-CASE-MSC-16777-1] N80-27067

WATER RECLAMATION
Water recovery by catalytic treatment of urine vapor
[ASME PAPER 80-ENAS-16] A80-43192
Development of a preprototype thermoelectric integrated membrane evaporation subsystem for water recovery
[ASME PAPER 80-ENAS-46] A80-43220
Upgrading efficacy of membrane techniques for regenerating water from urine
N80-28035

WATTMETERS
Development of a method for the traceable calibration of defibrillator energy meters
[NPL-DES-55] N80-27085

WEIGHTLESSNESS
Piracetam and fish orientation during parabolic aircraft flight
A80-41997

Results of studies of pulsed blood flow and regional vascular tonus during flights in the first and second expeditions aboard the Salyut-6-Soyuz orbital complex --- effects of weightlessness
N80-27996

Hemodynamics and phase structure of the cardiac cycle in members of the first crew of Salyut-5 at rest --- effects of hypokinesia and weightlessness
N80-27998

Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys
N80-27999

Activity of some hepatic enzymes and lipogenetic processes in rat aipose tissue after space flight --- effects of weightlessness
N80-28000

State of rat thyroid C cells following flights on the Cosmos type of biosatellites (according to results of a morphological study) --- effects of weightlessness
N80-28001

Studies of prognostic significance of antiorthostatic position
N80-28006

Evaluation of efficacy of the set of preventive measures referable to the human neuromuscular system under hypokinetic conditions
N80-28007

Theoretical analysis of the effect of state of pulmonary circulation on distribution of ventilation-perfusion relations and gas exchange in the lungs
N80-28011

Isolation and gas chromatographic demonstration of volatile organic substances in thin-layer biological samples
N80-28014

Circulation at rest in crew members of the first main expedition aboard Salyut 6
N80-28017

State of human bone tissue protein fraction after space flights
N80-28018

Research hardware and habitat of animals used in experiment aboard Cosmos-936 biosatellite
N80-28019

Principal results of physiological experiments with mammals aboard the Cosmos-936 biosatellite
N80-28020

Semicircular canal function in rats after flight aboard the Cosmos-936 biosatellite
N80-28021

Role of dynamic space flight factors in the pathogenesis of involution of lymphatic organs (experimental morphological study)
N80-28022

Results of the investigation of the otolith function in manned space flights
[NASA-TM-76103] N80-28046

WEIGHTLESSNESS SIMULATION
Imitation of locomotion under conditions of weightlessness
A80-40846

Functional state of the cardiovascular system under the combined effect of 28 day immersion, rotation on a short-arm centrifuge and exercise on a bicycle ergometer
N80-28025

WHITE BLOOD CELLS
Changes in leukocyte stability in hypodynamia
[NASA-TM-75944] N80-27074

WINGS
Biological and aerodynamic problems with the flight of animals
[NASA-TM-75337] N80-27985

WORK CAPACITY
Absolute and relative work capacity in women at 758, 586, and 523 torr barometric pressure
A80-41977

WORKLOADS (PSYCHOPHYSIOLOGY)
Dynamic decisions and work load in multitask supervisory control
A80-40898

Heart rate variability, pilot workload, task difficulty, tracking
[DFVLR-FB-79-33] N80-27086

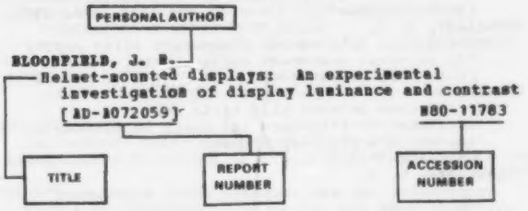
NASA TLA workload analysis support. Volume 2: Metering and spacing studies validation data
[NASA-CR-3239] N80-27091

NASA TLA workload analysis support. Volume 3: FFD autopilot scenario validation data
[NASA-CR-3240] N80-27093

PERSONAL AUTHOR INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 211)* OCTOBER 1980

Typical Personal Author Index Listing


PERSONAL AUTHOR
BLOOMFIELD, J. R.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059]
N80-11783
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABDUSATTAROV, A.
Effect of hypokinesia on invertase activity of the mucosa of the small intestine
[NASA-TM-76191] N80-28039

ACKLES, K. N.
Respiratory gas exchange during positive pressure breathing and rapid decompression to simulated altitudes of 18.3 and 24.4 km A80-41979

ADAMOVICH, B. A.
Research hardware and habitat of animals used in experiment aboard Cosmos-936 biosatellite N80-28019
Upgrading efficacy of membrane techniques for regenerating water from urine N80-28035

ADAMS, J. D.
Relation of breathing oxygen-argon gas mixtures to altitude decompression sickness A80-41992

AGADZHANYAN, N. A.
Dynamics of human external respiration and blood gases under the combined effect of hypercapnia and hypoxia N80-28024

ALEKSEYEV, D. A.
Method for assessing hemodynamics and detecting latent insufficiency of cerebral circulation in cosmonaut candidates N80-28012
Bioelectric activity of the human brain during and after 182-day anitorthosatic hypokinesia N80-28027

ALFEROVA, I. V.
Circulation in exercising crew members of the first main expedition aboard Salyut-6 N80-27997

ALICO, R.
The intracellular Na/+/ and K/+/ composition of the moderately halophilic bacterium, Paracoccus halodenitrificans A80-41250

ALLAN, J. R.
Effect of induced cyclic changes of deep body temperature on performance in a flight simulator A80-41881
Effect of direction and rate of change of deep body and skin temperatures on performance of a rotary pursuit task A80-41978

ALPERT, N. M.
CdTe ambulatory ventricular function monitor
[CONF-791037-26] N80-27083

ANDRIYAKO, L. Y.
Circulation in exercising crew members of the first main expedition aboard Salyut-6 N80-27997

AUFFRET, R.
Cardiovascular responses of man exposed to plus Gz accelerations in a centrifuge A80-41885
Vertebral pain in helicopter pilots
[NASA-TM-75792] N80-28043

AVELLINI, B. A.
Physiological responses of men and women to humid and dry heat A80-43151

AZHAYEV, A. N.
Effect of high ambient temperature on human performance N80-28023

B

BACKHAUSEN, F.
The relation between tilt table and acceleration-tolerance and their dependence on stature and physical fitness
[NASA-TM-75796] N80-28042

BAILEY, J. S.
Applied behavior analysis in flying research
[AD-A081750] N80-27094

BAKHTEYEVA, V. T.
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys N80-27999

BALOH, R. W.
On-line analysis of eye movements using a digital computer A80-41996

BANIN, D. B.
The ergatic intellect of electrical energy systems A80-42347

BARANSKI, S.
Displacement of plasma protein and conduction velocity in rats under action of acceleration forces and hypokinesia
[NASA-TM-76195] N80-27989

BARBER, R. E.
Response time, operator productivity and job satisfaction N80-28053

BARER, A. S.
Effect of prolonged +Gz accelerations on human performance N80-28003

BARSON, A. V., JR.
Human response to hypoxia-motion sickness stress as a predictor of the space sickness syndrome
[AD-A080306] N80-27080

BASSEN, H. I.
An evaluation of microwave emissions from sensormatic electronic security systems
[PB80-155385] N80-27088

BAUMANN, R.
The behavior of fatty acids in the blood plasma of monkeys following exposure to short term stresses
[NASA-TM-76151] N80-27079

BECKER, L. C.
Diagnosis of coronary artery disease with exercise radionuclide imaging - State of the art A80-40547

BECKMANN, K.
Environmental control of a pressurized equipment container for Shuttle flights - The Spacelab Igloo
[ASME PAPER 80-ENAS-19] A80-43195
BEKISHEV, K.
Effect of sharply lowered muscular activity on the thyroid gland of the white rat
[NASA-TM-76114] N80-27070
BELETSKII, V. V.
Imitation of locomotion under conditions of weightlessness
A80-40846
BELICH, A. I.
The organization of the sleep-wakefulness cycle according to data obtained by the continuous daily monitoring of heart rhythm and motor activity
A80-41319
BERGER, R. E.
A mathematical model for use in evaluating and developing impact test methods for protective headgear
[PB80-164957] N80-28055
BERNARD, G. D.
A technique for estimating the contribution of photomechanical responses to visual adaptation
A80-41645
BERRY, W. E.
NASA-Ames Life Sciences Flight Experiments program - 1980 status report
[ASME PAPER 80-ENAS-34] A80-43209
BERT, J.
Effect of immobilization on the EEG of the baboon. Comparison with telemetry results from unrestricted animals
[NASA-TM-76137] N80-27987
BEVERLEY, K. I.
Device for measuring the precision of eye-hand coordination while tracking changing size
A80-42010
BIRICH, T. V.
The effect of the acute ischemia of the brain on the permeability of the hemato-ophthalmic barrier
A80-42051
BLACK, S.
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995
BLOMQVIST, C. G.
Interactions between surface cooling and LBNP-induced central hypovolemia
A80-41987
BLUM, J. E.
Effect of psychotropic drugs on gastric ulcers induced by immobilization: Increased protective effect of amitriptyline caused by chlordiazepoxide
[NASA-TM-76197] N80-27991
BONDI, K. R.
Carbon dioxide effects on submarines
[ASME PAPER 80-ENAS-32] A80-43207
BOONE, J. O.
Toward the development of a new aptitude selection test battery for air traffic control specialists
A80-42011
BOOTH, J. M.
Overview of human engineering considerations for electro-optical displays
A80-42846
BOSCOLA, R. J.
Molecular sieve generation of aviator's oxygen - Performance of a prototype system under simulated flight conditions
A80-42008
BOTSOLIN, P. S.
The effect produced by phenobarbital, sex hormone and by castration on the development of gastric mucosa destruction due to electrization of immobilized rats
[NASA-TM-76156] N80-27071
BOUCHER, C. A.
CdTe ambulatory ventricular function monitor
[CONF-791037-26] N80-27083
BOYNTON, C. E.
Maintainable maintenance disconnect valve /MMDV/ for on-orbit component replacement
[ASME PAPER 80-ENAS-42] A80-43216
BRAGIN, L. K.
Dynamics of human external respiration and blood gases under the combined effect of hypercapnia and hypoxia
N80-28024
BRESLAV, I. S.
Respiration and gas exchange under hyperbaric conditions
N80-28016
BROCK, P. J.
Na+ and Ca2+ ingestion - Plasma volume-electrolyte distribution at rest and exercise
A80-41661
BROOKS, D. E.
Countercurrent distribution of biological cells
[NASA-CR-161487] N80-27069
BROUILLET, A. O.
Maintainable maintenance disconnect valve /MMDV/ for on-orbit component replacement
[ASME PAPER 80-ENAS-42] A80-43216
BRUNER, H.
The relation between tilt table and acceleration-tolerance and their dependence on stature and physical fitness
[NASA-TM-75796] N80-28042
BRYANTSEVA, L. A.
Respiration and gas exchange under hyperbaric conditions
N80-28016
BUDERER, M. C.
Life sciences experiments on Spacelab 1
[ASME PAPER 80-ENAS-36] A80-43211
BUDININKAS, P.
Water recovery by catalytic treatment of urine vapor
[ASME PAPER 80-ENAS-16] A80-43192
BURR, T. E.
Maintainable maintenance disconnect valve /MMDV/ for on-orbit component replacement
[ASME PAPER 80-ENAS-42] A80-43216
BURTON, R. R.
Development, test, and evaluation of an advanced anti-G valve for the F-15
A80-41988
Human tolerance to aerial combat maneuvers
A80-42005
BUTCHENKO, L. A.
Myocardial dystrophy in athletes
A80-42935
BYCHKOV, V. P.
The question of using dehydrated foods during long-term space flights
N80-28031

C

CANGIANO, R.
Use of the multivariate approach to enhance the diagnostic accuracy of the treadmill stress test
A80-42098
CARHART, H. W.
A history of the Naval Research Laboratory contributions to submarine life support systems
[ASME PAPER 80-ENAS-29] A80-43205
CASON, B. H.
A monitor for atmospheric composition and contaminants in closed environments
[ASME PAPER 80-ENAS-35] A80-43210
CAUSBY, G. L.
Rhesus brain gas tension and learned task performance responses to normoxic and hyperoxic breathing
[AMRL-TR-105] A80-41880
CHANEY, R.
CdTe ambulatory ventricular function monitor
[CONF-791037-26] N80-27083
CHARLESTON, D. B.
Modified conjugate counting technique for quantitative measurement of radioactivity in vivo
[CONF-790782-1] N80-27084
CHAVARRIA, A.
Disorders of the menstrual cycle in airline stewardesses
A80-41991
CHEN, C. T.
Modified conjugate counting technique for quantitative measurement of radioactivity in vivo
[CONF-790782-1] N80-27084

CHERNOV, I. P.
Change in radiosensitivity of rats during hypokinetic stress
[NASA-TM-75968] N80-27068
The stress reaction to hypokinesia and its effect on general resistance
N80-28008
Morphometric analysis of glomerules and juxtaglomerula system of the rat kidney in the course of experimental hypokinesia
N80-28028

CHIANTA, M. A.
Rocket plume burn hazard
A80-41984

CHIZHOV, S. V.
Upgrading efficacy of membrane techniques for regenerating water from urine
N80-28035

CLARK, B.
Thresholds for detection of constant rotary acceleration during vibratory rotary acceleration
A80-42003

COLLINS, W. E.
Performance effects of alcohol intoxication and hangover at ground level and at simulated altitude
A80-41876

COLLOMB, H.
Effect of immobilization on the EEG of the baboon. Comparison with telemetry results from unrestricted animals
[NASA-TM-76137] N80-27987

COLONIAS, J. S.
Magnetic field on humans: Epidemiological study design, part 2
[LBL-9357-PT-2] N80-27081

CONSTABLE, S. H.
Catecholamine excretion in A-10 pilots
A80-42007

COOKE, J. P.
Relation of breathing oxygen-argon gas mixtures to altitude decompression sickness
A80-41992

CORBETT, R.
Retina' changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995

COSGROVE, D. J.
Frank orthogonal vectorcardiograms in humans during and after exposure to +Gz acceleration stress
A80-42006

CROOKS, L. E.
Instrumentation for the measurement of viscosity and flow of biological fluids
N80-27980

CROOKS, W. H.
A concept for developing human performance specifications
[AD-A084617] N80-28054

CRUMP, J. H.
Air traffic control stress and its effects - An investigation at Manchester airport
A80-40978

CULLER, V. H.
Simultaneous muscle force and displacement transducer
[NASA-CASE-NPO-14212-1] N80-27072

D

DAGIANTI, A.
Cardiovascular and respiratory physiopathological aspects of hypokinesia
[NASA-TM-76198] N80-28048

DANIELS, W. L.
Aerobic power and body fat of men and women during army basic training
A80-41986

DANT, C. C.
NASA-Ames Life Sciences Flight Experiments program - 1980 status report
[ASME PAPER 80-ENAS-34] A80-43209

DARST, P. W.
Catecholamine excretion in A-10 pilots
A80-42007

DAVIS, S. H., JR.
The factors influencing the formation of Li2CO3 from LiOH and CO2
[ASME PAPER 80-ENAS-45] A80-43219

DAVYDOV, G. A.
Dynamics of human external respiration and blood gases under the combined effect of hypercapnia and hypoxia
N80-28024

DAYHOFF, D.
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995

DECORPO, J. J.
Atmospheric monitoring in submersibles
[ASME PAPER 80-ENAS-31] A80-43206

DEGTIARENKO, L. N.
Mathematical model for evaluating human operator activity in solving the problem of limiting controllability in an ergatic control and monitoring system
A80-42349

DEGTIAREV, V. A.
Hemodynamics and phase structure of the cardiac cycle in members of the first crew of Salyut-5 at rest
N80-27998
Circulation at rest in crew members of the first main expedition aboard Salyut 6
N80-28017

DELAHAYE, R. P.
Vertebral pain in helicopter pilots
[NASA-TM-75792] N80-28043

DENYS, A.
Characteristics of enzymatic induction provoked by chlordane
[NASA-TM-76194] N80-28047

DIANOV, A. G.
Respiration and gas exchange under hyperbaric conditions
N80-28016

DILL, W. P.
Method and automated apparatus for detecting coliform organisms
[NASA-CASE-MSC-16777-1] N80-27067

DINU, M.
Morphofunctional correlations in the experimental study of myocardiopathies under the stress of forced restraint. Note 2: The influence of adrenal imbalance
[NASA-TM-76138] N80-28040

DOLINESCU, S.
Morphofunctional correlations in the experimental study of myocardiopathies under the stress of forced restraint. Note 2: The influence of adrenal imbalance
[NASA-TM-76138] N80-28040

DOMRACHEVA, M. V.
Results of studies of pulsed blood flow and regional vascular tonus during flights in the first and second expeditions aboard the Salyut-6-Soyuz orbital complex
N80-27996

DOROSHEV, V. G.
Circulation in exercising crew members of the first main expedition aboard Salyut-6
N80-27997
Hemodynamics and phase structure of the cardiac cycle in members of the first crew of Salyut-5 at rest
N80-27998
Circulation at rest in crew members of the first main expedition aboard Salyut 6
N80-28017

DUCSAI, S. J.
Manned maneuvering unit
[DGLR PAPER 80-081] A80-41761

DURNOVA, G. N.
Role of dynamic space flight factors in the pathogenesis of involution of lymphatic organs (experimental morphological study)
N80-28022

DYACHENKO, A. I.
Theoretical analysis of the effect of state of pulmonary circulation on distribution of ventilation-perfusion relations and gas exchange in the lungs
N80-28011

E

EDELWEJN, Z.
Displacement of plasma protein and conduction velocity in rats under action of acceleration forces and hypokinesia
[NASA-TM-76195] N80-27989
EICHHORN, J.,
The relation between tilt table and acceleration-tolerance and their dependence on stature and physical fitness
[NASA-TM-75796] N80-28042
ELLESTAD, M. H.
Use of the multivariate approach to enhance the diagnostic accuracy of the treadmill stress test
A80-42098
ENGIN, A. E.
Active muscle torques about long-bone axes of major human joints
A80-41994
ENGLUND, C. E.
An attempted validation study of the birthdate-based biorhythm /BBB/ hypothesis
A80-42000
ENTINE, G.
CdTe ambulatory ventricular function monitor
[CONF-791037-26] N80-27083
EPSTEIN, Y.
Psychomotor deterioration during exposure to heat
A80-42004
EREMENKO, S. A.
The effect of the acute ischemia of the brain on the permeability of the hemato-ophthalmic barrier
A80-42051

F

FARRELL, R. J.
Overview of human engineering considerations for electro-optical displays
A80-42846
FEDEROV, I. I.
Changes in leukocyte stability in hypodynamia
[NASA-TM-75944] N80-27074
FEDEROVA, Z. P.
Changes in leukocyte stability in hypodynamia
[NASA-TM-75944] N80-27074
FEDOROV, I. V.
Biochemical bases of pathogenesis of hypokinesia
N80-27995
FELDSTEIN, C.
Simultaneous muscle force and displacement transducer
[NASA-CASE-NPO-14212-1] N80-27072
FERGUSON, R. H.
Molecular sieve generation of aviator's oxygen - Performance of a prototype system under simulated flight conditions
A80-42008
FITZPATRICK, E. L.
Frank orthogonal vectorcardiograms in humans during and after exposure to +Gz acceleration stress
A80-42006
FRATTIALI, V. P.
Is the weight loss of hyperbaric habitation a disorder of osmoregulation
A80-41888
FULLER, J. D.
O2 sensing for environmental control and monitoring systems
[ASME PAPER 80-ENAS-41] A80-43215
FULTON, C. L.
Error analysis and corrections to pupil diameter measurements with Langley Research Center's oculometer
[NASA-TM-81806] N80-27075

G

GAFFAROV, A. G.
Morphometric analysis of glomerules and juxtaglomerula system of the rat kidney in the course of experimental hypokinesia
N80-28028
GAFFNEY, F. A.
Interactions between surface cooling and LBNP-induced central hypovolemia
A80-41987
GALUSHKO, Y. S.
Changes of the body functions during long-term hypokinesia
[NASA-TM-76166] N80-28041
GASKO, O.
Psychomotor deterioration during exposure to heat
A80-42004
GAUTHIER, P.
Electroencephalographic recordings during parachute jump sessions
A80-41877
GAZENKO, O. G.
USSR Report. Space Biology and Aerospace medicine, volume 14, no. 2, 1980
[JPRS-75654] N80-28015
Principal results of physiological experiments with mammals aboard the Cosmos-936 biosatellite
N80-28020
GAZHALA, Y. M.
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys
N80-27999
GENIN, A. M.
Principal results of physiological experiments with mammals aboard the Cosmos-936 biosatellite
N80-28020
GEORGIYEVSKIY, V. S.
Circulation in exercising crew members of the first main expedition aboard Salyut-6
N80-27997
Circulation at rest in crew members of the first main expedition aboard Salyut 6
N80-28017
GIANNOVARIO, J. A.
Experiment operations in Spacelab
[ASME PAPER 80-ENAS-40] A80-43214
GIBSON, T. M.
Effect of induced cyclic changes of deep body temperature on performance in a flight simulator
A80-41881
Effect of direction and rate of change of deep body and skin temperatures on performance of a rotary pursuit task
A80-41978
GLINER, J. A.
Psychomotor performance during ozone exposure - Spectral and discriminant function analysis of EEG
A80-41879
GNAUCK, G.
The behavior of fatty acids in the blood plasma of monkeys following exposure to short term stresses
[NASA-TM-76151] N80-27079
GNUECHTEL, U.
The behavior of fatty acids in the blood plasma of monkeys following exposure to short term stresses
[NASA-TM-76151] N80-27079
GOLDMAN, R. F.
Physiological responses of men and women to humid and dry heat
A80-43151
GOLOV, V. K.
Research hardware and habitat of animals used in experiment aboard Cosmos-936 biosatellite
N80-28019
GONCHAREVSKAYA, O. A.
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys
N80-27999
GOODEN, B. A.
Comparison of reactive hyperemia in warm and cool human forearms over a range of ischemic periods
A80-41982
GORNAGO, V. A.
Studies of prognostic significance of antiorthostatic position
N80-28006
GORSHUNOVA, A. I.
Isolation and gas chromatographic demonstration of volatile organic substances in thin-layer biological samples
N80-28014
GOTTESMANN, C.
Electroencephalographic recordings during parachute jump sessions
A80-41877

GOVINDARAJ, T.
Optimal control model predictions of system performance and attention allocation and their experimental validation in a display design study A80-40899

GOVOROVA, L. V.
Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period A80-41320

GRANRATH, D.
Two-channel model of image processing in the human retina A80-42849

GREEN, R. G.
Effect of induced cyclic changes of deep body temperature on performance in a flight simulator A80-41881

GREENBERG, P. S.
Use of the multivariate approach to enhance the diagnostic accuracy of the treadmill stress test A80-42098

GREENLEAF, J. E.
Na+ and Ca2+ ingestion - Plasma volume-electrolyte distribution at rest and exercise A80-41661

GRIFFIN, M. J.
Predicting the effects of vertical vibration frequency, combinations of frequencies and viewing distance on the reading of numeric displays A80-41690

GUGUSHVILI, M. Y.
Studies of prognostic significance of antiorthostatic position N80-28006

GUILBERT-BER, E.
Characteristics of enzymatic induction provoked by chlordane
[NASA-TM-76194] N80-28047

H

HANLEY, J.
Psychomotor performance during ozone exposure - Spectral and discriminant function analysis of EEG A80-41879

HANSEN, P. J.
Air transport of the man who needs everything A80-42015

HARRIS, R. L., JR.
Error analysis and corrections to pupil diameter measurements with Langley Research Center's oculometer
[NASA-TM-81806] N80-27075

HARRISON, E. A.
Biological effects of microwaves. Citations from the NTIS data base
[PB80-808256] N80-28050
Toxicity of vinyl chloride. Citations from the NTIS data base
[PB80-807662] N80-28051
Altitude hypoxia. Citations from the NTIS data base
[PB80-807696] N80-28052

HARRISON, G.
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment A80-41995

HARTUNG, G. H.
Physiological effects of cold air inhalation during exercise A80-42001

HEGDE, K. S.
Combined effect of hypoxia and cold on the phospholipid composition of lung surfactant in rats A80-41980
Alveolar macrophages and pulmonary surfactant of altitude-raised rats A80-42012

HEINO, M. E.
Ambiguous response of lung lamellar bodies to sauna-like heat stress in two age groups of adult male rats A80-41993

HIGGINS, E. A.
Effects of ozone on exercising and sedentary adult men and women representative of the flight attendant population
[AD-A080045] N80-28049

HINDS, C. M.
The Shuttle's remote manipulator system - Status and operation
[DGLR PAPER 80-075] A80-41757

HOCHSTEIN, L. I.
The intracellular Na/+/ and K/+/ composition of the moderately halophilic bacterium, Paracoccus halodenitrificans A80-41250

HOFFMAN, L. F.
The effect of sustained +Gz acceleration on extravascular lung water content in domestic fowl A80-41999

HOFFMAN, R. B.
Piracetam and fish orientation during parabolic aircraft flight A80-41997

HOFFMANN, H. E.
The influence of the flight altitude and the limitation of the field of view on the visibility of targets on the ground and the maximum visibility flight altitude
[DFVLR-FB-79-35] N80-27095

HOLNESS, D. E.
Respiratory gas exchange during positive pressure breathing and rapid decompression to simulated altitudes of 18.3 and 24.4 km A80-41979

HOLST, E. V.
Biological and aerodynamic problems with the flight of animals
[NASA-TM-75337] N80-27985

HOMICK, J. L.
Piracetam and fish orientation during parabolic aircraft flight A80-41997

HONRUBIA, V.
On-line analysis of eye movements using a digital computer A80-41996

HORVATH, S. M.
Psychomotor performance during ozone exposure - Spectral and discriminant function analysis of EEG A80-41879
Absolute and relative work capacity in women at 758, 586, and 523 torr barometric pressure A80-41977

HOYLE, F.
Comets - A matter of life and death /Milne Lecture/ A80-41002

HUERLIMANN, A.
Effect of psychotropic drugs on gastric ulcers induced by immobilization: Increased protective effect of amitriptyline caused by chlordiazepoxide
[NASA-TM-76197] N80-27991

HUGHES, R. G.
Applied behavior analysis in flying research
[AD-A081750] N80-27094

HUNT, B. R.
Two-channel model of image processing in the human retina A80-42849

I

IGLESIAS, R.
Disorders of the menstrual cycle in airline stewardesses A80-41991

IKELS, K. G.
Relation of breathing oxygen-argon gas mixtures to altitude decompression sickness A80-41992
Molecular sieve generation of aviator's oxygen - Performance of a prototype system under simulated flight conditions A80-42008

ILIN, Y. A.
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys N80-27999
Research hardware and habitat of animals used in experiment aboard Cosmos-936 biosatellite N80-28019

Principal results of physiological experiments with mammals aboard the Cosmos-936 biosatellite
N80-28020

ILYUSHKO, N. A.
The effect of hypodynamia on mineral and protein metabolism in calcified tissues of the maxillodental system (experimental radioisotope study)
[NASA-TM-75998] N80-27078
Mechanisms of water-salt metabolism disturbances in dogs subjected to six month hypokinesia
[NASA-TM-76170] N80-27984
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys
N80-27999

INCHINA, V. I.
Effects of hypodynamia on the hemocoagulative properties of the vascular wall and myocardium
[NASA-TM-76199] N80-27992

ISAULOV, IU. F.
The effect of psychic self-regulation /autogenous training/ on the maintenance of the professional skill of pilots
A80-42345

IVANOVA, L. A.
Electrocardiographic exercise testing and ambulatory monitoring to identify patients with ischemic heart disease at high risk of sudden death
A80-40546

J

JAGGARS, J. L.
Development, test, and evaluation of an advanced anti-G valve for the F-15
A80-41988

JAGOW, R. D.
The development of a Space Shuttle Research Animal Holding Facility
[ASME PAPER 80-ENAS-39] A80-43213

JEFFERS, E. L.
Method and automated apparatus for detecting coliform organisms
[NASA-CASE-MSC-16777-1] N80-27067

JHABVALA, M. D.
An implantable electrical device
[NASA-CASE-GSC-12560-1] N80-27073

JOHANNSEN, G.
Optimal control model predictions of system performance and attention allocation and their experimental validation in a display design study
A80-40899

JOHNSON, D. L.
Identification of the minimum noise level capable of producing an asymptotic temporary threshold shift
[AMRL-TR-79-106] A80-41887

JOHNSON, J. E.
A history of the Naval Research Laboratory contributions to submarine life support systems
[ASME PAPER 80-ENAS-29] A80-43205

JONES, D. R.
Aeromedical transportation of psychiatric patients - Historical review and present management
A80-42014

JOUFFRAY, L.
Electroencephalographic recordings during parachute jump sessions
A80-41877

JOVY, D.
The relation between tilt table and acceleration-tolerance and their dependence on stature and physical fitness
[NASA-TM-75796] N80-28042

K

KACIUBA-USCILKO, H.
Calorigenic effect of adrenaline in rats under conditions of restricted motor activity
[NASA-TM-76192] N80-27988

KALEPS, I.
Active muscle torques about long-bone axes of major human joints
A80-41994

KAPLAN, J. D.
A concept for developing human performance specifications
[AD-A084617] N80-28054

KAPLANSKIY, A. S.
Role of dynamic space flight factors in the pathogenesis of involution of lymphatic organs (experimental morphological study)
N80-28022

KARL, A. A.
Rhesus brain gas tension and learned task performance responses to normoxic and hyperoxic breathing
[AMRL-TR-105] A80-41880

KASIANOV, V. A.
Mathematical model for evaluating human operator activity in solving the problem of limiting controllability in an ergatic control and monitoring system
A80-42349

KAZACHKOV, V. N.
Investigation of the operation of eye-telescope systems
A80-42341
Exemplary model of an eye-telescope system for the detection of manned spacecraft on a background of stars
A80-42344

KAZAKOVA, R. T.
Ultrasonic method of recording gas bubbles in animal venous blood in a rarefied atmosphere
N80-28013

KAZARIAN, L. E.
The classification of spinal column deformities resulting from aircraft ejection forces
[ASME PAPER 80-ENAS-44] A80-43218

KAZARYAN, V. A.
Changes of the body functions during long-term hypokinesia
[NASA-TM-76166] N80-28041

KAZNACHEYEV, V. P.
Some problems of human adaptation and ecology under the aspect of general pathology
[NASA-TM-76095] N80-27076

KEISER, H. R.
Frank orthogonal vectorcardiograms in humans during and after exposure to +Gz acceleration stress
A80-42006

KENTSMITH, D. K.
Minimizing the psychological effects of a wartime disaster on an individual
A80-41890

KEREN, G.
Psychomotor deterioration during exposure to heat
A80-42004

KHARI, L.
Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period
A80-41320

KHLUDEEV, E. E.
Investigation of the operation of eye-telescope systems
A80-42341
Exemplary model of an eye-telescope system for the detection of manned spacecraft on a background of stars
A80-42344

KHRUNOV, E. V.
Investigation of the operation of eye-telescope systems
A80-42341
Exemplary model of an eye-telescope system for the detection of manned spacecraft on a background of stars
A80-42344

KINNEAR, G.
Red blood cell count /RCC/ and volume /MCV/ of three subjects in a hypobaric chamber
A80-41998

KIRILLOVA, Z. A.
Hemodynamics and phase structure of the cardiac cycle in members of the first crew of Salyut-5 at rest
N80-27998

Circulation at rest in crew members of the first main expedition aboard Salyut 6
N80-28017
KISSEN, A. T.
Rhesus brain gas tension and learned task performance responses to normoxic and hyperoxic breathing
[AMRL-TR-105] A80-41880
KISSINGER, L. D.
The factors influencing the formation of Li_2CO_3 from LiOH and CO_2
[ASME PAPER 80-ENAS-45] A80-43219
KLEIN, K. E.
The relation between tilt table and acceleration-tolerance and their dependence on stature and physical fitness
[NASA-TM-75796] N80-28042
KOBZEV, S. A.
Circulation at rest in crew members of the first main expedition aboard Salyut 6
N80-28017
KOBZEV, Y. A.
Circulation in exercising crew members of the first main expedition aboard Salyut-6
N80-27997
KOLESNIK, A. G.
The effect of hypodynamia on mineral and protein metabolism in calcified tissues of the maxillodental system (experimental radioisotope study)
[NASA-TM-75998] N80-27078
State of human bone tissue protein fraction after space flights
N80-28018
KOLOTILOVA, A. I.
Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period
A80-41320
KOLTSOV, A. N.
Effect of high ambient temperature on human performance
N80-28023
KOMISSAROVA, N. A.
State of human bone tissue protein fraction after space flights
N80-28018
KONDRATEV, Y. I.
Changes of the body functions during long-term hypokinesia
[NASA-TM-76166] N80-28041
KONDRATYEV, Y. I.
The effect of hypodynamia on mineral and protein metabolism in calcified tissues of the maxillodental system (experimental radioisotope study)
[NASA-TM-75998] N80-27078
Mechanisms of water-salt metabolism disturbances in dogs subjected to six month hypokinesia
[NASA-TM-76170] N80-27984
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys
N80-27999
KONDRATYEVA, V. A.
Mechanisms of water-salt metabolism disturbances in dogs subjected to six month hypokinesia
[NASA-TM-76170] N80-27984
KONIKOVA, N. S.
Imitation of locomotion under conditions of weightlessness
A80-40846
KORNILOVA, L. N.
Results of the investigation of the otolith function in manned space flights
[NASA-TM-76103] N80-28046
KOROLKOV, V. I.
Mechanisms of water-salt metabolism disturbances in dogs subjected to six month hypokinesia
[NASA-TM-76170] N80-27984
Principal results of physiological experiments with mammals aboard the Cosmos-936 biosatellite
N80-28020
KOSLIN, M. E.
A monitor for atmospheric composition and contaminants in closed environments
[ASME PAPER 80-ENAS-35] A80-43210
KOTOVSKAYA, A. R.
Principal results of physiological experiments with mammals aboard the Cosmos-936 biosatellite
N80-28020
KOVALENKO, Y. A.
The effect of hypodynamia on mineral and protein metabolism in calcified tissues of the maxillodental system (experimental radioisotope study)
[NASA-TM-75998] N80-27078
Mechanisms of water-salt metabolism disturbances in dogs subjected to six month hypokinesia
[NASA-TM-76170] N80-27984
Changes of the body functions during long-term hypokinesia
[NASA-TM-76166] N80-28041
KOVALEV, O. A.
Regional redistribution of rat blood after 7 and 30 days of hypokinesia
N80-28009
KOZLOWSKI, S.
Calorigenic effect of adrenaline in rats under conditions of restricted motor activity
[NASA-TM-76192] N80-27988
KRAHENBUHL, G. S.
Catecholamine excretion in A-10 pilots
A80-42007
KRASNYKH, I. G.
Oxygen consumption of animals under conditions of hypokinesia
[NASA-TM-76167] N80-27983
KRAVIK, S.
The use of antigravity suits in the treatment of idiopathic orthostatic hypotension
[NASA-TM-75804] N80-27077
KRISHNA, B.
Combined effect of hypoxia and cold on the phospholipid composition of lung surfactant in rats
A80-41980
Alveolar macrophages and pulmonary surfactant of altitude-raised rats
A80-42012
KRIVITSINA, Z. A.
Evaluation of efficacy of the set of preventive measures referable to the human neuromuscular system under hypokinetic conditions
N80-28007
KROTOV, V. P.
Mechanisms of water-salt metabolism disturbances in dogs subjected to six month hypokinesia
[NASA-TM-76170] N80-27984
KRUPINA, T. N.
Bioelectric activity of the human brain during and after 182-day anitorthosatic hypokinesia
N80-28027
KUCHEMANN, D.
Biological and aerodynamic problems with the flight of animals
[NASA-TM-75337] N80-27985
KUDRIAVTSEVA, G. V.
Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period
A80-41320
KUDRYASHOVA, Z. N.
Human color discriminating function with muscular tension during exposure to vestibular stimuli
N80-28004
KULIKOV, O. B.
Hemodynamics and phase structure of the cardiac cycle in members of the first crew of Salyut-5 at rest
N80-27998
KULIKOV, V.
The morale climate of the crew (from observations of a submarine doctor)
[NASA-TM-76094] N80-27092
KUMAR, R.
Combined effect of hypoxia and cold on the phospholipid composition of lung surfactant in rats
A80-41980
Alveolar macrophages and pulmonary surfactant of altitude-raised rats
A80-42012

KUSHAKOVSKII, M. S.
Myocardial dystrophy in athletes
A80-42935

L

LAHIRI, S.
Interaction of dopamine and haloperidol with O2 and CO2 chemoreception in carotid body
A80-43152

LAMB, M. J.
Molecular sieve generation of aviator's oxygen - Performance of a prototype system under simulated flight conditions
A80-42008

LANDMARK, K.
The use of antigravity suits in the treatment of idiopathic orthostatic hypotension
[NASA-TM-75804] N80-27077

LANGHOFER, L.
On-line analysis of eye movements using a digital computer
A80-41996

LAPSHINA, N. A.
Circulation in exercising crew members of the first main expedition aboard Salyut-6
N80-27997

Hemodynamics and phase structure of the cardiac cycle in members of the first crew of Salyut-5 at rest
N80-27998

Circulation at rest in crew members of the first main expedition aboard Salyut 6
N80-28017

LATEGOLA, M. T.
Effects of ozone on exercising and sedentary adult men and women representative of the flight attendant population
[AD-A080045] N80-28049

LAUGHLIN, M. H.
Frank orthogonal vectorcardiograms in humans during and after exposure to +Gz acceleration stress
A80-42006

LAVROUA, Y. A.
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys
N80-27999

LAWSON, C. J.
Effect of induced cyclic changes of deep body temperature on performance in a flight simulator
A80-41881

LAZEWATSKY, J. L.
CdTe ambulatory ventricular function monitor
[CONF-791037-26] N80-27083

LEACH, C. S.
Is the weight loss of hyperbaric habitation a disorder of osmoregulation
A80-41888

LEAMY, L.
Use of the multivariate approach to enhance the diagnostic accuracy of the treadmill stress test
A80-42098

LEBAN, M. I.
Water recovery by catalytic treatment of urine vapor
[ASME PAPER 80-ENAS-16] A80-43192

LEE, R.
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995

LEONTYEV, V. K.
State of human bone tissue protein fraction after space flights
N80-28018

LEUASHOV, M. M.
Generalized nystagmometric characteristics for diagnostic purposes
N80-28034

LEVY, J.
Characteristics of enzymatic induction provoked by chlordane
[NASA-TM-76194] N80-28047

LEWIS, C. H.
Predicting the effects of vertical vibration frequency, combinations of frequencies and viewing distance on the reading of numeric displays
A80-41690

LEWIS, G. W.
Simultaneous muscle force and displacement transducer
[NASA-CASE-NPO-14212-1] N80-27072

LIGHT, I. M.
The thermal properties of a survival bag incorporating metallised plastic sheeting
A80-41883

LOGINOVA, I. N.
Oxygen consumption of animals under conditions of hypokinesia
[NASA-TM-76167] N80-27983

LOVLIN, R. E.
Red blood cell count /RCC/ and volume /MCV/ of three subjects in a hypobaric chamber
A80-41998

LYSAK, V. F.
Regional redistribution of rat blood after 7 and 30 days of hypokinesia
N80-28009

M

MACDONALD, I. C.
Comparison of reactive hyperemia in warm and cool human forearms over a range of ischemic periods
A80-41982

MACLEOD, G.
NASA-Ames Life Sciences Flight Experiments program - 1980 status report
[ASME PAPER 80-ENAS-34] A80-43209

MADDOX, M. E.
Two-dimensional spatial frequency content and confusions among dot matrix characters
A80-42847

MAILYAN, E. S.
Changes of the body functions during long-term hypokinesia
[NASA-TM-76166] N80-28041

MAKAROV, S. A.
Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period
A80-41320

MAKHO, L.
Activity of some hepatic enzymes and lipogenetic processes in rat aipose tissue after space flight
N80-28000

MALKIN, V. B.
Effect of conditioning for hypoxia on fertility of white mice
N80-28030

MALYSHEV, IU. M.
Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period
A80-41320

MANSELL, A.
Changes in pulmonary PV characteristics of human subjects at an altitude of 5,366 m
A80-43153

MARETT, J. R.
Catecholamine excretion in A-10 pilots
A80-42007

MARKARYAN, M. V.
The question of using dehydrated foods during long-term space flights
N80-28031

MARTIN, A. M.
The effect of hearing protectors on the perception of warning and indicator sounds: A general review
[ISVR-TR-98] N80-27087

MARTIN, W. D.
Effects of chronic centrifugation on skeletal muscle fibers in young developing rats
A80-41983

MAXWELL, V. B.
Air traffic control stress and its effects - An investigation at Manchester airport
A80-40978

MAZUR, N. A.
Electrocardiographic exercise testing and ambulatory monitoring to identify patients with ischemic heart disease at high risk of sudden death
A80-40546

MCANINCH, M.
The intracellular Na/+/ and K/+/ composition of the moderately halophilic bacterium, Paracoccus halodenitrificans
A80-41250

MCGOURTY, J.
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995

MCKENZIE, J. M.
Effects of ozone on exercising and sedentary adult men and women representative of the flight attendant population
[AD-A080045] N80-28049

MEDKOVA, I. L.
Secretion, incretion and resecretion of pancreatic lipase during prolonged restriction of motor activity
N80-28010

MEITNER, E. R.
Effects of immobilization on spermiogenesis
[NASA-TM-76282] N80-27993

MELESHKO, G. I.
Study of compatilibity of certain higher plants and chlorella as related to a bioregenerative human life support system
N80-28033

MELNIK, B. E.
The content of catecholamines in the adrenal glands and sections of the brain under hypokinesia and injection of some neurotropic agents
[NASA-TM-76010] N80-28044

MELTON, C. E.
Effects of ozone on exercising and sedentary adult men and women representative of the flight attendant population
[AD-A080045] N80-28049

MESSIER, A. A.
Carbon dioxide effects on submarines
[ASME PAPER 80-ENAS-32] A80-43207

METGES, P. J.
Vertebral pain in helicopter pilots
[NASA-TM-75792] N80-28043

METLIK, V. I.
Investigation of the operation of eye-telescope systems
A80-42341

MEUNIER, K.
The growth of birdwings
[NASA-TM-75821] N80-27986

MICHAILOV, M. L.
The behavior of fatty acids in the blood plasma of monkeys following exposure to short term stresses
[NASA-TM-76151] N80-27079

MIKHAYLOV, V. M.
Circulation at rest in crew members of the first main expedition aboard Salyut 6
N80-28017

MILES, D. S.
Absolute and relative work capacity in women at 758, 586, and 523 torr barometric pressure
A80-41977

MILLER, R. L.
Relation of breathing oxygen-argon gas mixtures to altitude decompression sickness
A80-41992

Molecular sieve generation of aviator's oxygen - Performance of a prototype system under simulated flight conditions
A80-42008

MILYAVSKIY, V. I.
Research hardware and habitat of animals used in experiment aboard Cosmos-936 biosatellite
N80-28019

MOHLER, S. R.
Agricultural aviation medicine in the Soviet Union
A80-41990

MOISSEIEV, J.
Psychomotor deterioration during exposure to heat
A80-42004

MOKASHI, A.
Interaction of dopamine and haloperidol with O2 and CO2 chemoreception in carotid body
A80-43152

MOORE, R. H.
CdTe ambulatory ventricular function monitor
[CONF-791037-26] N80-27083

MOROZOVA, R. S.
Changes of the body functions during long-term hypokinesia
[NASA-TM-76166] N80-28041

MULLIGAN, E.
Interaction of dopamine and haloperidol with O2 and CO2 chemoreception in carotid body
A80-43152

MURAKAMI, H.
Effect of an altered rest-activity or feeding schedule on the shift of motor activity rhythm of mice
A80-41884

MURAKAMI, Y.
Effect of an altered rest-activity or feeding schedule on the shift of motor activity rhythm of mice
A80-41884

MYHRE, L. G.
Physiological effects of cold air inhalation during exercise
A80-42001

N

NAITOH, P.
An attempted validation study of the birthdate-based biorhythm /BBB/ hypothesis
A80-42000

NATOCHIN, Y. V.
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys
N80-27999

NAUREILS, P.
Pickup of visual information by the pilot during a ground control approach in a fighter aircraft simulator
A80-41981

NAYAR, H. S.
Alveolar macrophages and pulmonary surfactant of altitude-raised rats
A80-42012

NAZARENKO, V. A.
Electrocardiographic exercise testing and ambulatory monitoring to identify patients with ischemic heart disease at high risk of sudden death
A80-40546

NAZAROV, N. M.
Upgrading efficacy of membrane techniques for regenerating water from urine
N80-28035

NEGULESCO, J. A.
The architecture of the avian retina following exposure to chronic 2 G
A80-42013

NEMET, S.
Activity of some hepatic enzymes and lipogenetic processes in rat aipose tissue after space flight
N80-28000

NIKOLAYEVA, N. M.
Secretion, incretion and resecretion of pancreatic lipase during prolonged restriction of motor activity
N80-28010

NISHINO, T.
Interaction of dopamine and haloperidol with O2 and CO2 chemoreception in carotid body
A80-43152

NITSCHKOFF, S.
The behavior of fatty acids in the blood plasma of monkeys following exposure to short term stresses
[NASA-TM-76151] N80-27079

NIXON, C. W.
Identification of the minimum noise level capable of producing an asymptotic temporary threshold shift
[AMRL-TR-79-106] A80-41887

NORMAN, J. N.
The thermal properties of a survival bag incorporating metallised plastic sheeting
A80-41883

NOSKIN, A. D.
Research hardware and habitat of animals used in experiment aboard Cosmos-936 biosatellite
N80-28019

NUNNELEY, S. A.
Physiological effects of cold air inhalation during exercise
A80-42001

O

ORLANDO, R. G.
The architecture of the avian retina following exposure to chronic 2 G
A80-42013

ORTEGA, C.
Modified conjugate counting technique for quantitative measurement of radioactivity in vivo
[CONF-790782-1] N80-27084

OSADA, Y.
Community reactions to aircraft noise in the vicinity of airport: A comparative study of the social surveys using interview method
[NASA-TM-75439] N80-27090

OSADCHII, L. I.
Review - The role of pulse oscillations of intravascular pressure in the regulation of blood circulation
A80-41318

OSADCHIY, L. I.
Pharmacological analysis of physiological mechanisms of orthostatic hemodynamic stability
N80-28026

OSAKA, N.
Brightness exponent as a function of retinal eccentricity in the peripheral visual field - Effects of dark and light adaptation
A80-41139

OSAULENKO, V. Y.
Effect of transverse accelerations on innervation of the guinea pig's crural skeletal muscles
N80-28005

OVCHAROV, V. K.
Research hardware and habitat of animals used in experiment aboard Cosmos-936 biosatellite
N80-28019

OVECHKIN, V. G.
Semicircular canal function in rats after flight aboard the Cosmos-936 biosatellite
N80-28021

P

PACE, N.
Scale effects in the musculoskeletal system, viscera and skin of small terrestrial mammals
A80-40625
Energy status and oxidation reduction status in rat liver at high altitude /3.8 km/
A80-42002

PALADIY, E. S.
The content of catecholamines in the adrenal glands and sections of the brain under hypokinesia and injection of some neurotropic agents
[NASA-TM-76010] N80-28044

PALKOVICH, M.
Activity of some hepatic enzymes and lipogenetic processes in rat aipose tissue after space flight
N80-28000

PANDOLF, K. B.
Physiological responses of men and women to humid and dry heat
A80-43151

PAPIN, J. P.
Pickup of visual information by the pilot during a ground control approach in a fighter aircraft simulator
A80-41981

PASTUKHOV, IU. F.
Changes in the adrenergic regulation of thermogenesis during the long-term adaptation of rats to the cold
A80-41321

PATTON, J. F.
Aerobic power and body fat of men and women during army basic training
A80-41986
Prevalence of coronary heart disease risk factors in a young military population
A80-41989

PEKUS, Y. N.
Changes in leukocyte stability in hypodynamia
[NASA-TM-75944] N80-27074

PHILLIPS, N. H.
Thresholds for detection of constant rotary acceleration during vibratory rotary acceleration
A80-42003

PHILPOTT, D. E.
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995

PIERGALLINI, J. R.
Rocket plume burn hazard
A80-41984

PILON, R. A.
Atmospheric monitoring for submarine applications
[ASME PAPER 80-ENAS-33] A80-43208

PIMENTAL, N. A.
Physiological responses of men and women to humid and dry heat
A80-43151

PIRIE, N. W.
Space victualling
A80-41750

PLAKHUTA-PLAKUTINA, G. I.
State of rat thyroid C cells following flights on the Cosmos type of biosatellites (according to results of a morphological study)
N80-28001

PLISKOVSKAYA, G. N.
Research hardware and habitat of animals used in experiment aboard Cosmos-936 biosatellite
N80-28019

POLA, J.
Target position and velocity - The stimuli for smooth pursuit eye movements
A80-41646

POLESHCHUK, V. S.
Research hardware and habitat of animals used in experiment aboard Cosmos-936 biosatellite
N80-28019

PONAMAREV, S. I.
Hemodynamics and phase structure of the cardiac cycle in members of the first crew of Salyut-5 at rest
N80-27998

PONOMARENKO, V. A.
Some aspects of application of the systemic approach to aviation engineering psychology
N80-28002

PONOMAREV, IU. P.
Some problems in pattern detection
A80-42346

POPKOV, V. L.
Changes of the body functions during long-term hypokinesia
[NASA-TM-76166] N80-28041

PORLIER, J. A. G.
Respiratory gas exchange during positive pressure breathing and rapid decompression to simulated altitudes of 18.3 and 24.4 km
A80-41979

PORTUGALOV, V. V.
Principal results of physiological experiments with mammals aboard the Cosmos-936 biosatellite
N80-28020

POTAPOV, A. N.
Changes of the body functions during long-term hypokinesia
[NASA-TM-76166] N80-28041

POWLES, A.
Changes in pulmonary PV characteristics of human subjects at an altitude of 5,366 m
A80-43153

PROKHONCHUKOV, A. A.
The effect of hypodynamia on mineral and protein metabolism in calcified tissues of the maxillodental system (experimental radioisotope study)
[NASA-TM-75998] N80-27078
State of human bone tissue protein fraction after space flights
N80-28018
Changes of the body functions during long-term hypokinesia
[NASA-TM-76166] N80-28041

PUGOVKIN, A. P.
Review - The role of pulse oscillations of intravascular pressure in the regulation of blood circulation
A80-41318

Q

QUATTRONE, P. D.
Water recovery by catalytic treatment of urine vapor
[ASME PAPER 80-ENAS-16] A80-43192

R

RADKE, H.
Heart rate variability, pilot workload, task difficulty, tracking
[DFVLR-FB-79-33] N80-27086

RAGOZIN, V. N.
Circulation in exercising crew members of the first main expedition aboard Salyut-6
N80-27997

Hemodynamics and phase structure of the cardiac cycle in members of the first crew of Salyut-5 at rest
N80-27998

RAHLMANN, D. F.
Scale effects in the musculoskeletal system, viscera and skin of small terrestrial mammals
A80-40625

RASSON, J.
Transient diffusion in multi-layer biological tissue
N80-2[illegible]979

RASTRIGIN, L. A.
Some problems in pattern detection
A80-42346

RAVEN, P. B.
Interactions between surface cooling and LBNP-induced central hypovolemia
A80-41987

RAYMOND, L. W.
Is the weight loss of hyperbaric habitation a disorder of osmoregulation
A80-41888

RAYMOND, W. S.
Is the weight loss of hyperbaric habitation a disorder of osmoregulation
A80-41888

REDMAN, P. J.
Effect of direction and rate of change of deep body and skin temperatures on performance of a rotary pursuit task
A80-41978

REED, R. D.
Energy status and oxidation reduction status in rat liver at high altitude /3.8 km/
A80-42002

REGAN, D.
Device for measuring the precision of eye-hand coordination while tracking changing size
A80-42010

REID, G. B.
Catecholamine excretion in A-10 pilots
A80-42007

REPIN, Y. M.
Mechanism of selective lesion of the cardiovascular system in psycho-emotional stress
[NASA-TM-76035] N80-28045

REUTHER, L. C.
Catecholamine excretion in A-10 pilots
A80-42007

REYBURN, J. A.
Absolute and relative work capacity in women at 758, 586, and 523 torr barometric pressure
A80-41977

RICE, J. E.
Atmospheric monitoring for submarine applications
[ASME PAPER 80-ENAS-33] A80-43208

ROBINSON, S. M.
Evaluation of an acute mountain sickness questionnaire - Effects of intermediate-altitude staging upon subjective symptomatology
A80-41886

RODI, M.
Electroencephalographic recordings during parachute jump sessions
A80-41877

ROEBELEN, G. J., JR.
Development of a preprototype thermoelectric integrated membrane evaporation subsystem for water recovery
[ASME PAPER 80-ENAS-46] A80-43220

ROWLANDS, S.
Red blood cell count /RCC/ and volume /MCV/ of three subjects in a hypobaric chamber
A80-41998

RUDEK, F. P.
O2 sensing for environmental control and monitoring systems
[ASME PAPER 80-ENAS-41] A80-43215

RYLNIKOV, Y. P.
Effect of hypokinesia on changes in carbohydrate and lipid metabolism in the heart and liver
N80-28029

RYZHENKOV, V. E.
Effect of central neurotropic substances on the hypophysisadrenal cortex system during immobilization of animals
[NASA-TM-76158] N80-27982

S

SAALFELD, F. E.
Atmospheric monitoring in submersibles
[ASME PAPER 80-ENAS-31] A80-43206

SADLER, M.
The intracellular Na/+/ and K/+/ composition of the moderately halophilic bacterium, Paracoccus halodenitrificans
A80-41250

SAFONOV, V. I.
Evaluation of efficacy of the set of preventive measures referable to the human neuromuscular system under hypokinetic conditions
N80-28007

SAITO, M.
Interactions between surface cooling and LBNP-induced central hypovolemia
A80-41987

SAKUN, T. L.
Changes in leukocyte stability in hypodynamia
[NASA-TM-75944] N80-27074

SALINAS, G. A.
Piracetam and fish orientation during parabolic aircraft flight
A80-41997

Life sciences experiments on Spacelab 1
[ASME PAPER 80-ENAS-36] A80-43211

SANTUCCI, G.
Pickup of visual information by the pilot during a ground control approach in a fighter aircraft simulator
A80-41981

SAVELYEVA, V. G.
Circulation at rest in crew members of the first main expedition aboard Salyut 6
N80-28017

SAVIK, L.
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995

SCHALK, T. B.
Nonlinearities in auditory-nerve fiber responses to bandlimited noise: An experimental study and a model
N80-28037

SCHICK, F. V.
Heart rate variability, pilot workload, task difficulty, tracking
[DFVLR-FB-79-33] N80-27086

SCHOTTE, J.
The relation between tilt table and acceleration-tolerance and their dependence on stature and physical fitness
[NASA-TM-75796] N80-28042

SCHREINER, R.
CdTe ambulatory ventricular function monitor
[CONF-791037-26] N80-27083

SCHUTTE, J.
Interactions between surface cooling and LBNP-induced central hypovolemia
A80-41987

SEROVA, L. V.
Changes of the body functions during long-term hypokinesia
[NASA-TM-76166] N80-28041

SEVERIN, A. Y.
Dynamics of human external respiration and blood gases under the combined effect of hypercapnia and hypoxia
N80-28024

SEVEROVOSTOKOVA, V. I.
Regional redistribution of rat blood after 7 and 30 days of hypokinesia
N80-28009

SEWCHAND, L. S.
Red blood cell count /RCC/ and volume /MCV/ of three subjects in a hypobaric chamber
A80-41998

SHABELNIKOV, V. G.
Theoretical analysis of the effect of state of pulmonary circulation on distribution of ventilation-perfusion relations and gas exchange in the lungs
N80-28011

SHAFFSTALL, R. M.
Development, test, and evaluation of an advanced anti-G valve for the F-15
A80-41988

Human tolerance to aerial combat maneuvers
A80-42005

SHAKHMATOVA, Y. I.
Effect of weightlessness and artificial gravity on ion-regulating function of rat kidneys
N80-27999

SHAKIR, I.
Comparison of reactive hyperemia in warm and cool human forearms over a range of ischemic periods
A80-41982

SHAPIRO, Y.
Physiological responses of men and women to humid and dry heat
A80-43151

SHARMA, R. S.
Combined effect of hypoxia and cold on the phospholipid composition of lung surfactant in rats
A80-41980

SHAYDOROV, Y. I.
Study of compatilibity of certain higher plants and chlorella as related to a bioregenerative human life support system
N80-28033

SHCHERBINA, IU. V.
The ergatic intellect of electrical energy systems
A80-42347

SHEA, M. L.
Carbon dioxide effects on submarines
[ASME PAPER 80-ENAS-32] A80-43207

SHEBALIN, D. N.
Study of compatilibity of certain higher plants and chlorella as related to a bioregenerative human life support system
N80-28033

SHEREMETEVSKAYA, S. K.
Regional redistribution of rat blood after 7 and 30 days of hypokinesia
N80-28009

SHERIDAN, T. B.
Dynamic decisions and work load in multitask supervisory control
A80-40898

SHIPOV, A. A.
Human color discriminating function with muscular tension during exposure to vestibular stimuli
N80-28004

Research hardware and habitat of animals used in experiment aboard Cosmos-936 biosatellite
N80-28019

Semicircular canal function in rats after flight aboard the Cosmos-936 biosatellite
N80-28021

SHTRBAK, V.
Activity of some hepatic enzymes and lipogenetic processes in rat aipose tissue after space flight
N80-28000

SHULZHENKO, Y. B.
Functional state of the cardiovascular system under the combined effect of 28 day immersion, rotation on a short-arm centrifuge and exercise on a bicycle ergometer
N80-28025

SINYAK, Y. Y.
Upgrading efficacy of membrane techniques for regenerating water from urine
N80-28035

SMIRNOV, K. V.
Secretion, incretion and resecretion of pancreatic lipase during prolonged restriction of motor activity
N80-28010

SMIRNOVA, T. M.
Electrocardiographic exercise testing and ambulatory monitoring to identify patients with ischemic heart disease at high risk of sudden death
A80-40546

SMITH, A. H.
Scale effects in the musculoskeletal system, viscera and skin of small terrestrial mammals
A80-40625

SMITH, R. C.
Development of a method for the traceable calibration of defibrillator energy meters
[NPL-DES-55] N80-27085

SNEER, A.
Morphofunctional correlations in the experimental study of myocardiopathies under the stress of forced restraint. Note 2: The influence of adrenal imbalance
[NASA-TM-76138] N80-28040

SODE, J.
Is the weight loss of hyperbaric habitation a disorder of osmoregulation
A80-41888

SOKOLOVA, T. A.
Effect of prolonged +Gz accelerations on human performance
N80-28003

SOPIKOV, N. F.
Isolation and gas chromatographic demonstration of volatile organic substances in thin-layer biological samples
N80-28014

SORICH, R. A.
Psychomotor performance during ozone exposure - Spectral and discriminant function analysis of EEG
A80-41879

SOUDER, M. E.
Rhesus brain gas tension and learned task performance responses to normoxic and hyperoxic breathing
[AMRL-TR-105] A80-41880

SPASSKIY, Y. A.
Dynamics of human external respiration and blood gases under the combined effect of hypercapnia and hypoxia
N80-28024

SPAUR, W. H.
Is the weight loss of hyperbaric habitation a disorder of osmoregulation
A80-41888

SRIBNIK, F.
A Portable Oxygen Subsystem - Description and preliminary thermal performance prediction
[ASME PAPER 80-ENAS-7] A80-43184

SRINIVASAN, M. V.
A technique for estimating the contribution of photomechanical responses to visual adaptation
A80-41645

STAMPER, D. A.
Evaluation of an acute mountain sickness questionnaire - Effects of intermediate-altitude staging upon subjective symptomatology
A80-41886

STARTSEV, V. G.
Mechanism of selective lesion of the cardiovascular system in psycho-emotional stress
[NASA-TM-76035] N80-28045

STEPHENSON, M. R.
Identification of the minimum noise level capable of producing an asymptotic temporary threshold shift
[AMRL-TR-79-106] A80-41887

STERNER, R. T.
Evaluation of an acute mountain sickness questionnaire - Effects of intermediate-altitude staging upon subjective symptomatology
A80-41886

STEWART, J. D.
Thresholds for detection of constant rotary acceleration during vibratory rotary acceleration
A80-42003

STOCKTON, J. R.
Development of a method for the traceable calibration of defibrillator energy meters
[NPL-DES-55] N80-27085

STOLL, A. M.
Rocket plume burn hazard
A80-41984

STRAUSS, H. W.
CdTe ambulatory ventricular function monitor
[CONF-791037-26] N80-27083

STROGANOBA, T. A.
Effect of conditioning for hypoxia on fertility of white mice
N80-28030

STROGANOVA, T. A.
Oxygen consumption of animals under conditions of hypokinesia
[NASA-TM-76167] N80-27983

STROM, J. A.
Frank orthogonal vectorcardiograms in humans during and after exposure to +Gz acceleration stress
A80-42006

SUMAROKOV, A. B.
Electrocardiographic exercise testing and ambulatory monitoring to identify patients with ischemic heart disease at high risk of sudden death
A80-40546

SUNDSTROM, J. L.
NASA TLA workload analysis support. Volume 2: Metering and spacing studies validation data
[NASA-CR-3239] N80-27091
NASA TLA workload analysis support. Volume 3: FFD autopilot scenario validation data
[NASA-CR-3240] N80-27093

SUTHASINEKUL, S.
Adaptive delta modulation for telephone biotelemetry of ECG (electrocardiograph)
[PB80-160773] N80-27089

SUTTON, J.
Changes in pulmonary PV characteristics of human subjects at an altitude of 5,366 m
A80-43153

SVET, E. A.
Electrocardiographic exercise testing and ambulatory monitoring to identify patients with ischemic heart disease at high risk of sudden death
A80-40546

SYRYKH, G. D.
Results of the investigation of the otolith function in manned space flights
[NASA-TM-76103] N80-28046

T

TANAKA, K.
An analytical evaluation method of manual control system utilizing human pilot model
A80-41051

TARASOV, I. K.
Results of the investigation of the otolith function in manned space flights
[NASA-TM-76103] N80-28046

TARDOV, V. M.
Effect of prolonged +Gz accelerations on human performance
N80-28003

TAYLOR, R. E.
Method and automated apparatus for detecting coliform organisms
[NASA-CASE-MSC-16777-1] N80-27067

TEPLOV, S. I.
Respiration and oxidative phosphorylation in the mitochondria of brain and heart tissues during circulatory brain hypoxia and in the post-hypoxic period
A80-41320

TERRES, A.
Disorders of the menstrual cycle in airline stewardesses
A80-41991

THACKRAY, R. I.
Visual search performance during simulated radar observation with and without a sweepline
A80-41882

TIGRANIAN, R. A.
Activity of some hepatic enzymes and lipogenetic processes in rat aipose tissue after space flight
N80-28000
State of human bone tissue protein fraction after space flights
N80-28018
Principal results of physiological experiments with mammals aboard the Cosmos-936 biosatellite
N80-28020

TISHLER, V. A.
Evaluation of efficacy of the set of preventive measures referable to the human neuromuscular system under hypokinetic conditions
N80-28007

TISON, D. L.
Primary productivity, heterotrophy, metabolic indicators of stress and interactions in algal-bacterial mat communities affected by a fluctuating thermal regime
[DP-MS-80-14] N80-27082

TJAWOKIN, W. W.
Experimental coronary sclerosis induced by immobilization of rabbits: A new model of arteriosclerosis
[NASA-TM-76196] N80-27990

TOLLINGER, D.
Evaluation of biological models using Spacelab
[ASME PAPER 80-ENAS-38] A80-43212

TOMASZEWSKA, L.
Calorigenic effect of adrenaline in rats under conditions of restricted motor activity
[NASA-TM-76192] N80-27988

TOUCHSTONE, R.
Visual search performance during simulated radar observation with and without a sweepline
A80-41882

TSUI, B. M. W.
Modified conjugate counting technique for quantitative measurement of radioactivity in vivo
[CONF-790782-1] N80-27084

TULGA, M. K.
Dynamic decisions and work load in multitask supervisory control
A80-40898

TUMAKOV, A. I.
Generalized nystagmometric characteristics for diagnostic purposes
N80-28034

TURCHANINOVA, V. F.
Results of studies of pulsed blood flow and regional vascular tonus during flights in the first and second expeditions aboard the Salyut-6-Soyuz orbital complex
N80-27996

TURNBILL, C.
Retinal changes in rats flown on Cosmos 936 - A cosmic ray experiment
A80-41995

TYAVOKIN, V. V.
Experimental coronary sclerosis induced by immobilization of rabbits: A new model of arteriosclerosis
[NASA-TM-76196] N80-27990

U

UMNOVA, L. C.
Circulation in exercising crew members of the first main expedition aboard Salyut-6
N80-27997

UMNOVA, L. V.
Circulation at rest in crew members of the first main expedition aboard Salyut 6
N80-28017

V

VASILIEVA, T. D.
Studies of prognostic significance of antiorthostatic position
N80-28006

VAUGHAN, J. A.
Effects of ozone on exercising and sedentary adult men and women representative of the flight attendant population
[AD-A080045] N80-28049

VAWTER, D. L.
Measurement of lung function using magnetometers. 1: Principles and mathematical modeling
[AD-A083910] N80-28038

VETTES, B.
Cardiovascular responses of man exposed to plus Gz accelerations in a centrifuge A80-41885

VICENS
Vertebral pain in helicopter pilots
[NASA-TM-75792] N80-28043

VIEILLEFOND, H.
Cardiovascular responses of man exposed to plus Gz accelerations in a centrifuge A8C-41885

VIL-VILYAMS, I. F.
Functional state of the cardiovascular system under the combined effect of 28 day immersion, rotation on a short-arm centrifuge and exercise on a bicycle ergometer N80-28025

VOGEL, J. A.
Aerobic power and body fat of men and women during army basic training A80-41986

Prevalence of coronary heart disease risk factors in a young military population A80-41989

VOGT, L.
The relation between tilt table and acceleration-tolerance and their dependence on stature and physical fitness
[NASA-TM-75796] N80-28042

VOLGIN, V. D.
Upgrading efficacy of membrane techniques for regenerating water from urine N80-28035

VOLOZHIN, A. I.
Oxygen consumption of animals under conditions of hypokinesia
[NASA-TM-76167] N80-27983

VOLZ, P. A.
Postflight studies on fungal phenotypes irradiated in space A80-43011

W

WAGNER, J. A.
Absolute and relative work capacity in women at 758, 586, and 523 torr barometric pressure A80-41977

WARD, S. L.
Rhesus brain gas tension and learned task performance responses to normoxic and hyperoxic breathing
[AMRL-TR-105] A80-41880

WEGMAN, H. M.
The relation between tilt table and acceleration-tolerance and their dependence on stature and physical fitness
[NASA-TM-75796] N80-28042

WEIDNER, W. J.
The effect of sustained +Gz acceleration on extravascular lung water content in domestic fowl A80-41999

WHINNERY, J. E.
Acceleration effects on pulmonary blood flow distribution using perfusion scintigraphy A80-41985

Frank orthogonal vectorcardiograms in humans during and after exposure to +Gz acceleration stress A80-42006

WHITTAKER, R. H., JR.
Frank orthogonal vectorcardiograms in humans during and after exposure to +Gz acceleration stress A80-42006

WILKINS, P. A.
The effect of hearing protectors on the perception of warning and indicator sounds: A general review N80-27087
[ISVR-TR-98]

WILLIAMS, B. A.
NASA-Ames Life Sciences Flight Experiments program - 1980 status report
[ASME PAPER 80-ENAS-34] A80-43209
Evaluation of biological models using Spacelab
[ASME PAPER 80-ENAS-38] A80-43212

WINKLER, H. E.
Development of a preprototype thermoelectric integrated membrane evaporation subsystem for water recovery
[ASME PAPER 80-ENAS-46] A80-43220

WITHERS, B. F.
Anti-exposure suits in the VP community
[ASME PAPER 80-ENAS-43] A80-43217

WOJTKOWIAK, M.
Displacement of plasma protein and conduction velocity in rats under action of acceleration forces and hypokinesia
[NASA-TM-76195] N80-27989

WRIGHT, G. R.
Respiratory gas exchange during positive pressure breathing and rapid decompression to simulated altitudes of 18.3 and 24.4 km A80-41979

WYATT, H. J.
Target position and velocity - The stimuli for smooth pursuit eye movements A80-41646

WYATT, J. R.
Atmospheric monitoring in submersibles
[ASME PAPER 80-ENAS-31] A80-43206

Y

YACHIN, S.
Psychomotor deterioration during exposure to heat A80-42004

YAKOVLEVA, I. Y.
Results of the investigation of the otolith function in manned space flights
[NASA-TM-76103] N80-28046

YARULLIN, K. K.
Studies of prognostic significance of antiorthostatic position N80-28006

Bioelectric activity of the human brain during and after 182-day anitorthosatic hypokinesia N80-28027

YASHIN, Y. P.
Effect of prolonged +Gz accelerations on human performance N80-28003

YASILLO, N. J.
Modified conjugate counting technique for quantitative measurement of radioactivity in vivo N80-27084
[CONF-790782-1]

YEE, R. D.
On-line analysis of eye movements using a digital computer A80-41996

Z

ZABRODIN, O. N.
Experimental gastric ulcers induced by immobilization and electric shock of rats and their pharmacotherapy
[NASA-TM-76157] N80-27981

ZAVALOVA, N. D.
Some aspects of application of the systemic approach to aviation engineering psychology N80-28002

ZHIZHINA, N. A.
State of human bone tissue protein fraction after space flights N80-28018

ZHURAVLEVA, E. D.
Myocardial dystrophy in athletes A80-42935

ZORILE, V. I.
Effect of high ambient temperature on human performance N80-28023

1. Report No.
NASA SP-7011(211)

2. Government Accession No.

3. Recipient's Catalog No.

4. Title and Subtitle
AEROSPACE MEDICINE AND BIOLOGY
A Continuing Bibliography (Supplement 211)

5. Report Date
October 1980

6. Performing Organization Code

7. Author(s)

8. Performing Organization Report No.

9. Performing Organization Name and Address

National Aeronautics and Space Administration
Washington, D. C. 20546

10. Work Unit No.

11. Contract or Grant No.

12. Sponsoring Agency Name and Address

13. Type of Report and Period Covered

14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This bibliography lists 212 reports, articles, and other documents introduced into the NASA scientific and technical information system in September 1980.

17. Key Words (Suggested by Author(s))

Aerospace Medicine
Bibliographies
Biological Effects

18. Distribution Statement

Unclassified - Unlimited

19. Security Classif. (of this report)
Unclassified

20. Security Classif. (of this page)
Unclassified

21. No. of Pages
80

22. Price*
$7.00 HC

*For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1980

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to eleven special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley
COLORADO
University of Colorado, Boulder
DISTRICT OF COLUMBIA
Library of Congress
GEORGIA
Georgia Institute of Technology, Atlanta
ILLINOIS
The John Crerar Library, Chicago

MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge
MISSOURI
Linda Hall Library, Kansas City
NEW YORK
Columbia University, New York
OKLAHOMA
University of Oklahoma, Bizzell Library
PENNSYLVANIA
Carnegie Library of Pittsburgh
WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library
COLORADO
Denver Public Library
CONNECTICUT
Hartford Public Library
MARYLAND
Enoch Pratt Free Library, Baltimore
MASSACHUSETTS
Boston Public Library
MICHIGAN
Detroit Public Library
MINNESOTA
Minneapolis Public Library
MISSOURI
Kansas City Public Library
St. Louis Public Library
NEW JERSEY
Trenton Public Library

NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library
OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library
TENNESSEE
Memphis Public Library
TEXAS
Dallas Public Library
Fort Worth Public Library
WASHINGTON
Seattle Public Library
WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019.

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy of microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESA - Information Retrieval Service, European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

U.S.MAIL

NASA

POSTMASTER: If Undeliverable (Section 158
Postal Manual) Do Not Return

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP-7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP-7037	AERONAUTICAL ENGINEERING Engineering design, and operation of aircraft and aircraft components	Monthly
NASA SP-7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP-7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP-7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP-7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C. 20546

NASA SP-7011 (212)

Aerospace Medicine and Biology A Continuing Bibliography with Indexes

Pages 217–238

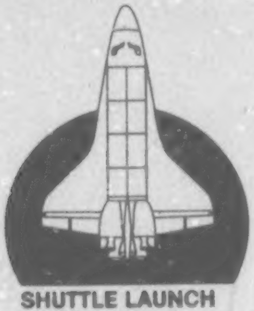
November 1980

NASA

7011 (212)

Aerospace Medicine and Biology
A Continuing Bibliography with Indexes

NASA SP-7011 (212)
November 1980



SHUTTLE LAUNCH
MARCH 1981

National Aeronautics and
Space Administration

NEWARK PUBLIC LIBRARY

JAN 30 1981

U. S. GOVT. PUBS.
DEPOSITORY 376

Aerospace Medicine & Biolog
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi
ine & Biology Aerospace Medi
ce Medicine & Biology Aerospa
Aerospace Medicine & Biolog
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi

NAS 1.21:

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series)	N80-28295 – N80-30271
IAA (A-10000 Series)	A80-43839 – A80-47366

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by PRC Data Services Company.

best copy available

NASA SP-7011(212)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 212)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in October 1980 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*

NASA Scientific and Technical Information Branch 1980
National Aeronautics and Space Administration
Washington, DC

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This supplement is available as NTISUB/123/093 from the National Technical Information Service (NTIS), Springfield, Virginia 22161 at the price of $7.00 domestic; $14.00 foreign.

INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 146 reports, articles and other documents announced during October 1980 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1980 Supplements.

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A80-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies of accessions are available at $7.00 per document up to a maximum of 40 pages. The charge for each additional page is $0.25. Microfiche (1) of documents announced in *IAA* are available at the rate of $3.00 per microfiche on demand, and at the rate of $1.25 per microfiche for standing orders for all *IAA* microfiche. The price for the *IAA* microfiche by category is available at the rate of $1.50 per microfiche plus a $1.00 service charge per category per issue. Microfiche of all the current AIAA Meeting Papers are available on a standing order basis at the rate of $1.50 per microfiche.

Minimum air-mail postage to foreign countries is $1.00 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

STAR ENTRIES (N80-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page vii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the * symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard $3.50 price, for those documents identified by a # symbol.)

---

(1) A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts*. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: Fachinformationszentrum, Karlsruhe. Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM).

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: U.S. Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free.

Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is $50.00 domestic; $100.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics
and Astronautics
Technical Information Service
555 West 57th Street, 12th Floor
New York, New York 10019

British Library Lending Division,
Boston Spa, Wetherby, Yorkshire,
England

Commissioner of Patents and
Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service
ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Scientific and Technical Information
Facility
P.O. Box 8757
B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Branch (NST-41)
Washington, D.C. 20546

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, California 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey
1033 General Services Administration
Building
Washington, D.C. 20242

U.S. Geological Survey
601 E. Cedar Avenue
Flagstaff, Arizona 86002

U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

U.S. Geological Survey
Bldg. 25, Denver Federal Center
Denver, Colorado 80225

Fachinformationszentrum Energie, Physik,
Mathematik GMBH
7514 Eggenstein Leopoldshafen
Federal Republic of Germany

NTIS PRICE SCHEDULES

Schedule A
STANDARD PAPER COPY PRICE SCHEDULE

(Effective January 1, 1980)

Price Code	Page Range	North American Price	Foreign Price
A01	Microfiche	$ 3.50	$ 5.25
A02	001-025	5.00	10.00
A03	026-050	6.00	12.00
A04	051-075	7.00	14.00
A05	076-100	8.00	16.00
A06	101-125	9.00	18.00
A07	126-150	10.00	20.00
A08	151-175	11.00	22.00
A09	176-200	12.00	24.00
A10	201-225	13.00	26.00
A11	226-250	14.00	28.00
A12	251-275	15.00	30.00
A13	276-300	16.00	32.00
A14	301-325	17.00	34.00
A15	326-350	18.00	36.00
A16	351-375	19.00	38.00
A17	376-400	20.00	40.00
A18	401-425	21.00	42.00
A19	426-450	22.00	44.00
A20	451-475	23.00	46.00
A21	476-500	24.00	48.00
A22	501-525	25.00	50.00
A23	526-550	26.00	52.00
A24	551-575	27.00	54.00
A25	576-600	28.00	56.00
A99	601-up	-- 1/	-- 2/

1/ Add $1.00 for each additional 25 page increment or portion thereof for 601 pages up.

2/ Add $2.00 for each additional 25 page increment or portion thereof for 601 pages and more.

Schedule E
EXCEPTION PRICE SCHEDULE

Paper Copy & Microfiche

Price Code	North American Price	Foreign Price
E01	$ 5.50	$ 11.50
E02	6.50	13.50
E03	8.50	17.50
E04	10.50	21.50
E05	12.50	25.50
E06	14.50	29.50
E07	16.50	33.50
E08	18.50	37.50
E09	20.50	41.50
E10	22.50	45.50
E11	24.50	49.50
E12	27.50	55.50
E13	30.50	61.50
E14	33.50	67.50
E15	36.50	73.50
E16	39.50	79.50
E17	42.50	85.50
E18	45.50	91.50
E19	50.50	100.50
E20	60.50	121.50

E99 - Write for quote

N01	28.00	40.00

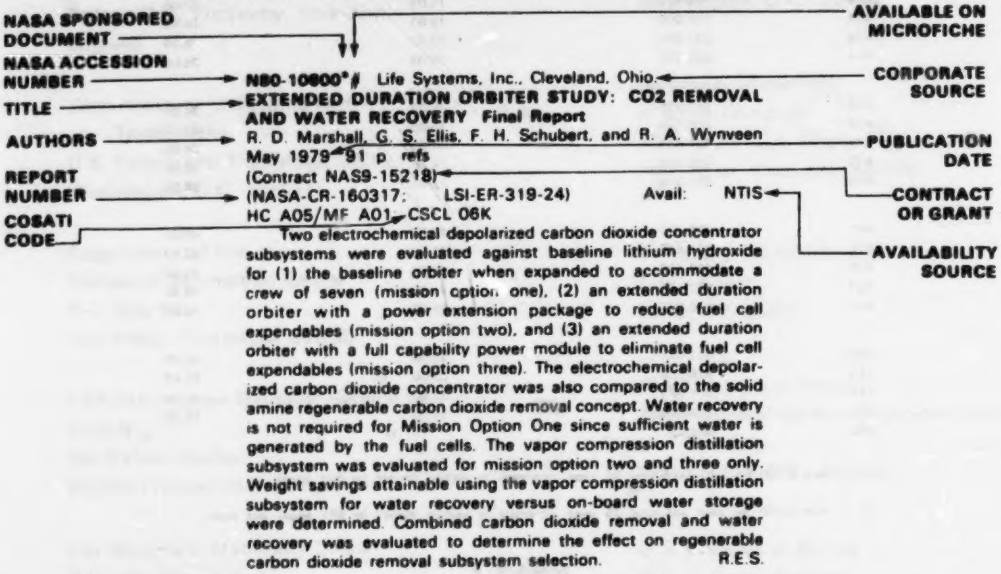
TABLE OF CONTENTS

Page

IAA ENTRIES (A80-10000) 217
STAR ENTRIES (N80-10000) 225

Subject Index I-1
Personal Author Index I-17

TYPICAL CITATION AND ABSTRACT FROM *STAR*

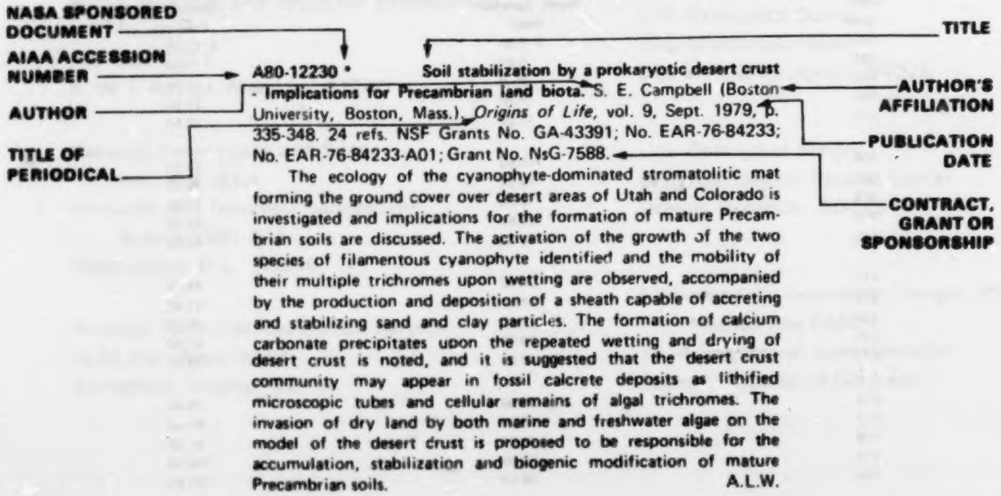


NASA SPONSORED DOCUMENT
NASA ACCESSION NUMBER
TITLE
AUTHORS
REPORT NUMBER
COSATI CODE
AVAILABLE ON MICROFICHE
CORPORATE SOURCE
PUBLICATION DATE
CONTRACT OR GRANT
AVAILABILITY SOURCE

N80-10600*# Life Systems, Inc., Cleveland, Ohio.
EXTENDED DURATION ORBITER STUDY: CO2 REMOVAL AND WATER RECOVERY Final Report
R. D. Marshall, G. S. Ellis, F. H. Schubert, and R. A. Wynveen
May 1979 91 p refs
(Contract NAS9-15218)
(NASA-CR-160317; LSI-ER-319-24) Avail: NTIS
HC A05/MF A01 CSCL 06K

Two electrochemical depolarized carbon dioxide concentrator subsystems were evaluated against baseline lithium hydroxide for (1) the baseline orbiter when expanded to accommodate a crew of seven (mission option one), (2) an extended duration orbiter with a power extension package to reduce fuel cell expendables (mission option two), and (3) an extended duration orbiter with a full capability power module to eliminate fuel cell expendables (mission option three). The electrochemical depolarized carbon dioxide concentrator was also compared to the solid amine regenerable carbon dioxide removal concept. Water recovery is not required for Mission Option One since sufficient water is generated by the fuel cells. The vapor compression distillation subsystem was evaluated for mission option two and three only. Weight savings attainable using the vapor compression distillation subsystem for water recovery versus on-board water storage were determined. Combined carbon dioxide removal and water recovery was evaluated to determine the effect on regenerable carbon dioxide removal subsystem selection. R.E.S.

TYPICAL CITATION AND ABSTRACT FROM *IAA*



NASA SPONSORED DOCUMENT
AIAA ACCESSION NUMBER
AUTHOR
TITLE OF PERIODICAL
TITLE
AUTHOR'S AFFILIATION
PUBLICATION DATE
CONTRACT, GRANT OR SPONSORSHIP

A80-12230 * **Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota.** S. E. Campbell (Boston University, Boston, Mass.), *Origins of Life*, vol. 9, Sept. 1979, p. 335-348. 24 refs. NSF Grants No. GA-43391; No. EAR-76-84233; No. EAR-76-84233-A01; Grant No. NsG-7588.

The ecology of the cyanophyte-dominated stromatolitic mat forming the ground cover over desert areas of Utah and Colorado is investigated and implications for the formation of mature Precambrian soils are discussed. The activation of the growth of the two species of filamentous cyanophyte identified and the mobility of their multiple trichromes upon wetting are observed, accompanied by the production and deposition of a sheath capable of accreting and stabilizing sand and clay particles. The formation of calcium carbonate precipitates upon the repeated wetting and drying of desert crust is noted, and it is suggested that the desert crust community may appear in fossil calcrete deposits as lithified microscopic tubes and cellular remains of algal trichromes. The invasion of dry land by both marine and freshwater algae on the model of the desert crust is proposed to be responsible for the accumulation, stabilization and biogenic modification of mature Precambrian soils. A.L.W.

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 212)

NOVEMBER 1980

IAA ENTRIES

A80-44125 **Biological studies on the Cosmos biosatellite (Biologicheskie issledovaniia na biosputnikakh 'Kosmos').** Edited by E. A. Il'in and G. P. Parfenov. Moscow, Izdatel'stvo Nauka, 1979. 240 p. In Russian.

Results of biological experiments performed on board recent Soviet Cosmos biosatellites are reviewed, with attention given to the joint Soviet-American investigations on board Cosmos 782 and 936. The significance of biological experiments in space is discussed, and consideration is also given to the design and control of biosatellites and their life support equipment and scientific instruments. Results are then presented for studies of the effects of weightlessness on the development and vestibular apparatus of the fish Fundulus heteroclitus, drosophila genetics and development, isolated carrot cell morphogenesis and embryogenesis, carrot tissue development, anatomy and biochemistry, and the orientation, growth and development of higher and lower plants. Experiments on the effects of artificial gravity and cosmic radiation on dried seeds, the effects of the space environment on mammalian cell cultures and on bacterial genetics are also indicated. A.L.W.

A80-44195 **Magnetic study of the His-Purkinje conduction system in man.** D. E. Farrell, J. H. Tripp (Case Western Reserve University, Cleveland, Ohio), and R. Norgren (California, University, Livermore, Calif.). *IEEE Transactions on Biomedical Engineering,* vol. BME-27, July 1980, p. 345-350. 22 refs. Research supported by the American Heart Association; NSF Grant No. ENG-77-15952-A01.

It has recently been suggested that depolarization of the entire His-Purkinje conduction system of the heart produces a characteristic waveform in the surface electrocardiogram. The magnetic probe offers a different and, in some respects, advantageous means of observing such waveforms, and extensive records of the surface magnetic field generated by the human heart have been obtained for four normal subjects. A first-order SQUID gradiometer was employed having the lowest noise level yet reported in any biomagnetic study (6 x 10 to the -15th T/square root of Hz). Using an on-line computer, 100 beat averages were taken at 49 positions over the chest on a 1 in. square grid. The fields observed have a characteristic symmetry and provide support for the suggestion that events associated with depolarization of the conduction system may be observed at the surface of the torso. (Author)

A80-44196 **Long-term biological effects of very intense 60 Hz electric field on mice.** W. Z. Fam (Nova Scotia Technical College, Halifax, Canada). *IEEE Transactions on Biomedical Engineering,* vol. BME-27, July 1980, p. 376-381. 10 refs. Research supported by the Natural Sciences and Engineering Research Council of Canada.

This paper presents the results of long-term exposure of mice to a 240 kV/m, 60 Hz electric field. Both males and females were subjected to this very intense field for over 4500 h before they were sacrificed for tests. The progenies resulting from breeding the various couples were also exposed to the same field. Studies were made to determine the effects of the electric field on drinking water consumption, rate of growth, body weight, number of progenies born and survived, blood count and blood chemistry, protein analysis, and organs histology. In each study, the results were compared with those obtained from the corresponding control group. (Author)

A80-44201 * # **Development of a multi-media crew-training program for the terminal configured vehicle mission simulator.** J. A. Rhouck and A. T. Markos (NASA, Langley Research Center, Hampton, Va.). *Society for Computer Simulation, American Meteorological Society, and Instrument Society of America, Summer Computer Simulation Conference, Seattle, Wash., Aug. 25-27, 1980, Paper.* 6 p. 6 refs.

This paper describes the work being done at the National Aeronautics and Space Administration's (NASA) Langley Research Center on the development of a multi-media crew-training program for the Terminal Configured Vehicle (TCV) Mission Simulator. Brief descriptions of the goals and objectives of the TCV Program and of the TCV Mission Simulator are presented. A detailed description of the training program is provided along with a description of the performance of the first group of four commercial pilots to be qualified in the TCV Mission Simulator. (Author)

A80-44213 * **Visually induced self-motion sensation adapts rapidly to left-right visual reversal.** C. M. Oman, O. L. Bock, and J.-K. Huang (MIT, Cambridge, Mass.). *Science,* vol. 209, Aug. 8, 1980, p. 706-708. 16 refs. Grant No. NsG-2032; Contract No. NAS9-15343.

The experimental demonstration of a reversal of the circularvection (CV) phenomenon is reported. After one to three hours of active movement while wearing vision-reversing goggles, 9 of 12 stationary human subjects viewing a moving stripe display experienced a self-rotation illusion in the same direction as the seen stripe motion. In addition, the subjects showed a 17% reduction in vestibulo-ocular reflex slow phase gain over their brief exposure period. It is noted that whether a subject demonstrated reversed CV within the allowed exposure period appeared to be correlated with CV strength produced with a narrow field stimulus. J.P.B.

A80-44249 **Maximal cardiac output during upright exercise - Approximate normal standards and variations with coronary heart disease.** K. F. Hossack, R. A. Bruce, B. Green, F. Kusumi, T. A. DeRouen, and S. Trimble (Washington, University, Seattle, Wash.). *American Journal of Cardiology,* vol. 46, Aug. 1980, p. 204-212. 28 refs. Research supported by the American Heart Association of Washington; Grants No. NIH-HL-23404; No. NIH-RR-37.

A80-44441 # **Interpretation of findings of the biological experiments of the Viking lander on Mars (Zur Interpretation der Befunde der biologischen Experimentiereinheiten der Viking-Landesonden auf dem Mars).** S. Fränzle. *Sterne und Weltraum,* vol. 19, July-Aug. 1980, p. 258-260. 10 refs. In German.

The biological experiments aboard the Viking lander encompassed three aspects: (1) experiments to determine a chemical reaction of nutrient solutions, (2) gas exchange experiments between the ground and the atmosphere, and (3) studies on photosynthesis and chemical synthesis. The significance of the measured results is examined in detail. M.E.P.

A80-44593 # **Ocular risks of astronomical observations (Risques oculaires des observations astronomiques).** G. Quentel (Cretéil, Hôpital Intercommunal, Cretéil, Val-de-Marne, France). *L'Astronomie,* vol. 94, July-Aug. 1980, p. 311-317. In French.

The mechanism and physiological reason for retinal alterations from the astronomical observation of the sun are examined. Attention is given to the constitution of the eye, the image formed on the retina, and the foveolate region. It is noted that in the absence of all movement, a lesion will create a definitive and irreversible alteration of the eye when the acuity is high, in the case of binoculars as well as telescopes. J.P.B.

A80-44608 * **Three-dimensional structure of Escherichia coli initiator tRNA/f//Met/.** N. H. Woo, A. Rich (MIT, Cambridge, Mass.), and B. A. Roe (Kent State University, Kent, Ohio). *Nature,* vol. 286, July 24, 1980, p. 346-351. 23 refs. Research supported by the American Cancer Society, NIH, NSF, and NASA.

The crystal structure of Escherichia coli tRNA(f)(Met), an initiator transfer RNA, has been determined. While grossly similar to that of the chain-elongating yeast tRNA(Phe), there are three major differences. One involves the folding of the anticodon loop; in particular, the position of the constant uridine, U33. This difference was unexpected and may be of functional significance. (Author)

A80-44765 **Parallel visual pathways - A review.** P. Lennie (Sussex, University, Brighton, England). *Vision Research,* vol. 20, no. 7, 1980, p. 561-594. 210 refs.

Within the last fifteen years it has become clear that the principal visual pathway in higher mammals, which connects the retina to the cortex via the dorsal lateral geniculate nucleus may fruitfully be regarded as a group of parallel pathways, each containing neutrons that have distinctive physiological properties and which presumably contribute distinctively to vision. The aims of this paper are first, to examine the properties that characterize the neurons of the different classes and to understand what mechanisms might underlie the differences; second, to trace the major central projection of the different cell types; and third, to try to understand their significance for seeing. The work to be discussed concerns primarily the cat and the macaque monkey, for the visual organization of the former is best understood, and the visual organization of the latter is of greatest relevance to human vision. Related observations made on other species are mentioned in passing. (Author)

A80-45025 **Pilots who drink - FAA regulations and policy, and the Air Line Pilots Association treatment program.** E. D. Weed, III. *Journal of Air Law and Commerce,* vol. 45, Summer 1980, p. 1089-1114. 102 refs.

Pilot alcoholism is discussed along with the methods of coping with the problem adopted by the CAB and the FAA: sanctions such as pecuniary penalties and revocation of certification are considered. Emphasis is placed on an alternative early identification and treatment plan, approved and supported by the FAA, which is currently being developed by the Air Line Pilots Association and involves the peer group approach and human intervention. J.P.B.

A80-45078 # **Standard man-machine procedure of optimal synthesis in computer-aided design systems. II (Tipovi choveko-mashinni protseduri na optimalniia sintez v sistemite za avtomatizirano proektirane. II).** D. D. Burev (B'lgarska Akademiia na Naukite, Institut po Tekhnicheska Kibernetika i Robotika, Sofia, Bulgaria). *Problemi na Tekhnicheskata Kibernetika,* vol. 9, 1980, p. 3-14. 5 refs. In Bulgarian.

Standard man-machine procedures are described for four classes of optimal synthesis in CAD systems. Consideration is given to question of systems design under off-line conditions of operation. B.J.

A80-45092 # **The effect of the temperatures of different skin layers on the activity of cold thermoreceptors (Vliianie temperatury razlichnykh sloev kozhi na impul'satsiiu kholodovykh termoretseptorov).** V. A. Konstantinov, N. K. Danilova, and K. P. Ivanov (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). *Fiziologicheskii Zhurnal SSSR,* vol. 66, June 1980, p. 902-907. 8 refs. In Russian.

The responses of skin thermoreceptors to variations in skin surface and interior layer temperatures are investigated. Rabbit upper lip and nose skin surfaces were cycled repeatedly between 22 and 40 C, and skin temperatures at depths of 0.1-0.2 and 2.55 mm and the activities of 16 individual cold thermoreceptors were monitored. The 18 C variations in surface temperature are found to cause variations of only 4.5 C in the temperature of the lower layers, with a time delay of 5-7 min. The firings of nine of the thermoreceptors are found to vary as skin surface temperature changed, while the remaining seven exhibited a pattern related to deep skin layer temperatures, demonstrating the existence of thermoreceptors at various depths within the skin. It is suggested that such a distribution allows the organism to assess the direction and intensity of heat flow through the skin. A.L.W.

A80-45093 # **The role of the hypoxic factor at elevated temperatures and possible mechanisms of its development (Rol' gipoksicheskogo faktora pri povyshennoi temperature i vozmozhnye mekhanizmy ego razvitiia).** L. V. Ngi and Iu. Iu. Keerig (Voenno-Meditsinskaia Akademiia, Leningrad, USSR). *Fiziologicheskii Zhurnal SSSR,* vol. 66, June 1980, p. 908-913. 20 refs. In Russian.

Biochemical indicators of hypoxia are examined at elevated temperatures and conditions of decreased and increased humidity, and mechanisms for the development of hypoxia in response to elevated temperatures are discussed. The blood pH and blood levels of CO2, buffer bases, bicarbonate, lactic acid and pyruvic acid of rabbits exposed to a simulated altitude of 5000 m at 20-22 C are found to be identical with those of rabbits exposed to a temperature of 44-45 C at low relative humidity, while those of rabbits kept at the same temperature and a humidity from 90-95% exhibit even greater differences from initial values. Of the factors suggested to be responsible for the observed hypoxia accompanying hyperthermia, it is argued that the reduced partial oxygen pressure of alveolar air and the shift of the hemoglobin dissociation curve can be only of small importance, and that hypoxia of mixed type can be induced by a redistribution of blood and changes in the activity of certain respiratory enzymes. A.L.W.

A80-45273 **Accuracy of visual estimate of the remoteness of an object in a space having no optical reference.** V. I. Kushpil' and E. K. Veselova. *(Optiko-Mekhanicheskaia Promyshlennost',* vol. 46, Dec. 1979, p. 54.) *Soviet Journal of Optical Technology,* vol. 46, Dec. 1979, p. 752, 753. Translation.

The question of the possibilities of estimating the remoteness of a point light source in a space having no optical reference is examined. The results of an experiment in which observers place a point light source at a specified distance are presented. The results obtained are compared with the data of a direct estimate of remoteness in meters. (Author)

A80-45623 **Low frequency asymptotics for a hydroelastic model of the cochlea.** M. H. Holmes (Rensselaer Polytechnic Institute, Troy, N.Y.). *SIAM Journal on Applied Mathematics,* vol. 38, June 1980, p. 445-456. 8 refs.

A three dimensional hydroelastic model of the cochlea is analyzed, where the fluid motion is described using the linearized Navier-Stokes equations and the basilar membrane is modeled as an elastic plate. By expanding in terms of the width to length ratio it is found that to first order there is Poiseuille flow down the cochlea and the plate reduces to a massless beam in the transverse direction. After this the solution is found for a particular geometry and comparison is made with experiment. (Author)

A80-45676 **Symposium on Theory and Practice of Robots and Manipulators, 3rd, Udine, Italy, September 12-15, 1978, Proceedings.** Symposium sponsored by the Centre International des Sciences Mécaniques and International Federation for the Theory of Machines and Mechanisms. Edited by A. Morecki (Warszawa, Politechnika, Warsaw, Poland), G. Bianchi (Milano, Politecnico, Milan, Italy), and K. Kedzior. Amsterdam, Elsevier Scientific Publishing Co.; Warsaw, PWN-Polish Scientific Publishers, 1980. 613 p. $123.

The symposium focused on the mechanics and biomechanics of motion, the synthesis and design of robots and manipulators, motion control, sensors and artificial intelligence, man-machine systems, and applications. Papers are presented on the optimization of manipulator performance and actuation by interactive computing, the dimensional synthesis of manipulators, the decoupled feedback control of robot and manipulator arms, and the manipulation of large objects. Other papers include the optimal manipulator control on the basis of actual information on movement limitation, a microprocessor-based telemanipulator system, and the adaptive control of technological industrial robots for welding. V.L.

A80-45680 # **On the grasping process for objects of irregular shape.** G. Bianchi and A. Rovetta (Milano, Politecnico, Milan, Italy). In: Symposium on Theory and Practice of Robots and Manipulators, 3rd, Udine, Italy, September 12-15, 1978, Proceedings. Amsterdam, Elsevier Scientific Publishing Co.; Warsaw, PWN-Polish Scientific Publishers, 1980, p. 67-86. Research supported by the Consiglio Nazionale delle Ricerche.

A limitation in the efficient use of manipulators is often found in the difficulty of designing a mechanical hand capable of safely handling objects of different shapes. With the aim of developing models of multipurpose extremities, a hand with two fingers and a palm was designed (Rovetta, 1977; Rovetta and Casarico, 1978; Rovetta, 1980). This paper describes a first step in the analysis of the prehension process of an object of irregular shape. The motion of the object relative to the fingers and the palm is studied during the grasping process. (Author)

A80-45682 # **Application of bond graphs to the synthesis and analysis of telechirics and robots.** J. E. E. Sharpe (Queen Mary College, London, England). In: Symposium on Theory and Practice of Robots and Manipulators, 3rd, Udine, Italy, September 12-15, 1978, Proceedings. Amsterdam, Elsevier Scientific Publishing Co.; Warsaw, PWN-Polish Scientific Publishers, 1980, p. 217-227.

A80-45687 * # **Manipulation of large objects.** A. K. Bejczy (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.). In: Symposium on Theory and Practice of Robots and Manipulators, 3rd, Udine, Italy, September 12-15, 1978, Proceedings. Amsterdam, Elsevier Scientific Publishing Co.; Warsaw, PWN-Polish Scientific Publishers, 1980, p. 301-322. 7 refs. Contract No. NAS7-100.

Remote manipulator control experiments have been conducted to investigate the problems related to the 'controlled collision' aspect of manipulation. A six degrees of freedom pantograph arm with a six-dimensional force-torque balance sensor and microprocessor-driven real-time graphics display are employed in the experiments. Among other results, it is found that the use of computer force-torque feedback loop for 'stop at contact' provides a nearly linear relation between load transfer to jigs at 'stop at contact', rate of motion, and preset force-torque threshold values for stop under limited motion and load conditions. V.L.

A80-45691 # **A contribution to the biomechanics of master-slave manipulators.** K. V. Frolov and A. E. Kobrinskii (Akademiia Nauk SSSR, Institut Mashinovedeniia, Moscow, USSR). In: Symposium on Theory and Practice of Robots and Manipulators, 3rd, Udine, Italy, September 12-15, 1978, Proceedings. Amsterdam, Elsevier Scientific Publishing Co.; Warsaw, PWN-Polish Scientific Publishers, 1980, p. 461-475.

The paper deals with the results of the analysis of a method to control manipulators that is based on the admission of arbitrary divergence between the positions of the master and slave arms. This method assures a considerable gain in the slave arms' working zone yet the system feature that is usually referred to as mnemonicity suffers a decrease. An attempt has been made to suggest quantitative estimates for the mnemonicity of duplication systems and for the hand control systems performance. (Author)

A80-45693 # **Adaptive control of technological industrial robots for welding.** G. A. Spynu, V. T. Antonenko, and V. G. Timoshenko (Akademiia Nauk Ukrainskoi SSR, Institut Elektrosvarki, Kiev, Ukrainian SSR). In: Symposium on Theory and Practice of Robots and Manipulators, 3rd, Udine, Italy, September 12-15, 1978, Proceedings. Amsterdam, Elsevier Scientific Publishing Co.; Warsaw, PWN-Polish Scientific Publishers, 1980, p. 554-568.

A80-45752 # **Cost effectiveness modeling for a total training system.** J. R. Milligan and R. J. Strohl (Rockwell International, North American Aircraft Div., Columbus, Ohio). *American Institute of Aeronautics and Astronautics, Aircraft Systems Meeting, Anaheim, Calif., Aug. 4-6, 1980, Paper 80-1894.* 9 p. 5 refs.

The Training System Cost Effectiveness (TSCE) Model enables many disciplines to assist in quantifying the critical relationship between system cost and effectiveness. In the TSCE model, trainer aircraft requirements and their relationship to other training media are defined using an expansion of the instructional system development process. In addition, the Model is designed to determine the influence of terminal learning objectives on combinations of people, support equipment, and training media. The result is a highly flexible model which can be used by decision makers to iteratively examine many alternatives and select a final system which best meets their needs. (Author)

A80-45974 **Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men.** B. Melin, J. P. Eclache, G. Geelen, G. Annat, A. M. Allevard, E. Jarsaillon, A. Zebidi, J. J. Legros, and C. Gharib (Lyon I, Université, Lyons, France). *European Journal of Applied Physiology*, vol. 44, Aug. 1980, p. 141-151. 39 refs. Research supported by the Université de Lyon; Délégation Générale à la Recherche Scientifique et Technique Contract No. 77-7-0823.

A80-45975 **The influence of temperature on the amplitude and frequency components of the EMG during brief and sustained isometric contractions.** J. S. Petrofsky (Wright State University, Dayton, Ohio) and A. R. Lind (St. Louis University, St. Louis, Mo.). *European Journal of Applied Physiology*, vol. 44, Aug. 1980, p. 189-200. 34 refs. Grant No. AF-AFOSR-76-3084; Contract No. F33615-78-C-0501.

The influence of temperature on the amplitude and frequency components of the EMG power spectra of the surface EMG recorded over the forearm muscles was examined in five male and five female subjects during brief and fatiguing isometric contractions of their handgrip muscles. Brief (3 s) isometric contractions were exerted at tensions ranging between 10 and 100% of each subject's maximum strength while fatiguing contractions were exerted at tensions of 25, 40, and 70% of their maximum strength. The temperature of the muscles during those contractions was varied by placing the forearms of the subjects in a controlled temperature water bath at temperatures of 10, 20, 30, and 40 C. The results of these experiments showed that the center frequency of the power spectra of the surface EMG was directly related to the temperature of the exercising muscles during brief isometric contractions. During fatiguing isometric contractions, the amplitude of the EMG increased while the center frequency of the EMG power spectra decreased for all tensions examined. (Author)

A80-46196 * **Extremes of urine osmolality - Lack of effect on red blood cell survival.** H. A. Leon and J. E. Fleming (NASA, Ames Research Center, Biomedical Research Div., Moffett Field, Calif.). *American Journal of Physiology*, vol. 239, July 1980, p. C27-C31. 13 refs.

Rats were allowed a third of normal water intake for 20 days, and food consumption decreased. The reticulocyte count indicated a suppression of erythropoiesis. Urine osmolality increased from 2,000 mosmol/kg to 3,390 mosmol/kg. Random hemolysis and senescence of a cohort of red blood cell (RBC) previously labeled with (2-(C-14)) glycine was monitored via the production of (C-14)O. Neither hemolysis nor senescence was affected. Following water restriction, the polydipsic rats generated a hypotonic urine. Urine osmolality decreased to 1,300 mosmol/kg for at least 6 days; a reticulocytosis occurred, but RBC survival was unaffected. These results contradict those previously reported, which suggest that RBC survival is influenced by the osmotic stress imposed on the RBC by extremes of urine tonicity. This discrepancy, it is concluded, is due to differences in the methods employed for measuring RBC survival. The random-labeling technique employed previously assumes a steady state between RBC production and destruction. The cohort-labeling technique used here measures hemolysis and senescence independent of changes in RBC production, which is known to be depressed by fasting. (Author)

A80-46378 # **Controlled ecological life support systems /CELSS/ and space habitats, anthropology, and psychology.** T. S. Cheston (Georgetown University, Washington, D.C.). In: Space manufacturing III; Proceedings of the Fourth Conference, Princeton, N.J., May 14-17, 1979. New York, American Institute of Aeronautics and Astronautics, Inc., 1979, p. 25-29.

Controlled ecological life support systems (CELSS) and the social, anthropological and psychological aspects of life in a space habitat are discussed. The results of studies indicating the value of a ground-based CELSS experiment and further research required in CELSS development are presented, and the relation of nutrition, diet and food processing in space to CELSS are discussed, with attention also given to instances of controlled environmental agriculture on earth and the waste treatment options and requirements for a closed system. Design considerations for a zero-gravity environment are examined in light of social interactions and human needs and the problems of children's growth in a permanent settlement. Consideration is then given to the benefits of including anthropology in the development of space settlements, consciousness alterations in space such as those undergone by various Apollo and Skylab astronauts, and the legal background and responsibilities of governments in space. A.L.W.

A80-46392 # **Nutrition, diet and food processing in controlled environment life support systems.** J. P. Clark (ITT Continental Baking Co., Rye, N.Y.). In: Space manufacturing III; Proceedings of the Fourth Conference, Princeton, N.J., May 14-17, 1979. New York, American Institute of Aeronautics and Astronautics, Inc., 1979, p. 371-373; Discussion, p. 373, 374.

The status and research requirements for the nutrition, diet and food processing components of a controlled environment life support system have recently been evaluated. The nutritional requirements for man, even in space, can be specified in terms of chemical composition rather than traditional foods. The dietary requirements are less well-known in terms of acceptability, variability and other psychological factors. Food processing requirements refer both to preservation of stored foods and processing of recycled nutrients. There are novel constraints imposed by space conditions and by various potential raw materials. The key need is for efficient means of providing the organoleptic characteristics found necessary for an acceptable and nutritional diet. (Author)

A80-46393 # **Agriculture and food production.** J. M. Phillips (Arizona Research Associates, Inc., Tucson, Ariz.). In: Space manufacturing III; Proceedings of the Fourth Conference, Princeton, N.J., May 14-17, 1979. New York, American Institute of Aeronautics and Astronautics, Inc., 1979, p. 375-380. 16 refs.

The development of agriculture and food production systems for controlled ecological life support systems (CELSS) such as would be necessary in large space habitats is discussed. The adoption of a conservative strategy for supplying human dietary requirements, which would imply a diet composed of traditional food sources in sufficient diversity and abundance, is discussed, and implications of this strategy for the potential crop, livestock and aquatic components and biomass flow of a CELSS food production system are considered. The influence of CELSS for large space habitats on the coevolution of humans and agricultural and livestock species is argued to be a factor necessitating the maintenance of comprehensive selection criteria for potential biological components of CELSS. Finally, areas of further study on the ground and in the space environment are recommended and the terrestrial benefits and applications of the development of food production systems for CELSS in space habitats are indicated. A.L.W.

A80-46398 # **Design opportunities - Zero gravity versus one gravity environments.** C. A. O'Donnell (M. Rosenblatt and Son, Inc., Arlington, Va.). In: Space manufacturing III; Proceedings of the Fourth Conference, Princeton, N.J., May 14-17, 1979. New York, American Institute of Aeronautics and Astronautics, Inc., 1979, p. 505-507, Discussion, p. 507-508.

The weightless environment produces physical changes in man, alters his modes of perception, and presents a new interface with his physical surroundings. These changes suggest that the eventual shape and form of habitat interiors will differ from many present concepts. This paper presents selected examples of physical and perceptual changes in zero gravity and raises issues which must be incorporated into the design process to provide space habitats which will meet man's new needs in a changed environment. It also suggests that methods must be developed to measure the qualitative effects of design on persons in confined environments. (Author)

A80-46549 **A rule-based model of human problem solving performance in fault diagnosis tasks.** W. B. Rouse, S. J. Pellegrino (McDonnell Douglas Automation Co., St. Louis, Mo.), and S. H. Rouse. *IEEE Transactions on Systems, Man, and Cybernetics*, vol. SMC-10, July 1980, p. 366-376. 22 refs. Grant No. DAHC19-78-G-0011; Contract No. MDA903-79-C-0421.

The paper considers the modeling of human fault diagnosis behavior in terms of sequences of tests selected. A rule-based model was proposed and evaluated in the context of fault diagnosis tasks: one task included data for 118 subjects and the second task had 36 subjects. It was shown that the model chose tests similar to those of the human 94% and 88% of the time, respectively. Considering the model's ability to choose the same tests as subjects, the comparison between model and subjects was not good, resulting in only a 52% agreement for the first task. However, such a result is expected when subjects are placed in a situation where they must choose between two or more equally attractive alternatives. It was concluded that the fairly favorable results presented in terms of similar tests should be interpreted as meaning that the model and subjects used the same rule in the same situation over 90% of the time. A.T.

A80-46550 **Use of active compliance in the control of legged vehicles.** C. A. Klein (Ohio State University, Columbus, Ohio) and R. L. Briggs (MIT, Lexington, Mass.). *IEEE Transactions on Systems, Man, and Cybernetics,* vol. SMC-10, July 1980, p. 393-400. 29 refs. NSF Grant No. ENG-78-18957.

Often it is desirable to specify both position and force at the end effector of a manipulator system; however, when the system forms a closed kinematic chain both cannot be realized independently. Active compliance is a trade-off method that can be easily incorporated into the supervisory control philosophy which is often used to control complex man-machine system. An example of such a system is the Ohio State University (OSU) Hexapod which is a legged walking vehicle. Active compliance is shown to be invaluable for allowing legged locomotion over irregular terrain. (Author)

A80-46804 # Results of the experiment 'Microorganism growth' on the Soyuz-22 spacecraft (Rezul'taty eksperimenta 'Rost mikroorganizmov' na kosmicheskom korable 'Soiuz-22'). V. A. Kordium, L. V. Polivoda, V. G. Man'ko, V. G. Babskii, N. I. Kon'shin, T. G. Gavrish, L. P. Polishchuk, and A. L. Mashinskii. *Kosmicheskie Issledovaniia na Ukraine,* no. 12, 1978, p. 3-14. 13 refs. In Russian.

Results of the Soyuz-22 experiment concerning the effects of the space environment on the growth of the bacterium Proteus vulgaris are presented. Following growth under anaerobic conditions in a ROST-3 growth chamber, bacteria innoculated onto a growth medium under space conditions were observed to be inhibited in growth relative to ground-based laboratory and transported controls, with the experimental cultures containing fewer and smaller cells. Chemotaxis investigations have shown the experimental cells to be less responsive to the products of their own metabolism than controls, while exhibiting inhibited colony growth on solid media with varying agar concentrations. It is noted that the differences found in the present experiment were more pronounced than decreases in viability and growth rate observed in previous experiments on board Soyuz-16 and Soyuz-19. A.L.W.

A80-46805 # The ultrastructure of Proteus vulgaris cells grown in orbit on board the Soyuz-22 spacecraft (Ul'trastruktura kletok Proteus vulgaris, vyrosshikh v orbital'nom polete na bortu kosmicheskogo korablia 'Soiuz-22'). O. P. Bochagova, N. I. Kon'shin, E. L. Kordium, and A. F. Popova. *Kosmicheskie Issledovaniia na Ukraine,* no. 12, 1978, p. 14-20. In Russian.

Results of an electron microscopic analysis of the ultrastructure of cells of the bacterium Proteus vulgaris grown under anaerobic conditions in orbit on board Soyuz-22 and in the laboratory are presented. Four types of bacterial cell are observed, corresponding to cell types I, III, IV and VI, which are characterized by varying amounts of regions of electron-transparent deposits of easily dissolved formazan, fibrillar-granular formations and membrane structures. In addition, a number of other cell types was observed, all without formazan deposits but with a great extent of internal lysis. The ultrastructures of the experimental and control cells are found to be similar in many ways, exhibiting signs of premature aging due to the experimental manipulation. Ultrastructural observations are also found to be in agreement with the observed growth patterns of the cells, with the presence of formazan deposits in 3% of the experimental cells, 6.8% of the laboratory controls and 1.5% of the transported controls, and the laboratory controls remaining in the best condition. A.L.W.

A80-46806 # The survival rate of various species of dark-colored mushrooms under the influence of artificial solar radiation (Vyzhivaemost' nekotorykh vidov temnookrashennykh gribov pod vliianiem iskusstvennogo solnechnogo izlucheniia). N. N. Zhdanova, A. N. Liulichev, A. I. Vasilevskaia, and A. L. Antonenko. *Kosmicheskie Issledovaniia na Ukraine,* no. 12, 1978, p. 20-24. 18 refs. In Russian.

The resistance of several species of melanin-containing mushrooms to artificial solar radiation is investigated in light of their demonstrated resistance to UV radiation prevalent in the space environment. Specimens of the UV-resistant mushrooms Stemphylium ilicis, S. sarciniforme and Cladosporium transchelii and certain of its mutations with defects in melaninogenesis were irradiated by a simulated solar radiation with 10-12% of its energy in the UV at levels of up to 700 J/sq m sec in air and 1400 J/sq m sec in vacuum. Results obtained in air are found to be similar to those in vacuum, and indicate that resistance to damage induced by solar radiation is dependent on melanin content in the cellular envelope of the mushrooms studied. A.L.W.

A80-46807 # The effect of space flight factors on the characteristics of nutrient media for the bacterium Proteus vulgaris (Vliianie faktorov kosmicheskogo poleta na kharakteristiki pitatel'noi sredy dlia bakterii Proteus vulgaris). V. G. Babskii, V. G. Man'ko, L. V. Polivoda, A. A. S'edin, and V. A. Kordium. *Kosmicheskie Issledovaniia na Ukraine,* no. 12, 1978, p. 24-30. 18 refs. In Russian.

The effects of the space flight environment on the physicochemical and biological properties of the weak gel of nutrient agar used to support cultures of the bacterium Proteus vulgaris during space experiments are investigated. The bacterial growth properties, viscosity and sedimentation characteristics of the indicator-containing nutrient medium used in space-borne microorganism growth experiments were measured for samples flown on Soyuz 20 for a period of three months and laboratory and transported controls. It is found that the transport of the medium to the launch facility and space flight conditions lead to a significant decrease in the mechanical strength of the agar gel, accompanied even in the laboratory samples by a decrease in its capacity to support bacterial growth and mobility. A.L.W.

A80-46809 # The effect of space flight conditions on higher plant cells in vitro culture (Vliianie uslovii kosmicheskogo poleta na kletki vysshikh rastenii v kul'ture in vitro). P. G. Sidorenko and A. L. Mashinskii. *Kosmicheskie Issledovaniia na Ukraine,* no. 12, 1978, p. 39-42. 5 refs. In Russian.

The effects of space flight conditions on the growth, reproduction and several structural and function characteristics of tissue cultures of the higher plant Haplopappus gracilis are investigated. For cultures grown on a solid agar medium on board the Soyuz-22 spacecraft for nine days, optical and electron microscopic analysis indicates that the growth of the culture was slowed relative to control cultures, with a disruption of tissue structure evidently due to in-flight vibrations. No substantial differences were found between the nature of growth, the formation of reproductive cells, mitosis frequencies, nuclear dimensions and population karyotypes in experimental and control cultures kept at 18 C, although controls grown at the optimum temperature of 26 C exhibited a larger increase in biomass. A.L.W.

A80-46810 # The effects of orbital flight conditions on the formation of the generative organs in Muscari racemosum and Anethum graveolens (Vliianie uslovii orbital'nogo poleta na formirovanie generativnykh organov Mussari racemosum i Anethum graveolens). E. L. Kordium, A. L. Mashinskii, A. F. Popova, S. A. Uvarova, and L. A. Khristenko. *Kosmicheskie Issledovaniia na Ukraine,* no. 12, 1978, p. 42-49. In Russian.

The effects of orbital space flight conditions on the growth of the male gametophyte of the bulbous herb Muscari racemosum and on the formation of the generative organs of dill plants (Anethum graveolens) are investigated. The plants were grown from seeds carried on board the Soyuz-20 spacecraft during the course of its three-month flight beginning in November, 1975, and compared with laboratory controls and plants grown under natural conditions by means of optical microscopy. It is found that space flight conditions lead to an acceleration in the development of the male gametophyte of M. racemosum and a decrease in the germination rate and the percent of shoot formation in dill plants. However, the numbers of buds and leaves and the characteristics of the establishment of generative organs, sporo- and gametogenesis, male and female gametophyte development, fruiting and embryo- and endospermgenesis in the dill are observed to be basically similar to those of the controls. Finally, it is noted that the seeds produced by the experimental plants were similar in size and weight to those of the controls. A.L.W.

A80-46811 # **Investigation of the effects of space flight factors on the emergence from the anabiotic state of turions of the great duckweed (Izuchenie vliianiia faktorov kosmicheskogo poleta na vykhod iz anabioticheskogo sostoianiia turinov spirodely mnogokorennoi).** Iu. A. Kutlakhmedov, G. S. Sokirko, D. M. Grodzinskii, A. L. Mashinskii, G. S. Nechitailo, and N. I. Kon'shin. *Kosmicheskie Issledovaniia na Ukraine,* no. 12, 1978, p. 49-54. In Russian.

The effects of space flight conditions on the emergence of turions from the dormant state to a state of active growth is investigated in the great duckweed Spirodela polyrhiza. Specimens of dormant spirodela turions placed in IFS growth chambers on board the Soyuz-12 and 13 and Cosmos-656 spacecraft were activated under space flight conditions by the awakening factor kinetin, and subsequent growth was monitored by tritiated thymidine uptake and fascicle growth. The early stages of cell division in the meristem are found to be inhibited in experimental specimens relative to controls, accompanied by an irregular suppression of the function of the first daughter fascicle. It is concluded that the early stages of the awakening of the duckweed appear to be a sensitive and convenient model for the investigation of the effects of the space flight environment. A.L.W.

A80-46812 # **The effects of simulated weightlessness on the reproductive capacity of the great duckweed in the norm and under irradiation (Vliianie simulirovannoi nevesomosti na reproduktivnuiu sposobnost' spirodely mnogokorennoi v norme i pri obluchenii).** Iu. A. Kutlakhmedov, G. S. Sokirko, and D. M. Grodzinskii. *Kosmicheskie Issledovaniia na Ukraine,* no. 12, 1978, p. 55-58. 7 refs. In Russian.

The effects of weightlessness simulated on a clinostat on the generative capacity of meristem cells of the great duckweed are investigated for samples irradiated by various doses of Co-60 gamma radiation. Irradiated cells grown under simulated weightlessness are found to exhibit an increased number of descendants relative to meristems cultured under normal gravity, indicating an increase in radiation stability. Increased numbers of generations, descendents in each generation and generation rates are also observed for nonirradiated specimens in the clinostat relative to those grown under normal conditions. A.L.W.

A80-46813 # **The effects of low-intensity magnetic fields on plant cell reproduction (Vliianie magnitnykh polei nizkoi napriazhennosti na reproduktsiiu kletok).** V. M. Fomicheva, N. I. Bogatina, B. I. Verkin, V. M. Litvin, and N. B. Rudenko. *Kosmicheskie Issledovaniia na Ukraine,* no. 12, 1978, p. 58-62. 28 refs. In Russian.

The effects of magnetic fields on the order of 0.5 millioersted on the reproduction rate of cells of the seeds of the pea plant are investigated by means of autoradiography. Following a 24-h incubation of the seeds in an artificial magnetic field and control fields, autoradiographs were made of cells labeled by tritiated thymidine. Results indicate a 30% increase in the duration of the cell cycle for cells grown in a null magnetic field, which is due to the prolongation of the G1 (presynthetic) phase. In addition, in hypomagnetic conditions the size of the proliferative pool is decreased to 68% of the population, in contrast to the 96% of the population undergoing proliferation in control cells. Results thus demonstrate the sensitivity of the phase preceding DNA synthesis to environmental factors and the complexity of the system regulating cell proliferation. A.L.W.

A80-46961 # **The axiomatic introduction of a metric in binocular visual space. I, II (Aksiomaticheskoe vvedenie metriki v binokuliarnom zritel'nom prostranstve. I, II).** B. K. Lopatchenko. *Problemy Bioniki,* no. 23, 1979, p. 10-20. In Russian.

Consideration is given to the development of a mathematical model of the physical space revealed by binocular visual mechanisms. The black box method for investigating visual perception, in which the subject is regarded as an undetermined transformer of information (black box), is discussed, with attention given to the types of input-output tasks involved in such experiments, and it is noted that such experiments have indicated that in perception, binocular space is characterized by Lobachevskii geometry. A set of axioms is then derived based on the operations of equipartition and distance comparison for specifying the metric properties of visual space. It is noted that the axioms and definitions presented are in agreement with experimental observations and can be used to obtain Hilbert's axioms describing three-dimensional space. A.L.W.

A80-46962 # **The discreteness of auditory information (K voprosu o diskretnosti slukhovoi' informatsii).** S. A. Usenko. *Problemy Bioniki,* no. 23, 1979, p. 27-32. In Russian.

On the basis of psychoacoustic experiments, it is proposed that the quantity of information derivable by the human auditory apparatus from an audio oscillogram is finite and thus can be represented in discrete form. Consideration is given to the observed behavior of sensory systems as nonideal instruments, reacting only to sufficiently large changes in sensory input, and the limited temporal passband of acoustic information receivers. An analytic expression is derived for a discrete signal perceived as an analog signal, and an experimental transformer circuit used to verify the formulation, which is in accordance with Talbot's law is presented. It is pointed out that the discreteness of auditory information can be used as a basis for the development of an instrument for the analysis and synthesis of speech. A.L.W.

A80-46970 # **Experimental investigations of binocular space perception (Eksperimental'nye issledovaniia binokuliarnogo vospriiatiia prostranstva).** B. K. Lopatchenko and I. V. Shul'gin. *Problemy Bioniki,* no. 22, 1979, p. 17-24. 18 refs. In Russian.

Experimental investigations of binocular perception are reviewed in light of their applicability to the formulation of a mathematical model of space perception. Attention is given to the work of Helmholtz (1911) and Blumenfeld (1913), which demonstrated that a line perceived as straight in the frontal plane is in reality curved, the experiments of Ames (1951, 1957) on the perception of distorted rooms, the theoretical work of Luneburg which concluded that visual space was not Euclidian but Riemannian with constant negative curvature, and the subsequent work of Blank, (1958), von Schelling (1960), Faley (1964), Buzeman (1962), and Ziman (1970) which developed Luneburg's ideas. In addition, the conclusions of Zajaczkowska (1956) and Kienle (1963) which point out some of the difficulties of the Luneburg theory of a hyperbolic space projected on a Euclidian space are indicated. A.L.W.

A80-46972 # **An information processing mechanism for systems with boundary contrast and some optical illusions (Mekhanizm obrabotki informatsii v sistemakh s kraevym kontrastom i nekotorye zritel'nye illiuzii).** G. V. Aleshin and V. A. Grabina. *Problemy Bioniki,* no. 22, 1979, p. 60-65. In Russian.

Mechanisms for enhancing the contrast of contours are discussed and the implications of these mechanisms for certain optical illusions encountered in observational tasks are examined. Expressions for contrast enhancement for a linear receptor field are presented, and it is pointed out that the increase in brightness observed at the light side of a boundary is equal to the brightness drop observed at the dark edge. Conditions for the perception of a widening of the white field of the contrasting system at the expense of the darker field are also obtained and shown to account for the well-known square illusion, the Mueller-Lyer illusion and illusions of radiating lines by retinal mechanisms. A.L.W.

A80-47021 * **Characterization of renal response to prolonged immersion in normal man.** M. Epstein, A. G. DeNunzio, and M. Ramachandran (U.S. Veterans Administration, Medical Center; Miami, University, Miami, Fla.). *Journal of Applied Physiology:*

Respiratory, Environmental and Exercise Physiology, vol. 49, Aug. 1980, p. 184-188. 21 refs. Research supported by the U.S. Veterans Administration; Contract No. NAS9-15473.

During the initial phase of space flight, there is a translocation of fluid from the lower parts of the body to the central vascular compartment with a resultant natriuresis, diuresis, and weight loss. Because water immersion is regarded as an appropriate model for studying the redistribution of fluid that occurs in weightlessness, an immersion study of relatively prolonged duration was carried out in order to characterize the temporal profile of the renal adaptation to central hypervolemia. Twelve normal male subjects underwent an immersion study of 8-h duration in the sodium-replete state. Immersion resulted in marked natriuresis and diuresis which were sustained throughout the immersion period. The failure of that natriuresis and diuresis of immersion to abate or cease despite marked extracellular fluid volume contraction as evidenced by a mean weight loss of -2.2 + or - 0.3 kg suggests that central blood volume was not restored to normal and that some degree of central hypervolemia probably persisted. (Author)

A80-47022 **Cerebrovascular permeability to sucrose in the rat exposed to 2,450-MHz microwaves.** E. Preston and G. Préfontaine (National Research Council, Div. of Biological Sciences, Ottawa, Canada). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 49, Aug. 1980, p. 218-223. 15 refs.

A80-47023 **Plasma testosterone during treadmill exercise.** J. E. Wilkerson, S. M. Horvath, and B. Gutin (California, University, Santa Barbara, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 49, Aug. 1980, p. 249-253. 18 refs. Grant No. AF-AFOSR-78-3534.

Five male volunteers performed 20 min of steady-state submaximal exercise on a motor-driven treadmill at five intensities (30, 45, 60, 75, and 90% maximal aerobic capacity) as well as several maximal aerobic capacity tests. Peripheral venous plasma testosterone concentrations increased above resting values in proportion to exercise intensity. However, this increase in plasma testosterone concentration was virtually equal in magnitude to the decrease in plasma volume observed consequent to the exercise bouts, resulting in no change in total testosterone contents. There was an unexpected anticipatory elevation in resting preexercise control testosterone concentration and content with increasing work intensity. The possibility that testosterone has a direct role in the organism's response to whole-body exercise is questioned. (Author)

A80-47024 **Physiological responses of physically fit men and women to acclimation to humid heat.** B. A. Avellini, E. Kamon, and J. T. Krajewski (Pennsylvania State University, University Park, Pa.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 49, Aug. 1980, p. 254-261. 23 refs.

A80-47025 **Work capacity during 3-wk sojourn at 4,300 m - Effects of relative polycythemia.** D. Horstman, R. Weiskopf, and R. E. Jackson (U.S. Army Research Institute of Environmental Medicine, Natick, Mass.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 49, Aug. 1980, p. 311-318. 29 refs.

The effects of a three-week exposure to an altitude of 4300 m on physiological work capacity are investigated, with particular emphasis on the contribution of high-altitude polycythemia. Nine healthy male subjects were tested for maximal exercise capacity and endurance at sea level, during a three-week sojourn at 4300 m and following the subsequent removal of 450 ml of whole blood from five of the subjects. Following two weeks at altitude, maximal O2 consumption and systemic O2 transport are observed to increase 10%, the latter of which is due to a 19% increase in arterial O2 content despite a 9% decrease in maximal cardial output. The increased arterial O2 content in turn is found to be a result of a 12% increase in O2 carrying capacity and a 6% increase in arterial O2 saturation, while decreased cardiac output is attributed to a 9% decrease in maximal stroke volume. Following blood removal, reductions of 8 and 7% in maximal O2 consumption and systemic O2 transport respectively are obtained, accompanied by decreases in arterial O2 content and capacity and increases in cardiac output and stroke volume. Results indicate that the effects of increased carrying capacity exceed those of reduced cardiac output, resulting in increased work capacity to which relative polycythemia is a major contributor. A.L.W.

A80-47064 # **Thermal response model of a simulated cranial structure exposed to radiofrequency radiation.** J. G. Burr, D. K. Cohoon, E. L. Bell, and J. W. Penn (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *IEEE Transactions on Biomedical Engineering*, vol. BME-27, Aug. 1980, p. 452-460. 21 refs.

A thermal response model of a simulated cranial structure (multilayered sphere) exposed to radiofrequency radiation (RFR) has been developed and experimentally verified for the no blood flow case. The thermal response model considers the RFR energy absorption distribution as predicted through use of the Mie theory, the thermal properties of the many layers, the blood flow to the central core area, and surface cooling through the application of a nonhomogeneous Newton cooling law. The model was preliminarily verified using homogeneous muscle equivalent spheres and an electrothermia monitor. (Author)

A80-47065 **Theoretical analysis of error during signal averaging for detection of His-bundle activity.** J. E. Ribeiro, A. G. Neto, N. G. Wiederehecker, A. F. C. Infantosi (Rio de Janeiro, Universidade Federal, Rio de Janeiro, Brazil), and A. Caprihan (Lovelace Medical Center, Albuquerque, N. Mex.). *IEEE Transactions on Biomedical Engineering*, vol. BME-27, Aug. 1980, p. 473-476. 5 refs.

Errors associated with the use of coherent signal averaging in synchronism with the ECG R wave to detect His-bundle activity are analyzed. A model of signal averaging is developed in order to investigate the effects of the sampling interval, periodic noise, quantization error and trigger detection for an information signal occuring up to 40 msec before the QRS complex at an amplitude from 0.001 to 0.01 times that of the QRS complex. It is found that 60-Hz interference muscular noise and quantization error all behave as white noise, an accurate detection of the R wave is necessary, and that quantization error is negligible for 8 bits of quantization. A.L.W.

blank page

STAR ENTRIES

N80-28812*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.

A VERY LONG BASELINE INTERFEROMETRY SKY SURVEY

Robert A. Preston and D. D. Morabito *In* NASA. Goddard Space Flight Center Radio Interferometry Jul. 1980 p 173-179 refs
(Contract NAS7-100)
Avail: NTIS HC A20/MF A01 CSCL 08E

A systematic very long baseline interferometry (VLBI) sky survey, undertaken to find a suitable set of compact celestial radio sources from which a more complete VLBI reference frame can be constructed, discussed. The survey was conducted by searching known celestial radio sources for compact components by means of VLBI observations. Baseline lengths were about 7 x 10 to the 7th power RF wavelengths (lambda = 13.1 cm), so the spatial wavelengths being sampled by the interferometer were generally on the order of a few milliarcseconds. Hence, the radio sources detected have a measurable portion of their total flux density contained in components that are no more than a few milliarcseconds in angular extent. Existing information of radio sources were used as clues to source size. E.D.K.

N80-29010*# National Aeronautics and Space Administration, Washington, D. C.

ELECTROENCEPHALOGRAPHIC CHANGES IN ALBINO RATS SUBJECTED TO STRESS

J. Mercier, G. Assouline, and J. Fondarai Apr. 1980 8 p ref Transl. into ENGLISH from OMPT Rend. Soc. Biol. (France), v. 161, no. 7, Jun. 1967 p 1639-1641 Presented at Marseilles Biol. Soc. Meeting, 20 Jun. 1967 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Med. and Pharm. Fac. of Marseilles
(Contract NASw-3199)
(NASA-TM-76118) Avail: NTIS HC A02/MF A01 CSCL 06C

Twenty one albino Wistar rats were subjected to stress for 7 hours. There was a significant difference in the slopes of regression lines for 7 nonulcerous rats and those for 14 ulcerous rats. Nonulcerous rats subjected to stress showed greater EEG curve synchronization than did ulcerous rats. If curve synchronization can be equated to a relaxed state, it may therefore be possible to explain the protective action of hypnotics, tranquilizers and analgesics on ulcers. Author

N80-29011*# Miami Univ., Coral Gables, Fla. Inst. for Molecular and Cellular Evolution.

FROM INANIMATE MATTER TO LIVING SYSTEMS

Sidney W. Fox 27 May 1980 33 p refs
(Grant NGR-10-007-008)
(NASA-CR-163372) Avail: NTIS HC A03/MF A01 CSCL 06C

Since the early part of this century, the Genesis account of the origin and evolution of life has been explained as an extrapolation of astronomical and geochemical processes. The essence of the answer to date is a protoreproductive protocell of much biochemical and cytophysical competance. The processes of its origin, molecular ordering, and its functions are described. A crucial understanding is that of the nonrandomness of evolutionary processes at all stages (with perhaps a minor statistical component). In this way, evolution conflicts with statistical randomness; the latter is a favorite assumption of both scientific and creationistic critics of the proteinoid theory. The principle contribution of the proteinoid theory to the understanding of general biology is to particularize the view that evolutionary direction is rooted in the shapes of molecules, in stereochemistry. After molecules of the right kind first assembled to protocells, life in its various stages of evolution was an inevitable consequence. It is molecules that continue to assemble as part of living process and, in the role of enzymes, continue to direct life cycle of the cell. A.R.H.

N80-29012*# National Aeronautics and Space Administration, Washington, D. C.

THE EFFECT OF HYPODYNAMIA ON THE STRUCTURE OF THE INTRAORGANIC BLOOD VESSELS AND THE CAPACITY OF THE BLOOD STREAM IN THE DIAPHRAGM OF WHITE RATS

A. I. Genus May 1980 11 p refs Transl. into ENGLISH from Vestsi Akad. Navuk BSSR, Ser. Biyal. Navuk (USSR), no. 3, 1974 p 94-98 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76140) Avail: NTIS HC A02/MF A01 CSCL 06C

The effect of hypodynamia on the vascular system of white rats with diaphragm deprivation was investigated. Morphological changes in the intraorganic blood stream of the diaphragm were determined. The capacity of the intraorganic vascular flow within the diaphragm muscles was established. R.E.S.

N80-29013*# National Aeronautics and Space Administration, Washington, D. C.

GENETIC CHANGES INDUCED BY SPACE FLIGHT FACTORS IN BARLEY SEEDS ON SOYUZ-5 AND SOYUZ-9 CRAFT

N. I. Nuzhdin and R. L. Dozortseva Jul. 1980 17 p refs Transl. into ENGLISH from Zh. Obshch. Biol. (USSR), v. 33, no. 2, 1972 p 336-346 Translation was announced as N70-23662 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76281) Avail: NTIS HC A02/MF A01 CSCL 06C

Air-dry seeds of the barley Zimujuschij moscowskyi of the 1969 harvest were taken into space onboard the spaceships Soyuz-5 and Soyuz-9. A cytological study of the mitoses in meristemic cells in rootlet terminals revealed that space flight factors (SFF) in nonirradiated seeds induced about 3% of aberrant cells. After irradiation the effect of SFF increased over two-fold. Although the radio protectors ensured the seeds against from the SFF-induced damage either in irradiated or nonirradiated seed cells which is inconsistent with the previously obtained data. L.F.M.

N80-29014*# National Aeronautics and Space Administration. John F. Kennedy Space Center, Cocoa Beach, Fla.

RESPONSE OF SELECTED PLANT AND INSECT SPECIES TO SIMULATED SOLID ROCKET EXHAUST MIXTURES AND TO EXHAUST COMPONENTS FROM SOLID ROCKET FUELS

William W. Heck (Department of Agriculture), William M. Knott, Edward P. Stahel (North Carolina State Univ.), John T. Ambrose (North Carolina State Univ.), James N. McCrimmon (North Carolina State Univ.), Madeleine Engle (North Carolina State Univ.), Louse A. Romanow (North Carolina State Univ.), Alan G. Sawyer (North Carolina State Univ.), and James D. Tyson (North Carolina State Univ.) Aug. 1980 158 p refs
(NASA-TM-74109; KSC-TR-51-1) Avail: NTIS HC A08/MF A01 CSCL 06C

The effects of solid rocket fuel (SRF) exhaust on selected plant and and insect species in the Merritt Island, Florida area was investigated in order to determine if the exhaust clouds generated by shuttle launches would adversely affect the native, plants of the Merritt Island Wildlife Refuge, the citrus production, or the beekeeping industry of the island. Conditions were simulated in greenhouse exposure chambers and field chambers constructed to model the ideal continuous stirred tank reactor. A plant exposure system was developed for dispensing and monitoring the two major chemicals in SRF exhaust, HCl and Al2O3, and for dispensing and monitoring SRF exhaust (controlled fuel burns).

Plants native to Merritt Island, Florida were grown and used as test species. Dose-response relationships were determined for short term exposures of selected plant species to HCl, Al2O3, and mixtures of the two to SRF exhaust. R.E.S.

N80-29015*# National Aeronautics and Space Administration, Washington, D. C.

ULCERS IN RESTRAINED RATS: STUDY OF PROTECTIVE SUBSTANCES

L. Buche and D. Gallaire May 1980 21 p refs Transl. into ENGLISH from Arch. Sci. Physiol. (France), v. 21, no. 4, 1967 p 537-552 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Pharmacology Inst.
(Contract NASw-3199)
(NASA-TM-76184) Avail: NTIS HC A02/MF A01 CSCL 06C

The genesis of ulcers in restrained rats is discussed through an investigation of the relationship between the protective effects of nervous system effectual substances examined vis-a-vis ulcers in restrained rats and their elective or secondary pharmacologic effects. The substances used were capable of either peripheral parasympatholytic, sympatholytic, ganglioplegic, spasmolytic effects or central, hypnotic, tranquilizing, neuroleptic, analgesic effects. The regular and considerable protection observed with parasympatholytics (atropine sulfate, benzylonium bromide, dihexyverine, J.L. 1344) and a ganglioplegic (pentamethonium) is a function of their anticholinergic properties. It is of less importance with dibenamine, a sympatholytic action on the adrenergic receptors. Among the central depressive substances tested (hypnotics, tranquilizers, neuroleptics, analgesic), phenobarbital at a nonhypnotic dose, and dextromoramide at a nonanalgesic dose, show antiulcerous effects, which are found with chlorpromazine only at cataleptogenic doses. M.G.

N80-29016*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF CERTAIN PSYCHOPHARMACOLOGICAL PREPARATIONS ON ADAPTATION UNDER STRESS CONDITIONS

A. V. Stanishevskaya and L. N. Mezentseva Jun. 1980 7 p refs Transl. into ENGLISH from Farakol. Toksikol. (USSR), v. 40, no. 1, 1977 p 9-12 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76185) Avail: NTIS HC A02/MF A01 CSCL 06C

Experiments staged on rats demonstrated that the formation of pathological states caused by stress and accompanied by the development of ulcerative lesion of the gastric mucosa are associated with the degree of the catecholamines level drop in the mesencephalon and hypothalamus. The application of seduxen and also of combinations consisting of L-DOPA with seduxen, or with an L-adrenoblocking agent pyroxan tends to reduce the frequency of developing alcerative lesions of the stomach. The protective effect produced by the combination of L-DOPA with an L-adrenoblocking agent pyroxan is barred by an additional administration of an B-adrenoblocking agent, inderal. Author

N80-29017# Wyoming Univ., Laramie. Dept. of Zoology and Physiology.

PARAMECIUM TETRAURELIA: PRESCREEN FOR HAZARDOUS AGENTS

J. Smith-Sonneborn, C. Herr, and E. VanKirk 1979 37 p refs
(Contract DE-AC02-77EV-04477)
(DOE/EV-04477/1) Avail: NTIS HC A03/MF A01

The ciliated protozoan, paramecia, is proposed as a eukaryote model system for use in short term screening assays for detection of mutagenic/carcinogenic and hazardous agents. The approach utilizes two assays: the mutagenic and photodynamic systems. DOE

N80-29018# WIL Research Labs., Inc., Cincinnati, Ohio.

TERATOLOGIC EFFECTS OF LONG-TERM EXPOSURE TO DIESEL EXHAUST EMISSIONS (RATS) Progress Report, 15 Sep. 1978 - 7 Feb. 1979

Kathleen M. Werchowski, Vincent W. Chaffee, and G. Bruce Briggs Jan. 1980 41 p
(Contract EPA-68-03-2652)
(PB80-159965; EPA-600/1-80-010) Avail: NTIS HC A03/MF A01 CSCL 06T

The potential for diesel exhaust emissions to produce malformations in rat fetuses was investigated. The rats were exposed by the inhalation route to a 10% concentration of diesel exhaust emissions in inhalation chambers on days 6 through 15 of gestation. (Methods used conform to the guideline developed by the Food and Drug Administration for evaluating teratogenic effects in rats.) The results of the exposure of pregnant rats indicate that diesel exhaust emissions have no effect upon normal development of rat fetuses. Diesel exhaust emissions did not effect any of the parameters evaluated to assess maternal toxicity nor total number of fetuses born. GRA

N80-29019# WIL Research Labs., Inc., Cincinnati, Ohio.

TERATOLOGIC EFFECTS OF LONG-TERM EXPOSURE TO DIESEL EXHAUST EMISSION (RABBITS) Progress Report, 19 Dec. 1978 - 25 May 1979

Kathleen M. Werchowski, Stephen P. Henne, and G. Bruce Briggs Jan. 1980 49 p
(Contract EPA-68-03-2652)
(PB80-168529; EPA-600/1-80-011) Avail: NTIS HC A03/MF A01 CSCL 06T

The potential for diesel exhaust emissions to produce malformation in rabbit fetuses was evaluated. The pregnant does were exposed by the inhalation route to a 10% concentration of diesel exhaust emissions in inhalation chambers on days 6 through 18 of gestation (Methods used conform to the guideline developed by the Food and Drug Administration for evaluating teratogenic effects in rabbits.) The results of the exposure of pregnant rabbits indicate that diesel exhaust emissions have no effect upon the normal development of rabbit fetuses. Diesel exhaust emission did not effect any of the parameters evaluated to assess maternal toxicity nor total number of fetuses born. GRA

N80-29020# Michigan State Univ., East Lansing. Inst. of Water Research.

AN EMPIRICAL STUDY OF FACTORS AFFECTING BLUE-GREEN VERSUS NONBLUE-GREEN ALGAL DOMINANCE IN LAKES Project Completion Report, 1 Oct. 1978 - 30 Sep. 1979

Kenneth H. Reckhow and Jonathan T. Simpson Feb. 1980 108 p refs
(Contract DI-14-34-0001-9024)
(PB80-169311; W80-04441; OWRT-A-102-MICH(3)) Avail: NTIS HC A06/MF A01 CSCL 06C

Exploratory data analysis techniques were applied to 90 north temperate lakes included in the EPA National Eutrophication Survey to examine empirical relationships between: (1) the chemical and physical variables that affect algal dominance in lakes; and (2) the dominant algal type. Single variable box plots and bivariate-discriminant plots document the importance of the inorganic nitrogen concentration and hydraulic detention time in determining blue-green versus nonblue-green algal dominance in eutrophic lakes. The multivariate statistical technique of discriminant analysis was also applied to 68 high, alkalinity lakes in the data set to: (1) further identify variable relationships; and (2) construct a simple predictive model for algal dominance. GRA

N80-29022# National Electrical Engineering Research Inst., Pretoria (South Africa).

CHANGES IN THE QRS COMPLEX OF THE ELECTROCARDIOGRAM DURING SLEEP AND EXERCISE M.S. Thesis

The abrupt change in mean value, the beat by beat variability of the amplitudes and the gradual change of mean amplitude may assist the analysis of sleep. (4) The response of the QRS waveform to inspiration has two components, namely a step response caused by movement of the heart with the diaphragm, and a transient response possibly caused by ventricular volume changes. (5) The amplitudes of the R and S waves change in a defined pattern during exercise. (6) Changes of the R and S

Pretoria Univ.
John Nicholas Amoore May 1979 178 p refs
(CSIR-ELEK-167) Avail: NTIS HC A09/MF A01

Changes in the QRS complex in normal healthy individuals during sleep were identified and studied in order to determine whether they are due to alteration in the cardiac signal or in the transfer function. A knowledge of the mechanism of the changes could provide useful information on the nature of sleep. The following conclusions were reached: (1) The surface ECG is a function of both the electrical activity of the heart and the transfer of the signals to the body surface. (2) An analysis of the transfer function extends the usefulness of the ECG. (3) Three modes of R and S amplitude changes occur during sleep. wave amplitudes may reflect changes in left ventricular end diastolic volume. R.E.S.

N80-29023*# GARD, Inc., Niles, Ill.
DESIGN, FABRICATION AND TESTING OF A DUAL CATALYST AMMONIA REMOVAL SYSTEM FOR A URINE VCD UNIT Final Report
P. Budinikas Jun. 1980 43 p ref
(Contract NAS2-10237)
(NASA-CR-152372) Avail: NTIS HC A03/MF A01 CSCL 06B

A three-man capacity catalytic system for the recovery of water from urine was designed, constructed, and tested, it was designed to operate with feed streams containing high concentrations of urine vapor and only 5 to 7% of oxygen for the oxidation of ammonia and volatile organic vapor.It can operate either in a flow-through or a recycle mode and is capable of accepting the urine vapor produced by a vapor compression distillation evaporator. Testing consisted of short preliminary and optimization test, an endurance test of 74 hours continuous operation, and recycle tests using both air and oxygen. The system was designed for a urine processing rate of 0.86 liters/hr; however, it was tested at rates up to 1.2 liter/hr. Untreated urine evaporated by an electrically heated evaporator was used. The quality of the recovered water meets the U.S. Drinking Water Standards, with the exception of a low pH. Accumulation of solids in the urine sludge is reduced to approximately 65% of the anticipated value. L.F.M.

N80-29024*# Houston Univ., Clear Lake, Tex.
ASTRONAUT TRAINING MANUAL Final Report
Eugene A. Coleman 30 Jun. 1980 251 p refs
(Contract NAS9-15642)
(NASA-CR-160758) Avail: NTIS HC A12/MF A01 CSCL 05I

Scientific information from previous space flights, space medicine, exercise physiology, and sports medicine was used to prepare a physical fitness manual suitable for use by members of the NASA astronaut population. A variety of scientifically valid exercise programs and activities suitable for the development of physical fitness are provided. Programs, activities, and supportive scientific data are presented in a concise, easy to read format so as to permit the user to select his or her mode of training with confidence and devote time previously spent experimenting with training routines to preparation for space flight. The programs and activities included were tested and shown to be effective and enjoyable. E.D.K.

N80-29025*# National Aeronautics and Space Administration, Washington, D. C.
EFFECT OF RESTRICTED MOBILITY ON RNA CONTENT AND NUCLEOTIDE COMPOSITION AND ON PROTEIN CONTENT IN MOTONEURONS OF SPINAL CORD ANTERIOR HORNS
A. V. Gorbunova Jun. 1980 7 p Transl. into ENGLISH from Dokl. Akad. Nauk SSSR (USSR), v. 199, no. 4, 1971 p 976-979
Transl. by Scientific Translation Service, Santa Barbara, Calif.
Original doc. prep. by Inst. of Med. and Biol. Problems, USSR Min. of Public Health
(Contract NASw-3198)
(NASA-TM-76190) Avail: NTIS HC A02/MF A01 CSCL 06S

An investigation into the effect of hypokinesia on the ribonucleic acid (RNA) content, the nucleotide composition, and dynamics of protein content in the motoneuron of the rat spinal cord anterior horns is described. Methodology and findings are presented. The study results showed that the nucleotide composition of the total cellular RNA at all the studied periods of hypokinesia remained unchanged and is characteristic for the cytoplasmic, high polymer ribosomal RNA. This means that with a change in the functional state of the neuron the newly formed RNA of the nerve cell has the same composition of bases as the original RNA that belongs to the ribosomal type. Author

N80-29026*# National Aeronautics and Space Administration, Washington, D. C.
RNA CONTENT IN SPINAL CORD MOTONEURONS DURING HYPOKINESIA
A. V. Gorbunova Jun. 1980 9 p refs Transl. into ENGLISH from Tsitologiya (USSR), v. 13, no. 1, Jan. 1971 p 83-87
Transl. by Scientific Translation Service, Santa Barbara, Calif.
Original doc. prepared by USSR Ministry of Public Health
(Contract NASw-3198)
(NASA-TM-76200) Avail: NTIS HC A02/MF A01 CSCL 06S

The effect of a diminished motor activity of rats upon the ribonucleic and (RNA) content in a single isolated motoneuron of frontal of their spinal cord was studied. Within a 1 to 30 day exposure of rats to the hypokinetic conditions, RNA content was found to decrease on the 1st, 3rd, and 5th day and to return to the initial level by the 7th day. No changes in RNA content were observed during the subsequent stages of the experiments. The volume of the nerve cells declined on the 3rd and 5th day, whereas RNA concentration reduced on the 1st, 3rd, 5th, and 30th day. L.F.M.

N80-29027# Massachusetts Inst. of Tech., Cambridge. Artificial Intelligence Lab.
A COMPUTER IMPLEMENTATION OF A THEORY OF HUMAN STEREO VISION
W. E. L. Grimson Jan. 1980 62 p refs
(Contract N00014-75-C-0643; Grant NSF MCS-77-07569)
(AD-A084696; AI-M-565) Avail: NTIS HC A04/MF A01 CSCL 06/16

Recently, Marr and Poggio (1979) presented a theory of human stereo vision. An implementation of that theory is presented, and consists of five steps: (1) The left and right images are each filtered with masks of four sizes that increase with eccentricity; the shape of these masks is given by the laplacian of a Gaussian function. (2) Zero-crossings in the filtered images are found along horizontal scan lines. (3) For each mask size, matching takes place between zero-crossings of the same sign and roughly the same orientation in the two images, for a range of disparities up to about the width of the mask's central region. Within this disparity range, Marr and Poggio showed that false targets pose only a simple problem. (4) The output of the wide masks can control vergence movements, thus causing small masks to come into correspondence. In this way, the matching process gradually moves from dealing with large disparities at a low resolution to dealing with small disparities at a high resolution. (5) When a correspondence is achieved, it is stored in a dynamic buffer, called the 2 1/2 dimensional sketch. To support the sufficiency of the Marr-Poggio model of human stereo vision, the implementation was tested on a wide range of stereograms from the human stereopsis literature. The performance of the implementation is illustrated and compared with human perception. As well, statistical assumptions made by Marr and Poggio are supported by comparison with statistics found in practice. Finally, the process of implementing the theory has led to the clarification and refinement of a number of details within the theory; these are discussed in detail. GRA

N80-29028# Wayne State Univ., Detroit, Mich. Ergonomics Research Lab.
A TECHNIQUE FOR ESTABLISHING TRUE LEVELS OF MUSCLE STRENGTH EXERTION Final Report, 1 Jun. 1979 - 31 Jan. 1980

K. H. E. Kroemer and W. S. Marras Jan. 1980 85 p refs
(Contract F49620-79-C-0109; AF Proj. 2313)
(AD-A083576; AFOSR-80-0263TR) Avail: NTIS
HC A05/MF A01 CSCL 06/16

Experiments were performed with 20 female and 20 male subjects in order to determine indicators of whether the subjects performed maximal or submaximal isometric strength exertion. The exertion tested were elbow flexion, finger flexion, knee flexion and knee extension. The only performance measures used were analog recordings of the strength scores exerted on a static dynamometer. The following was found: (1) The variability of tests scores in repeated exertion is not a viable indicator of the actual portion of individual strength exerted. (2) The buildup phase of strength exertion is a reliable indicator of the force level to be attained. The steeper the strength formation curve, the stronger the following muscle strength exertion. GRA

N80-29029# Oak Ridge National Lab., Tenn. Health and Environmental Studies Program.

CHEMICAL IDENTIFIED IN HUMAN BIOLOGICAL MEDIA: A DATA BASE, VOLUME 1, PART 1, RECORDS 1-1580 Annual Report, Oct. 1979

M. Virginia Cone, comp., Margaret F. Baldauf, comp., Fay M. Martin, comp., and John T. Ensminger, comp. Mar. 1980 314 p refs
(Contract W-7405-eng-26)
(ORNL/EIS-163/V1-P1; APR-1) Avail: NTIS
HC A14/MF A01

A comprehensive data base of chemicals identified in human biological media (tissues and body fluids) is presented in two volumes. The data base in given in this volume in tabular form and arranged alphabetically by CAS 'preferred chemical name'. R.E.S.

N80-29030# Oak Ridge National Lab., Tenn. Health and Environmental Studies Program.

CHEMICALS IDENTIFIED IN HUMAN BIOLOGICAL MEDIA: A DATA BASE, VOLUME 1, PART 2, RECORDS 1-1580 Annual Report, Oct. 1979

M. Virginia Cone, comp., Margaret F. Baldauf, comp., Fay M. Martin, comp., and John T. Ensminger, comp Mar. 1980 816 p refs
(Contract W-7405-eng-26)
(ORNL/EIS-163/V1-P2; APR-1) Avail: NTIS
HC A99/MF A01

A comprehensive data base of chemicals identified in human biological media (tissues and body fluids) is presented in two volumes. Introductory material, references, appendices, indices, and a chemical directory are given in this volume as a user guide to the data base. R.E.S.

N80-29031# Bolt, Beranek, and Newman, Inc., Canoga Park, Calif.

INITIAL STUDY ON THE EFFECTS OF TRANSFORMER AND TRANSMISSION LINE NOISE ON PEOPLE. VOLUME 1: ANNOYANCE Final Report

K. S. Pearsons, R. L. Bennett, and S. A. Fidell Dec. 1979 114 p refs Sponsored by DOE 3 Vol.
(EPRI-EA-1240-Vol-1; EPRI-RP852-Vol-1) Avail: NTIS
HC A06/MF A01

The relative annoyance of transmission line and transformer noise along with shaped noise and other environmental noises was evaluated in a laboratory setting. Thirty-two test subjects made paired comparisons of the annoyance of 19 signals under free field listening conditions. The study shows that transformer noise is about 10 decibles more acceptable than transmission line noise and thus casts doubt on the general validity of the A-weighted sound level index as a predictor of the relative noise annoyance of transformer noise as compared to transmission line corona noise. The inadequacy of the dBA as a unit for assessing certain types of relative noise evaluation is confirmed. DOE

N80-29032# Bolt, Beranek, and Newman, Inc., Canoga Park, Calif.

INITIAL STUDY ON THE EFFECTS OF TRANSFORMER AND TRANSMISSION LINE NOISE ON PEOPLE. VOLUME 2: SLEEP INTERFERENCE Final Report

R. D. Horonjeff, R. L. Bennett, and S. R. Teffeteller Dec. 1979 68 p refs Sponsored by Electric Power Research Inst. 3 Vol.
(EPRI-EA-1240-Vol-2; EPRI-RP852-Vol-2) Avail: NTIS
HC A04/MF A01

The relative awakening potential of four different sounds (a transformer, transmission line, window air conditioner, and distant traffic) was evaluated in a behavioral awakening study conducted in peoples' own homes. Fourteen participants in the Los Angeles, California area each participated in the experiment for a three week period. The results of the study indicate that the transformer, air conditioner, and traffic sounds would all awaken essentially the same proportion of the test population when presented at the same A-weighted sound level. The transmission line around, however, had to be presented at a level 10 dB(A) less than the other sounds to awaken an equivalent proportion of the population. DOE

N80-29033# Bolt, Beranek, and Newman, Inc., Canoga Park, Calif.

INITIAL STUDY ON THE EFFECTS OF TRANSFORMER AND TRANSMISSION LINE NOISE ON PEOPLE. VOLUME 3: COMMUNITY REACTION Final Report

S. A. Fidell, S. R. Teffeteller, and K. S. Pearsons Dec. 1979 61 p refs 3 Vol.
(EPRI-EA-1240-Vol-3; EPRI-RP852-Vol-3) Avail: NTIS
HC A04/MF A01

A social survey intended to assess reactions to exposure to noise emissions of overhead electric power transmission lines and power transformers was conducted in Southern California. A structured questionnaire was administered by personal interview to a purposive sample of about 400 people residing at 17 sites along power line rights-of-way and in neighborhoods adjacent to transformer substations in urban areas. Estimates of the proportion of the American population exposed to noise of different levels from power lines and transformers were developed by analyses of several information sources. Acoustic measurements were made at all interviewing sites to assess the contributions of these low level electrical noise sources to overall background noise environments. DOE

N80-29034# Oak Ridge National Lab., Tenn. Industrial Safety and Applied Health Physics Div.

HEALTH EFFECTS OF LOW LEVEL RADIATION

John A. Auxier 1980 13 p
(Contract W-7405-eng-26)
(DOE/TIC-11176) Avail: NTIS HC A02/MF A01

The health and environmental effects of low level radiation are reviewed. Emphasis is placed on effects on bone marrow and incidence of leukemia. Dose response curves are presented. DOE

N80-29035# CarboMedics, Inc., San Diego, Calif.

STUDIES OF CARBON-SURFACED POLYMERIC, METALLIC AND CERAMIC BIOMATERIALS Annual Report, 1 Apr. 1978 - 31 Mar. 1979

A. D. Haubold and H. S. Shim Dec. 1979 71 p refs
(Contract N01-HV-4-2928)
(PB80-168859) Avail: NTIS HC A04/MF A01 CSCL 06B

Carbon-surfaced composite biomaterials were investigated in order to: (1) determine whether thin carbon films that have physical and chemical properties similar to those of LTI carbon also confer the biochemical properties of LTI carbon to the coated composites, and (2) determine if the carbon-surfaced composites possess the necessary engineering properties for use in prosthetic devices. It was found that the strain to failure of carbon films on polymeric substrates is on the order of 4 to 5%. Failure of the carbon coating always coincided with the onset of plastic deformation in the substrate. The adhesion of the thin coatings is greater than the bulk strength of the polymer. GRA

N80-29036# National Technical Information Service, Springfield, Va.

AIRCRAFT SONIC BOOM: BIOLOGICAL EFFECTS. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1964 - Apr. 1980

Elizabeth A. Harrison May 1980 89 p Supersedes NTIS/PS-79/0190; NTIS/PS-78/0120
(PB80-810310; NTIS/PS-79/0190; NTIS/PS-78/0120) Avail: NTIS HC $30.00/MF $30.00 CSCL 06S

The selected abstracts of research reports cover the effects of sonic booms on humans, animals, birds, and fish. Discussions of biophysics, psychoacoustics, stress, and auditory tolerances are presented, along with materials on startle responses, disturbance, and compression wave reactions. This updated bibliography contains 82 abstracts. GRA

N80-29037# National Technical Information Service, Springfield, Va.

HYPOTHERMIA. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1964 - May 1980

Elizabeth A. Harrison May 1980 257 p Supersedes NTIS/PS-79/0533; NTIS/PS-78/0517
(PB80-180526; NTIS/PS-79/0533; NTIS/PS-78/0517) Avail: NTIS HC $30.00/MF $30.00 CSCL 06S

The selected abstracts cover high pressure narcosis, organ preservation, hyperbaric conditions, thermal homeostasis, thermoregulation, cold stress, cold tolerance, physiological effects and cold water immersion as related to hypothermia. This updated bibliography contains 250 abstracts. GRA

N80-29038 Flying Personnel Research Committee, London (England).

RESEARCH ABSTRACTS IN THE BEHAVIOURAL SCIENCES, 1971 TO 1975: A BIBLIOGRAPHY

Oct. 1979 55 p
(FPRC-Memo-259; BR70999) Copyright. Avail: Issuing Activity

Abstracts of 122 papers representing work completed by the Royal Air Force between 1971 and 1975 are presented. Subjects studied include: general psychology; group and interpersonal processes; military structure and political processes; personal atitudes and evaluation; aviation medicine; physiological psychology and psychopharmacology; stress and performance; flight simulation; human factors and equipment design; ergonometrics of both air traffic control systems; and map design. Author (ESA)

N80-29039# Toronto Univ. (Ontario). Inst. for Aerospace Studies.

THE EFFECT OF A PREDICTIVE WIND SHEAR CHART ON PILOT LANDING PERFORMANCE

Eric Nick Solowka Apr. 1980 82 p refs Sponsored by National Research Council of Canada
(UTIAS-TN-220; ISSN-0082-5263) Avail: NTIS HC A05/MF A01

A fixed base aircraft simulator limited to providing only the longitudinal equations of motion was used to study the effect of a predictive wind shear chart on landing performance through wind shear. It was found that the introduction of the predictive wind shear chart alone did not significantly alter the pilot's landing performance. Training as to wind shear effect and limited coaching combined with the presence of the predictive shear display did however improve pilot ability to maintain the aircraft on the desired flight path with little effect on airspeed control. This inability to improve airspeed control might not be an indication of poor pilot performance but suggests the adoption of another airspeed performance criterion. The overreaction of pilots to a novel wind shear (that was slightly different from those used in training flights) when the wind shear chart was available to them indicates that although better glide slope control can be achieved, care will have to be exercised when introducing a predictive shear display to the general aviation field. R.E.S.

N80-29040# Analytics, Inc., Willow Grove, Pa.

DECISION AIDS FOR NAVAL AIR ASW Technical Report, Aug. 1978 - Aug. 1979

Wayne W. Zachary 15 Mar. 1980 136 p refs
(Contract N00014-78-C-0743; NR Proj. 199-003)
(AD-A085134; Rept-1366-A) Avail: NTIS HC A07/MF A01 CSCL 15/7

This report examines the applicability of a variety of decision aiding techniques to operation decision situations encountered in Naval Air Anti-Submarine Warfare (ASW). Decisions performed by the Tactical Coordinator (TACCO) in the three major Navy air ASW platforms, P-3C, S-3A, and LAMPS MK-III, are examined and synthesized into six decision making situations. These six situations are lost contact reacquisition, contact classification/verification, on-station search, localization, surveillance tracking, and attack planning. They represent distinct decision making contexts in which specific mission objectives are sought. A method for prioritizing these decision situations for decision and construction is developed and applied. A survey of numerous decision aids and a detailed analysis of 15 military decision aids results in the development of a six category taxonomy of decision aiding techniques. Possible combinations of techniques that could be applied to aid each of the decision situations are determined by matching the decision aiding techniques from the taxonomy to the detailed descriptions of the decision situations. The matching of techniques to situations is facilitated by the development of a descriptive framework for the decision situations. The categories in this framework are chosen so as to uncover the aspects of the situations most amenable to decision aiding by the techniques in the taxonomy. GRA

N80-29041# Lovelace Foundation for Medical Education and Research, Albuquerque, N. Mex. Clinical Research Div.

AUTOMATED PSYCHOLOGICAL STRESS DETECTION IN AN ENTRY PORTAL SYSTEM Final Report

Jerry G. Davis, Jack A. Loeppky, and Michael D. Venters Oct. 1979 35 p refs
(Contracts EY-76-C-04-0789; DE-AC04-76DP-00789)
(SAND-80-7026) Avail: NTIS HC A03/MF A01

The application of automatic psychological stress detection to persons entering a secured facility through an entry portal is discussed. The numerous technical considerations in transducing the required physiological signals are presented. The major methods that a psychologically stressed person might utilize in an attempt to evade detection are also discussed. The prime evasionary method of drug intervention is given added emphasis. The hardware requirements for a typical installation are presented. DOE

N80-29042# Institut de Recherche de Transports, Bron (France). Centre d'Evaluation et de Recherche des Nuisances.

EFFECTS OF AIRCRAFT NOISE ON SLEEP: AN IN-SITU EXPERIENCE

M. Vallet, J. M. Gagneux, and F. Simonet 1979 10 p refs Presented at 3d Intern. Congr. on Noise as a Public Health Problem Sponsored by Min. de l'Environ. and Direc. de l'Aviation Civile
Avail: NTIS HC A02/MF A01

Electroencephalogram data and bedroom noise levels were recorded during four consecutive nights for 40 men living near the Roissy Airport in Paris questionnaire about sleep quality was administered each morning. All subjects had lived in the same location before the opening of the airport, and had been exposed to the noise for at least a year. The immediate effects of each noise event were noted and an analysis made of sleep structure. For the noisiest nights, total sleep decreased as the noise increased sleep induction latency increased with the noise index, and stage three and four sleep increase were noted. Author (ESA)

N80-29043*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.

ENVIRONMENTAL CONTROL AND LIFE SUPPORT SYSTEM: ANALYSIS OF STS-1

G. J. Steines Jul. 1980 38 p refs
(NASA-TM-81032; JSC-16730; Rept-80-FM-36) Avail: NTIS HC A03/MF A01 CSCL 06K

The capability of the orbiter environmental control and life support system (ECLSS) to support vehicle cooling requirements in the event of cabin pressure reduction to 9 psia was evaluated.

using the Orbiter versions of the shuttle environmental consumables usage requirement evaluation (SECURE) program, and using heat load input data developed by the spacecraft electrical power simulator (SEPS) program. The SECURE model used in the analysis, the timeline and ECLSS configuration used in formulating the analysis, and the results of the analysis are presented. The conclusion which may be drawn drom these results. is summarized. There are no significant thermal problems with the proposed mission. There are, however, several procedures which could be optimized for better performance: setting the cabin HX air bypass and the interchanger watet bypass to the zero flow position is of questionable efficacy; the cabin air pressure monitoring procedure should be re-evaluated; and the degree of equipment power down specified for this analysis and no problems were noted. A.R.H.

N80-29044# Naval Postgraduate School, Monterey, Calif.
THE ADVANTAGE OF THE COLOR-CODE MODALITY VERSUS ALPHANUMERIC AND SYMBOL CODE M.S. Thesis
Henning Hoops Mar. 1980 68 p refs
(AD-A084383) Avail: NTIS HC A04/MF A01 CSCL 05/8

This study describes an experiment designed to investigate potential advantages and/or disadvantages of color-coding relative to symbol - or alphanumeric-codes. Performance was evaluated in terms of reaction time and the number and type of errors made. The stimuli used in the experiment were the letters: E, F, N, U, the colors: red, yellow, green, blue, and the symbols: square, triangle, circle, and cross. They stood for enemy, friendly, neutral, and unknown forces, respectively. The analysis of the data obtained from the experiment suggested that the color and symbol-codes were significantly better than the alphanumeric-code with respect to the number of errors. The reaction time of the color-code was shortest, followed by the symbol-code with reaction time for the alphanumerics being longest. GRA

N80-29045# Donrich Research, Inc., West Palm Beach, Fla.
DETERMINATION OF THE IMPACT OF DIGITAL DATA BROADCAST ON FLIGHT TECHNICAL ERROR Final Report
Donald W. Richardson Feb. 1980 85 p refs
(Contract DOT-FA01-80-P-85745)
(AD-A085177; F-80-01; FAA/RD-80-35) Avail: NTIS HC A05/MF A01 CSCL 05/9

This report documents the data reduction and analysis of existing flight test data regarding the digital data broadcast system (DDBS) concept of automating cockpit data input procedures in an area navigation environment. Particular attention is paid to the statistical quantification of the impact of the DDBS concept on pilot steering performance, mainly flight technical error (FTE). Results of this analysis indicate that DDBS significantly reduces both pilot blunder rate and FTE, for both the enroute and approach phases of flight. GRA

N80-29046# National Technical Information Service, Springfield, Va.
PROTECTIVE CLOTHING: ARCTIC AND TROPICAL ENVIRONMENTS. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1964 - 1980
Edith Kenton Apr. 1980 126 p Supersedes NTIS/PS-79/0436; NTIS/PS-78/0371
(PB80-809635; NTIS/PS-79/0436; NTIS/PS-78/0371) Avail: NTIS HC $30.00/MF $30.00 CSCL 06Q

A bibliography containing 120 abstracts concerning clothing for environmental protection in extreme climates is given. Fabrics and textiles, insulating methods, physiological and psychological responses of users, mobility and dexterity of wearers, care of specialized clothing, and human factors involved are specifically addressed. GRA

N80-29047# National Technical Information Service, Springfield, Va.
PROTECTIVE CLOTHING: SURVIVAL, AIRCRAFT, AND COMBAT ENVIRONMENTS. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1964 - Apr. 1980
Edith Kenton Apr. 1980 230 p Supersedes NTIS/PS-79/0438; NTIS/PS-78/0373
(PB80-809650; NTIS/PS-79/0438; NTIS/PS-78/0373) Avail: NTIS HC $30.00/MF $30.00 CSCL 06Q

A bibliography containing 224 abstracts is presented addressing the design, testing, and evaluation of protective apparel for pilots in various conditions of climate and gravity, for military personnel in combat conditions, for persons in special circumstances of exposure and survival, such as the ocean environment, and for other aviation personnel. GRA

N80-29983 Louisiana State Univ., New Orleans.
BLOOD FLOW TO ADIPOSE TISSUES IN THE MALE SPRAGUE-DAWLEY RAT Ph.D. Thesis
Barbara Jean Maren 1980 214 p
Avail: Univ. Microfilms Order No. 8018275

The differences in adipocyte size among adipose depots in the male Sprague Dawley rat were studied with respect to their effect on blood flow. Blood flow was also examined within adipose depots to detect how it might vary with an increase of both adipocyte size and animal body size (age). In addition, since adipose tissue serves different metabolic functions of the body during the fed and fasted states, the effect of nutritional status on adipose tissue blood flow was studied. Results are presented. Dissert. Abstr.

N80-29984 New York Univ., N. Y.
VESTIBULAR COMPENSATION IN THE RAT: A MODEL FOR MOTOR LEARNING Ph.D. Thesis
Kerry Dee Walton 1980 290 p
Avail: Univ. Microfilms Order No. 8017600

A global picture of the changes in neuronal activity underlying the acquisition and retention of vestibular compensation (VC). Brain stem and cerebellar nuclear levels was obtained using 2-deoxy-D-glucose. The distribution of glucose uptake at these sites was determined in normal, uncompensated, compensated, and 3-acetylpyridine decompensated animals. Results indicate that the asymmetries following hemilabyrinthectomy reflect an imbalance in the activity of the vestibular nuclei (VN) and that compensation results from the restoration of balance. In uncompensated and decompensated animals the VN ipsilateral to the lesion were significantly less active than the contralateral VN. In compensated animals, VN activity was the same on the both sides, the level being close to or higher than normal. Thus, VC is accompanied by an increase in activity in the ipsilateral VN. Author

N80-29985 California Univ., Davis.
EFFECT OF ACCELERATION ON CIRCULATORY AND RESPIRATORY FUNCTION IN THE DOMESTIC FOWL Ph.D. Thesis
Sue Carol Walgenbach 1979 123 p
Avail: Univ. Microfilms Order No. 8016790

The respiratory and circulatory function was examined in chickens exposed to high sustained G sub z (exposure to fields greater than 6 G for 15 seconds: HGS sub z) Acceleration tolerance was determined for cocks exposed to + 6, +8, +10, and +12 G sub z. Acceleration tolerance time was found to be hyperbolically related to the field strength (G). Blood gases in chickens during HSG sub z exposure showed that chickens, unlike mammals, had near normal PaO2 and PaCO2. Forced ventilation of centrifuging chickens with oxygen increased PaO, a response not found mammals. Ventilation of one lung with air produced near normal PaO2 and PaCO, at 1 G, but in HGS sub z gave low PaO, as observed in spontaneously breathing mammals. Ventilation did not extend all tolerance times suggesting circulatory impairments are principally responsible for acceleration tolerance limitations. Expired P(CO2) during oxygen ventilation indicated that cardiac output decreased during HSG sub z, even down to zero for several seconds; after HSG sub z, expired P(CO2) increased, indicating that oxygen debt and metabolism perfusion inequalities were developed during HSG sub z. Dissert. Abstr.

N80-29986 Kentucky Univ., Lexington.
THE NEURAL CONTROL OF THE CORONARY CIRCULATION DURING BEHAVIORAL STRESS IN CONSCIOUS DOGS Ph.D. Thesis

George Edward Billman 1980 161 p
Avail: Univ. Microfilms Order No. 8018226

Experiments were performed on eight (3 female, 5 male) mongrel dogs during classical aversive conditioning. The conditioning paradigm consisted of two 30 second tones: one was paired with a one second pulsed DC shock, the other was nonreinforced. The subjects were chronically instrumented to measure aortic pressure, left ventricular pressure, and left circumflex coronary blood flow. The data were analyzed with multifactorial analysis of variances and Newman's-Keul's multiple range test. Results indicate that the coronary vascular response to stress consisted of two components: an initial alpha adrenergic vasoconstriction followed by a more complex vasodilation, which was mediated by metabolites released secondarily to increases in heart rate and inotropic state. The vasodilation may also involve a reactive hyperemic response to the initial vasoconstriction or perhaps a reflex withdrawal of alpha receptor tonus. Dissert. Abstr.

N80-29987 Florida Technological Univ., Orlando.
A COMPARATIVE STUDY IN MOLECULAR AGING: ALTERATIONS TO THE NUCLEIC ACIDS OF CELLS OF A REPRESENTATIVE PLANT, INVERTEBRATE AND VERTEBRATE ANIMAL OF VARIOUS AGES Ph.D. Thesis
Charles David Allen Polson 1979 93 p
Avail: Univ. Microfilms Order No. 8016621

The DNA of three tissues of Mus musculus, wild type and short lived vestigial wing mutant of Drosophila melanogaster and cotyledons of bush beans, Phaseolus vulgaris, was examined for age related fragmentation, formation of single stranded gaps, and decrease in RNA genes. Agarose gel electrophoresis showed that no DNA fragmentation occurred in wild type or vestigial wing Drosophila, or in DNA from mouse brain and heart. Mouse liver appeared to possess a large fragment in both ages tested; thus, no age related change occurred. Phaseolus cotyledon DNA possessed a fragment of approximately 3.5 megadaltons in both imbibed seeds and 12 day old cotyledons. Therefore, there was no age related increase in DNA fragmentation. Results indicate that DNA fragmentation, formation of single-stranded gaps, and loss of RNA genes are not of universal occurrence in aging organisms. Dissert. Abstr.

N80-29988 American Univ., Washington, D. C.
INTERACTION OF ELECTROMAGNETIC ENERGY WITH ABSORPTIVE MATERIAL BY THERMALLY INDUCING ELASTIC STRESS WAVES Ph.D Thesis
Kenneth John Oscar 1980 225 p
Avail: Univ. Microfilms Order No. 8017445

Rats were exposed to 1.3 or 2.8 gHz, pulsed or continuous wave (CW) microwave energy. Exposure time, incident power, and microwave pulse characteristics were varied. Local cerebral blood flow, blood volume, and blood-brain barrier permeability experiments were performed with several different, quantitative, radioactive isotope techniques with measurement by brain homogenization and liquid scintillation counting. It was confirmed that low power microwaves could alter the uptake of small molecular weight saccharides in the blood-brain barrier of rats. It was further learned that the permeability increases occurred for small but not large molecular weight saccharides. The rises returned to normal after 24 hours and were of greatest magnitude in the medulla, cerebellum, and hypothalamus. The relationship between the magnitude of the increase and the pulse characteristics of the microwaves were determined. Other pertinent observation and results are reported. Dissert. Abstr.

N80-29989# Applied Physics Lab., Johns Hopkins Univ., Laurel, Md.
BIOMEDICAL RESEARCH, DEVELOPMENT AND ENGINEERING AT THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY Annual Report, 1 Oct. 1978 - 30 Sep. 1979
Oct. 1979 74 p refs
(PB80-175268; JHU/APL/MQR-79) Avail: NTIS HC A04/MF A01 CSCL 06B

The Medical Institutions of The Johns Hopkins University and The Johns Hopkins University and The Johns Hopkins University Applied Physics Laboratory have developed a vigorous collaborative program of biomedical research, development, and systems engineering. An important objective of the program is to apply the expertise in engineering, the physical sciences, and systems analysis acquired by APL in defense and space research and development to problems of medical research and health care delivery. This program has grown to include collaboration with many of the clinical and basic science departments of the medical divisions. Active collaborative projects exist in ophthalmology, neurosensory research and instrumentation development, cardiovascular systems, patient monitoring, therapeutic and rehabilitation systems, clinical information systems, and clinical engineering. This application of state-of-the-art technology has contributed to advances in many areas of basic medical research and in clinical diagnosis and therapy through improvement of instrumentation, techniques, and basic understanding. GRA

N80-29990# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).
HIGH-SPEED, LOW-LEVEL FLIGHT: AIRCREW FACTORS
David H. Glaister, ed. (Royal Air Force Inst. of Aviation Medicine) Mar. 1980 321 p refs In ENGLISH and FRENCH Presented at the Aerospace Med. Panel's Meeting, Lisbon, 22-26 Oct. 1979
(AGARD-CP-2670; ISBN-92-835-0263-9) Avail: NTIS HC A14/MF A01

Factors effecting aircrews during high speed, low level flight are addressed. Specific topics include ride quality and the effect of the physical environment; thermal effects; vibration effects; cockpit design and aircrew workload; and escape and survival. Particular attention is paid to ride bumpiness and the influence of airframe design and control strategy, the effects of vibration on vision, and the problems and potential uses of helmet mounted sights and displays.

N80-29991# Royal Air Force, Farnborough (England).
RIDE-BUMPINESS AND THE INFLUENCE OF ACTIVE CONTROL SYSTEMS
J. G. Jones *In* AGARD High-Speed, Low-Level Flight Mar. 1980 16 p refs
Avail: NTIS HC A14/MF A01

The influence of aircraft design and control strategy on aircraft disturbances stressful to aircrew in high-speed, low-altitude flight is discussed. Standard methods for assessing ride quality are briefly reviewed. In addition, a technique is described that combines time-plane characteristics of response with frequency-plane features usually defined in terms of power spectra. This method, which has been developed as a tool for assessing the dynamic response of aircraft in turbulence, may provide useful additional information for human factors work. The technique leads in particular to a 'characteristic signature', in the time plane, of the aircraft response to gusts. In determining the dependence on aircraft dynamics of this characteristic energy pattern emphasis is placed on the concept of signal 'increments' or 'differences', in contrast to the sinusoidal components of Fourier analysis. It is perhaps relevant that the role of signal differences in time or space is also stressed in classical work on the mechanisms of human sensory perception. M.G.

N80-29992# Amt fuer Wehrgeophysik, Traben-Trarbach (West Germany).
INFLUENCES OF GEOPHYSICAL FACTORS (METEOROLOGICAL AND TOPOGRAPHICAL) ON THE PILOT-AIRCRAFT-SYSTEM IN HIGH SPEED LOW LEVEL FLIGHT (HSLLF)

Karl Krames *In* AGARD High-Speed, Low-Level Flight Mar. 1980 46 p refs
Avail: NTIS HC A14/MF A01

The effects of interaction between atmosphere, lithosphere, and biosphere on low level high speed flight are discussed along with particular examinations of visibility, wind, thunderstorms, and sleet and hailstones. Since geophysical hazards are at their maximum in low levels, it follows that an extreme reaction ability of the man-machine system in that domain is an absolute requirement. The primary function of geophysical information consists in assessing those flight routes and flight levels presenting minimum potential hazards to the accomplishment of the individual military mission. The use of terrain data bases offers an optimal approach in achieving a high degree of resolution on the basis of 95-by-150-m-grid. The inclusion of weather, vegetation, and surface data will ensure detailed flight information. M.G.

N80-29993# British Aerospace Aircraft Group, Preston (England).
DEVELOPMENT IN HIGH-SPEED LOW-LEVEL FLIGHT: THE PILOT'S VIEWPOINT
J. J. Lee *In* AGARD High-Speed, Low-Level Flight Mar. 1980 3 p
Avail: NTIS HC A14/MF A01

Developments in aviation technology during the last one and a half decades leading to significant benefits to high speed low level flight are briefly reviewed. It is concluded that the human characteristics of sensitiveness to stimuli, reaction time, strength/stamina, and adaptability have remained virtually unchanged in evolution terms and will remain a constant in flight assessment. Given the requirements of the mission and the scenario, the areas where development can be applied to improve mission success still remain firmly in the fields of performance, handling, guidance/navigation and vehicle design characteristics. M.G.

N80-29994# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.
BIOTECHNOLOGY CHALLENGES PRESENT IN OPERATIONAL HIGH-SPEED LOW-LEVEL FLIGHT
Roy L. DeHart *In* AGARD High-Speed, Low-Level Flight Mar. 1980 6 p refs
Avail: NTIS HC A14/MF A01

Operational stressors in high speed low level flight (HSLL) are identified for the mission scenarios of the B-52, F-111, and the A-10 aircraft. It is concluded that there exists a common technology need requiring contributions from the aerospace medical practitioner which becomes evident in discussing the aircraft in their respective HSLL combat missions. Continued development of automated systems integrating components within the cockpit affecting aircraft controls and weapons delivery systems is required. The specialist in aerospace medicine must ensure that sophisticated systems do in fact offload peripheral tasks of the pilot and increase his performance and ability to successfully accomplish the mission in a high threat combat environment. In addition, it is evident opportunities are available for biotechnology to improve or develop systems providing required information to the aircrew member in a method or format which permits him to remain heads-up and eyes-out-of the cockpit. M.G.

N80-29995# Centre d'Etudes et de Recherches de Medecine Aerospatiale, Paris (France).
THERMIC PROBLEMS PRESENTED BY HIGH-SPEED, LOW-LEVEL FLIGHT [PROBLEMES THERMIQUES POSES PAR LE VOL A GRANDE VITESSE ET A BASSE ALTITUDE]
J. Timbal and J. Colin *In* AGARD High-Speed, Low-Level Flight Mar. 1980 7 p refs In FRENCH
Avail: NTIS HC A14/MF A01

In certain cases, high speed flight at low altitude is likely to create conditions which surpass the tolerance limits of pilots. The physical factors of the environment as well as their effects on performance have been the subject of numerous studies. One method of predicting the period of heat tolerance is presented and discussed. The important part played by the humidity of the air and the physical activity of the pilot is demonstrated. The prevention of climatic inconveniences requires the use of relatively simple means which must be put into effect before flight. During the course of flight, prevention implies that the inconveniences were predicted during the design of the aircraft. The problem of risk associated with thermal loads is discussed under three principles: evaluating thermal ambience, evaluating human tolerance, and increasing the tolerance. Transl. by A.R.H.

N80-29996# Royal Air Force Inst. of Aviation Medicine, Farnborough (England).
EFFECTS ON PERFORMANCE OF THERMAL STRAIN ENCOUNTERED DURING HIGH-SPEED, LOW-LEVEL FLIGHT
T. M. Gibson, J. R. Allan, C. J. Lawson, and R. G. Green *In* AGARD High-Speed, Low-Level Flight Mar. 1980 9 p refs
Avail: NTIS HC A14/MF A01

The effects of thermal strain on pilot performance during high speed, low level flight are examined through flight simulator testing. Each subject carried out two replicate experiments in which he was first heated to a deep body temperature of 37.5 C, then alternately heated and cooled twice between deep body temperature limits of 37.9 and 38.5 C, and finally cooled to 37.5 C. Core temperatures and skin temperatures were monitored. The results demonstrate that differences in performance on the flight simulator can be produced by heating or cooling the skin at the same level of deep body temperature. These differences do not exist at deep body temperatures of 37.5 C, but at core temperatures between 37.9 and 38.5 C, performance during heating is worse than during cooling. Above the critical core temperature (i.e., above 37.5 C), skin temperature is a more important determinant of performance than the absolute level of deep body temperature; it is, however, impossible to exclude possible effects on performance of direction and rate of change of both core and skin temperatures. It is clear that the thermal strain encountered by aircrew in routine high speed, low level flight in warm conditions could cause a reduction in the operational capability of the aircrew. The situation will be exacerbated by anything that increases the thermal strain such as the wearing of more insulative protective clothing, higher work rates and repeated sorties separated by inadequate time for thermal recovery. M.G.

N80-29997# School of Aerospace Medicine, Brooks AFB, Tex. Crew Technology Div.
AIRCREW HEAT STRESS DURING HIGH-SPEED, LOW-LEVEL FLIGHT
Richard F. Stribley and Sarah A. Nunneley *In* AGARD High-Speed, Low-Level Flight Mar. 1980 5 p refs
Avail: NTIS HC A14/MF A01

An overview of the problems related to aircrew heat stress during high speed low level flight is given. Physiological heat exchange mechanisms in the cockpit environment and the performance consequences of heat stress are examined. Current cockpit cooling systems designs are assessed and suggestions are made for the design of man-oriented cockpit cooling. M.G.

N80-29998# Laboratoire Central de Biologie Aerospatiale, Paris (France).
QUANTIFYING THE AGRESSION GENERATED BY LOW FREQUENCY VIBRATIONS [ESSAI DE QUANTIFICATION DE L'AGRESSION ENGENDREE PAR LES VIBRATIONS DE BASSE FREQUENCE]
P. Quandieu, P. Borredon, J. C. Rouhet, and L. Pellieux *In* AGARD High-Speed, Low-Level Flight Mar. 1980 17 p refs In FRENCH
Avail: NTIS HC A14/MF A01

From a biomechanical viewpoint, man can be considered as a deformable solid under the effect of mechanical stimulation such that as provoked by flight at high speed and low altitude. A physiological response to physical stimulation results and muscular mass struggles against the deformation imposed. According to the degree of muscle tension, the vibratory response of the subject is a phase displacement in relation to the oscillation which gives birth to movement. The final deformation is the result of mechanical action and physiological reaction. A baboon was used in laboratory tests to demonstrate magnitude of the mechanical capability to account for the behavior of a subject exposed to vibrations. A loads transducer and an accelerometer were placed at the point where force was applied in order to determine the effective mass (the complex relation of dynamic force to the acceleration). With the help of measurements obtained totally outside the body, it was possible to record an eminently variable dynamic behavior the whole length of the same vibration. The importance of the variations obtained on the parameters considered provides hope for using the method to examine the total behavior of man exposed to vibrations. Transl. by A.R.H.

N80-29999# Naval Aerospace Medical Research Lab., New Orleans, La.
A METHOD FOR STUDYING HUMAN BIODYNAMIC RESPONSES TO WHOLE-BODY Z-AXIS
J. C. Guignard, C. L. Ewing, G. C. Willems, W. Anderson, W. H. Muzzy, III, D. J. Thomas, and P. L. Majewski *In* AGARD High-Speed, Low-Level Flight Mar. 1980 7 p refs

Avail: NTIS HC A14/MF A01

The methodology used as well as some illustrative results obtained in current experiments to determine the transmissibility of mechanical vibration to major axial segments (pelvis, upper torso, head) of the seated human body vibrated in the z-axis are presented. Factors influencing transmissibility are mentioned and the importance of controlling such factors in experimental determinations of the human biodynamic response to vibration is discussed. The methodology described, adapted from established use in human impact studies, includes the use of standardized anatomical coordinate systems for data reference, which is essential to the meaningful comparison of responses measured in different subjects or in different conditions of vibration. R.C.T.

N80-30000# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Bonn (West Germany). Inst. fer Flugmedizin.
HEAD MOVEMENTS INDUCED BY VERTICAL VIBRATIONS
L. Vogt, E. Schwartz, and H. Mertens *In* AGARD High-Speed, Low-Level Flight Mar. 1980 14 p refs

Avail: NTIS HC A14/MF A01

Eleven subjects were vibrated on a shake-table in the frequency range of 2 Hz to 19 Hz to assess the complex head motion induced by z-axis mechanical vibration. Acceleration amplitude was sinusoidal and held constant at 0.35 g (rms). Each subject was given two trials: one sitting relaxed without a backrest; the other leaning against a backrest with a 12 deg inclination from the vertical. Head motion was recorded with a special television camera (x-y tracker) by pursuing a target painted on the temporal part of the subject's forehead. This instrument continuously records the horizontal and vertical coordinates of the tracked point and gives the output as analogues voltages. For each frequency and experimental condition the vertical and horizontal motion of the tracking target was related to the displacement of the shake-table. The results are given as different transmissibility curves for vertical and horizontal head motion. When relating horizontal to vertical transmissibility it becomes obvious that, without a backrest, at the resonant frequency the horizontal transmissibility is about 75 percent of the vertical transmissibility. When using a backrest horizontal transmissibility is reduced to about 35 percent of the vertical transmissibility. R.C.T.

N80-30001# Royal Aircraft Establishment, Farnborough (England).
THE EFFECT OF RECLINED SEATING ON THE TRANSMISSION OF LINEAR VIBRATION TO THE HEAD
Mary E. Johnston *In* AGARD High-Speed, Low-Level Flight Mar. 1980 14 p refs

Avail: NTIS HC A14/MF A01

The transmission of vibration to the heads of subjects seated in a Mk 10B ejection seat exposed to vibration within the frequency range 2-25 Hz was measured. Measurements were made for the seat conventionally mounted (back angle 20 deg to the vertical) and reclined for seat back angles of 30 deg., 45 deg., and 60 deg. to the vertical. The seat was vibrated using a swept sine wave technique in either the vertical or lateral direction. Head motion in each of the three head anatomical orthogonal linear axes (G sub x, G ub y, G sub z) was measured on a bite bar fitted with accelerometers. Ten subjects were used, each fitted with a standard Mk 2/3 flying helmet. The results indicate that for a given input, particularly in the lateral axis, head motion increases considerably when the head is in contact with the rest. Also head motion both against and off the rest increases as the seat back angle to the vertical is increased. Such increases in vibration to the head are very uncomfortable and could well lead to a performance decrement for a visual task. R.C.T.

N80-30002# Royal Air Force Inst. of Aviation Medicine, Farnborough (England).
THE EFFECTS OF AIRCRAFT VIBRATION ON VISION
G. R. Barnes *In* AGARD High-Speed, Low-Level Flight Mar. 1980 11 p refs
Avail: NTIS HC A14/MF A01

Movements of the head resulting from aircraft vibration were investigated in terms of their effects on visual performance. Major emphasis was placed on the limitations in the response of the pursuit reflex and the vestibulo-ocular reflex. The following analyses were conducted in order to assess: (1) the frequency characteristics of the vestibulo-ocular and pursuit reflexes; (2) the ability of subjects to suppress reflex vestibular eye movements which become inappropriate when viewing a helmet-mounted display; (3) the effect of relative movement between the eye and the viewed object on visual performance, and (4) the biodynamic response of the head during vibration which gives rise to stimulation of the vestibular system. The results are discussed in an attempt to estimate the effects of aircraft vibration on visual performance. R.C.T.

N80-30003# Royal Aircraft Establishment, Farnborough (England).
THE EFFECT OF 3-25 Hz VIBRATION ON THE LEGIBILITY OF NUMERIC LIGHT EMITTING DIODE DISPLAYS
Mary E. Johnston and John H. Wharf *In* AGARD High-Speed, Low-Level Flight Mar. 1980 9 p refs

Avail: NTIS HC A14/MF A01

The effects of 3-25 Hz2 sinusoidal vibration at an rms acceleration level of 2.5 m/s2 in both the vertical and lateral axes on the performance of a reading task are described. The task was to read aloud numeric characters presented on a yellow high luminance light emitting diode display which was designed for the military cockpit. Random numbers were presented on the display in sets of four changed every 3 s. The subjects were each fitted with a MK 2/3 flying helmet and strapped into an Mk 10B ejection seat which was mounted on the same vibration platform as the display. Tests were conducted with the subject's head held both against and just off the head rest. The results indicate that reading performance is affected most by lateral vibration, when the head is against the head rest. Maximum errors occurred for lateral vibration frequencies of 15-16 Hz which is shown to correspond to the probable onset of overlapping nodal images due to head vibration. R.C.T.

N80-30004# Royal Aircraft Establishment, Farnborough (England). Flight Systems Dept.
THE EFFECT OF TURBULENCE ON HELMET MOUNTED SIGHT AIMING ACCURACIES
N. O. Tatham *In* AGARD High-Speed, Low-Level Flight Mar. 1980 4 p
Avail: NTIS HC A14/MF A01

The effects of the turbulence associated with high speed, low level flight on the accuracies achievable with helmet mounted sighting equipment were assessed. In-flight analysis were conducted during trials in a Canberra aircraft, flying straight and level at 350 km, 250 ft. Laboratory analysis were conducted using a two axis vibration rig driven by vibration data recorded from the same Canberra aircraft to provide simulated turbulence. Aiming accuracies were obtained for collimated targets fixed in space in the simulation, and for both collimated targets fixed to the airframe and ground targets in flight. The results obtained show a good correlation between aiming errors achieved in flight and those obtained from the simulation, and demonstrate that the aiming errors consist mainly of a low frequency random motion which increases with vibration level. In addition, various techniques were investigated to overcome the errors involved in order to enable fine aiming to be performed with the helmet sight. R.C.T.

N80-30005# Naval Aerospace Medical Research Lab., New Orleans, La.
CLINICAL MEDICAL EFFECTS OF HEAD AND NECK RESPONSE DURING BIODYNAMIC STRESS EXPERIMENTS
D. J. Thomas, C. L. Ewing, P. L. Majewski, and N. S. Gilbert *In* AGARD High-Speed, Low-Level Flight Mar. 1980 15 p refs
Avail: NTIS HC A14/MF A01

Volunteers were subjected to various degrees of impact acceleration. The directions of applied acceleration were -X (front to back), +Y (right to left), and -X+Y (45 degrees between -X, and +Y). The major categories of symptoms were neck pain, headache, restraint related musculoskeletal symptoms, and syncope. A few special cases had findings which required clinical evaluation and followup. The type, extent, duration, and severity of the symptoms were related in some cases to the direction peak acceleration, and acceleration duration. R.C.T.

N80-30006# Air Force Flight Dynamics Lab., Wright-Patterson AFB, Ohio.
OPERATIONAL ASPECTS OF GUIDANCE AND CONTROL ADVANCES VERSUS PILOT WORKLOAD FOR LOW ALTITUDE, HIGH SPEED FLIGHT
Morris A. Ostgaard *In* AGARD High-Speed, Low-Level Flight Mar. 1980 10 p refs

Avail: NTIS HC A14/MF A01

Some of the characteristics of the human operator and their similarity to guidance and control functions are discussed. It is shown that the operator's characteristics as a controller depend on four kinds of variables: control task variables, which include the system inputs and all the system elements external to the operator; environmental variables such as ambient illumination, temperature, vibration, etc.; operator centered variables such as training, fatigue, motivation; and procedural variables such as instructions, practice, order of presentation relating to a given task. When these variables are essentially time stationary or invariant over an interval of interest, the operator vehicle system can be modeled as a quasilinear system much the same as standard servo loops. R.C.T.

N80-30007# Fraunhofer-Inst. fuer Informations- und Datenverarbeitung, Karlsruhe (West Germany).
TV OPERATOR PERFORMANCE IN REAL TIME AIR-TO-GROUND RECONNAISSANCE MISSIONS UNDER TASK-LOADING CONDITIONS
H. Mutschler *In* AGARD High-Speed, Low-Level Flight Mar. 1980 11 p refs Sponsored by the German Federal Ministry of Defense
Avail: NTIS HC A14/MF A01

The detection performance of a black-and-white-TV operator in real time reconnaissance missions was determined by the parameters of the RPV-system, the scene, and the task. A series of 6 experiments were performed with 19 untrained subjects who had to find military vehicles in static ground scenes displayed on a TV screen. The scenes were presented only shortly, for 1 to 10 secs. This corresponds to a speed of about 50 to 500 km/h at a nonoverlapping frame rate. The subjects pointed to located targets with a light-pen. Analysis of variance indicate that the detection rate is influenced by: (1) scene parameters which consititute the conspicuity of a target in a natural scene, such as global context, contrast and local context; (2) short presentation times of less than 3 secs; (3) system parameters such as resolution and image segmentation; and (4) number of targets. Detection rate decreases if the task is to mark all targets and detection rate increases if the task is only to indicate those scenes which contain at least one target. The false alarm rate decreases with the number of sessions the subjects took part in and was finally at low level. Taking the confidence level expressed into account proved to increase the detection-false alarm ratio remarkably. Search times were nearly equal to presentation times from 1 to 5 secs only. The search times for the 50% detection rate decreased from 4 secs in the first experiment to 2 secs in the last one. R.C.T.

N80-30008# Marconi Avionics Ltd., Rochester (England). Airborne Display Div.
THE INFLUENCE OF THE DESIGN OF DISPLAYS ON COCKPIT WORKLOAD
R. H. Holmes *In* AGARD High-Speed, Low-Level Flight Mar. 1980 10 p
Avail: NTIS HC A14/MF A01

The problems involved in designing display and controls for high speed low level aircraft are discussed with the emphasis on the reduction of cockpit workload. Some modern display techniques are also described. R.C.T.

N80-30009# Marconi Avionics Ltd., Rochester (England). Airborne Display Div.
COLOUR DISPLAYS: THEIR AVAILABILITY, PERFORMANCE AND APPLICATION TO IMPROVED CREW EFFICIENCY
D. W. Hussey *In* AGARD High-Speed, Low-Level Flight Mar. 1980 12 p refs
Avail: NTIS HC A14/MF A01

The use of advanced technology in the form of multifunction electronic displays, processors, sophisticated sensors, and other automated pilot aids are discussed. Guidelines are suggested which are to be used in determining how color is used to enhance the presentation of information. R.C.T.

N80-30010# Royal Aircraft Establishment, Farnborough (England). Flight Systems Dept.
HELMET-MOUNTED DEVICES IN LOW-FLYING HIGH-SPEED AIRCRAFT
D. N. Jarrett *In* AGARD High-Speed, Low-Level Flight Mar. 1980 9 p refs
Avail: NTIS HC A14/MF A01

Two separate simulation studies are described. The first assesses the amount of movement occurring between the pilot's helmet and his eyes. The second concerns the legibility of information presented on an experimental LED matrix display. It is concluded that aircraft vibration does not cause significant helmet movement in comparison with natural voluntary head motion, and that the degrading effect of aircraft vibration on the legibility of displayed information could be counteracted using a brighter display. E.D.K.

N80-30011# Naval Air Development Center, Warminster, Pa
THE ROLE OF HELMET MOUNTED DISPLAYS IN HIGH-SPEED LOW-LEVEL FLIGHT
Gloria Twine Chisum *In* AGARD High-Speed, Low-Level Flight Mar. 1980 5 p refs

Avail: NTIS HC A14/MF A01

During critical phases of flight operations the requirement for shifts of gaze between the environment outside the cockpit and the interior of the cockpit is a problem which can be eased by the development of an effective helmet mounted display capable of presenting sensor and aircraft position and condition information. In both fixed wing and rotary wing aircraft, a head out of the cockpit attitude is considered to be highly desirable. An effective helmet mounted display is one which is comfortable to use, does not degrade normal visual functioning, can present the required information, and does not increase crew fatigue due to weight and bulk. The general design concerns regarding helmet mounted displays apply to those to be used in a high speed, low level environment. Some of the design parameters take on special significance, however, in high speed low level flight. E.D.K.

N80-30012# Naval Air Systems Command, Washington, D. C.
RESEARCH FOR VISUAL ENHANCEMENT FOR HIGH SPEED LOW LEVEL FLIGHT SPONSORED BY THE NAVAL AIR SYSTEMS COMMAND
H. Rosenwasser, Gloria Twine Chisum (NADC, Warminster, Pa.), J. J. Kulik (Naval Training Equipment Center), M. L. Wolbarsht (Duke Univ.), M. M. Cohen (NADC, Warminster, Pa.), and A.

Lewis (Cornell Univ.) *In* AGARD High-Speed, Low-Level Flight Mar. 1980 11 p refs

(Contracts N00019-78-C-0431; N00019-78-C-3036)
Avail: NTIS HC A14/MF A01

Apart from engineering considerations, the proper emphasis of the various parameters of visual displays in high speed low level flight depends upon the knowledge of the physiological variables in the visual system. Psychophysical tests can best be interpreted in conjunction with a detailed examination of the physiological function of the visual system. A summary of programs is given to show progress in this approach. E.D.K.

N80-30014# Naval Aerospace Medical Research Lab., New Orleans, La.
CREW STATION ASSESSMENT USING THE BIOMAN MODELING SYSTEM
Georg D. Frisch, Louis A. Daulerio, and Michael Schultz *In* AGARD High-Speed, Low-Level Flight Mar. 1980 16 p refs
Prepared in cooperation with NADC, Warminster, Pa.

Avail: NTIS HC A14/MF A01

The use of the Bioman modeling system in evaluating the physical compatability of crew members with crew stations under emergency egress conditions is demonstrated and the usefulness of this approach as both a design and evaluation criteria is illustrated. Validated results from F-18 aircraft investigations based both on ejection tower and human physiological acceptance tests are presented to demonstrate the evaluation process of a given crew station. Furthermore, these results are contrasted against those obtained from the A-4 and F-14 and the relative propensity of direct impact injuries are discussed. E.D.K.

N80-30019# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).
OPERATIONAL ROLES, AIRCREW SYSTEMS AND HUMAN FACTORS IN FUTURE HIGH PERFORMANCE AIRCRAFT
P. F. Iampietro, ed. Mar. 1980 97 p refs Partly in ENGLISH and FRENCH Presented at the Aerospace Med. Panels Specialist Meeting, Lisbon, 22-26 Oct. 1979
(AGARD-CP-266; ISBN-92-835-0262-0) Avail: NTIS HC A05/MF A01

The understanding of the operational characteristics of high performance aircraft in relationship to the operator's physiological, cognitive, psychomotor and perceptual capabilities is investigated. Relationships between man and machine are discussed in order to identify any biotechnology research deficiencies and establish appropriate selection, training, and assignment criteria for future high performance aircraft.

N80-30023# French Air Force, Bretigny sur Orge. Centre d'Essais en Vol.
WEAPONS SYSTEMS OF THE MIRAGE 2000: MAN MACHINE INTERFACE [LE SYSTEME D'ARMES DU MIRAGE 2000 INTERFACE HOMME MACHINE]
G. Varin *In* AGARD Operational Roles, Aircrew Systems and Human Factors in Future High Performance Aircraft Mar. 1980 15 p In FRENCH
Avail: NTIS HC A05/MF A01

The multipurpose role of the Mirage 2000 aircraft led to the design of a very complex weapon system which includes navigation, automatic pilot, radar, and countermeasures. The use of such a system which already saturates the pilot in combat aircraft actually in service could be still more difficult in the Mirage 2000. In face, considering the maneuverability qualities of the aircraft, which is largely augmented by electric flight control, the Air Army could introduce new combat techniques which would be more trying and more constraining for the pilot. In order to best utilize the capabilities of the Mirage 2000, an important integration effort was made at the cabin level to realize the best compromise in the presentation of parameters and of the controls at the pilot station: displays highly adapted to each flight phase, multiplexed control, and synthetic representation of tactical situations. Transl. by A.R.H.

N80-30024# Royal Air Force Inst. of Aviation Medicine, Farnborough (England).
TORNADO - AIRCREW SYSTEMS
E. P. Beck (Royal Navy) *In* AGARD Operational Roles, Aircrew Systems and Human Factors in Future High Performance Aircraft Mar. 1980 7 p refs

Avail: NTIS HC A05/MF A01

Aspects of the aircrew equipment assembly (AEA) for Tornado, including the cabin environment, the escape system, personal equipment and associated supply systems, and survival equipment are considered. The size rolls and integration of preproduction standard items comprising the various AEAs are validated, unforseen man/seat/cockpit incompatibilities are identified, limitations to be imposed on the aircrew population acceptable for Tornado on account of critical anthropometric dimensions are defined, and proposed aircrew drills for strapping-in, emergency ground egress, etc., are refined. E.D.K.

N80-30025# Air Force Avionics Lab., Wright-Patterson AFB, Ohio. Reconnaissance and Weapon Delivery Div.
INFORMATION TRANSFER FOR IMPROVED PILOT PERFORMANCE
Robert N. Lutter *In* AGARD Operational Roles, Aircrew Systems and Human Factors in Future High Performance Aircraft Mar. 1980 6 p refs
Avail: NTIS HC A05/MF A01

The missile intercept confidence factor (MICF) concept was developed to provide the pilot with information about the engagement dynamics of an air-to-air missile engagement. It attempts to account for the critical parameter target maneuver by bounding the possible aerodynamic boundaries, by calculating upper and lower boundary limits. A no-escape target maneuver is utilized to establish the lower boundary and the current maneuver is used for the upper boundary. The MICF factor relates the pilot's position relative to these two boundaries and a minimum range boundary. As an interceptor varies its position within the missile launch envelope boundaries, the MICF varies between a value of zero to one and presents the pilot with an indication of the increasing/decreasing goodness of his launch condition. The MICF allows the pilot to be interactive with the fire control system. Through an assessment of the tactical situation, the pilot can determine whether to accept a low confidence launch or to maneuver to a more favorable launch position. E.D.K.

N80-30026# Panavia Aircraft G.m.b.H., Munich (West Germany). Flight Operations.
HUMAN FACTORS ASPECTS IN HIGH SPEED LOW LEVEL FLIGHT
James L. Dell *In* AGARD Operational Roles, Aircrew Systems and Human Factors in Future High Performance Aircraft Mar. 1980 4 p
Avail: NTIS HC A05/MF A01

Human factors aspects of high speed, low level flying are discussed. There is a direct relationship between crew comfort and operational efficiency. The following areas of comfort are discussed: flying clothing; combined harness, arm, leg, and head restraints; helmets; anti-g protection; ejector seats; cockpit conditioning; cockpit layout; noise aspects; and ride comfort. Other topics include workload and workload sharing, physiological and psychological aspects, spatial disorientation, and detachment phenomenon. E.D.K.

N80-30027# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.
ADDRESSING HUMAN FACTOR OPTIONS IN CONCEPTUAL DESIGN
Philip V. Kulwicki *In* AGARD Operational Roles, Aircrew Systems and Human Factors in Future High Performance Aircraft Mar. 1980 15 p refs
Avail: NTIS HC A05/MF A01

The interplay of human factors technology with systems design disciplines during the conceptual phase of development is discussed. Such design features as a full bubble canopy for unobscured vision, fly by wire primary flight control system, modified ejection seat position for better comfort and G-relief and the hands-on-throttle-and-stick concept for improved subsystem management are examples of the benefits of addressing human factor options in conceptual design. E.D.K.

N80-30028# Laboratoire de Medecine Aerospatiale, Bretigny-sur-Orge (France).

HUMAN FACTORS IN MIRAGE 2000 MISSIONS [FACTEURS HUMAINS DES MISSIONS DU MIRAGE 2000]

Henri Vieillefond *In* AGARD Operational Roles, Aircrew Systems and Human Factors in Future High Performance Aircraft Mar. 1980 6 p refs In FRENCH

Avail: NTIS HC A05/MF A01

Like modern aircraft, the Mirage 2000 is characterized essentially by a great degree of controllability, an aptitude to perform at high altitude, and a lessening of the pilot's workload. These three essential characteristics require that the pilot adapt to his aircraft. The great controllability implies very brutal variations of intense accelerations which the pilot must endure. Toleration of repeated accelerations is still poorly understood, especially over a long period, consequently pilot selection must be rigorous. The physiopathological effects of high altitude are better known and effective protection can be proposed. The chances of mission success are real only if the pilot has at his disposal a comfortable environment, which involves ergonometric studies of the seat, of controls, of protective equipment, and of cabin ventilation. Transl. by A.R.H.

N80-30029 Stanford Univ., Calif.

INTERACTION OF RESPONSES TO ACOUSTIC AND ELECTRIC STIMULI AT THE AUDITORY CORTEX Ph.D. Thesis

Hugh Sherbon Lusted 1980 82 p

Avail: Univ. Microfilms Order No. 8016846

The interaction of tone pips and electrical pulses to the auditory nerve was studied. The evoked cortical response to each type of stimulus was recorded from the primary auditory cortex of barbiturate anesthetized cats. The stimuli were then delivered in time delayed pairs where the interstimulus interval was within the refractory period of the evoked response (typically 50 msec) to either stimulus alone. The amplitude of the cortical response to the trailing stimulus was compared with its single stimulus amplitude as the frequency of the tone pips was changed from 250 through 40 kHz. Results are reported. Dissert. Abstr.

N80-30030 Duke Univ., Durham, N. C.

THE STRUCTURE OF FIBRINOGEN AND ITS INTERMOLECULAR ASSOCIATIONS Ph.D. Thesis

Walter Earle Fowler 1980 120 p

Avail: Univ. Microfilms Order No. 8017140

Fibrinogen was prepared by shadowing with platinum in the conventional manner and by a novel technique of negative staining, which has not previously been used with fibrinogen. With the electron microscope, images were obtained that show a single consistent structure for the fabrinogen molecule in both types of preparations, conforming the trinocular model for fibrinogen. Plasmin degradation products of fibrinogen were examined in the electron microscope using the same preparatory techniques and the structures of these proteolytic fragments were related to the trinodular structure of the intact molecule. This work demonstrates structurally the sequence of events which occurs during the proteolysis of fibrinogen and also allows the well known effects of the various fragments on fibrin polymerization to be interpreted in structrural terms. The mechanism of fibrin polymerization was studied by many different techniques, but the location of intermolecular contact sites on the trinodular molecule and the packing arrangement of these molecules in the fibrin fiber are not known. Fibrinogen dimers were studied in the electron microscope using the same techniques that we developed for the study of single fibrinogen molecules and it was determined that their mode of association is end to end and linear. Evidence is presented that this intermolecular contact and arrangement are the same within the fibrin fiber. Dissert. Abstr.

N80-30031# Systems Research Labs., Inc., Dayton, Ohio.

EFFECTS OF BACKGROUND ILLUMINATION AND TARGET CONTRAST ON FLASHBLINDNESS RECOVERY TIME

David C. Smedley and Diana R. Nelson Wright-Patterson AFB, Ohio AMRL Apr. 1979 18 p refs

(Contract F00615-76-C-5001)

(AD-A071906; AMRL-TR-79-30) Avail: NTIS HC A02/MF A01 CSCL 06/16

Seven subjects were shown a series of Landolt Cs with gaps oriented one of eight compass directions. After a randomly occurring flash, the subjects were asked to identify the gap orientation of the target. A tungsten halogen lamp was used as the flash source. The duration was 100 msec and the luminance was 60000 foot lamberts. Five background luminances (16,62,120,230, and 575 foot lamberts) and four target contrast ratios (0.1,0.2,0.3 and 0.5) were used in this experiment. Results show recovery times at the 0.1 contrast level differ significantly from those obtained at the other levels regardless of background. Recovery times on the 16 foot lambert background level were significantly different from all other backgrounds regardless of contrast. There were no differences between recovery times at the other constrast levels or background luminances. Author

N80-30032# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.

ACCELERATION AND PERFORMANCE MODELING WORKSHOP

Ensor Rodriguez-Lopez, ed., James H. Veghte, ed., and Patricia M. Lewandowski, ed. Dec. 1979 38 p refs Conf. held at Washington, D.C., 14-17 May 1979

(Contract F33615-78-C-0501; AF Proj. 7231)

(AD-A083700; AMRL-TR-79-111) Avail: NTIS HC A03/MF A01 CSCL 06/19

A workshop, sponsored by the Aerospace Medical Research Laboratory, was held to exchange current knowledge in the area of acceleration and performance modeling and to provide future guidance. Representatives from the Air Force, US Navy Medical Research Laboratories as well as distinguished academicians participated in this workshop. Two current modeling approaches were presented and provided the basis of later discussions. The participants responses to this effort in this area were favorable and future topics for another meeting were discussed. GRA

N80-30033# SRI International Corp., Arlington, Va.

ON THE INTERACTION OF NON-IONIZING RADIATION WITH PEOPLE

Malvin A. Ruderman and Gordon J. MacDonald Mar. 1980 47 p refs

(Contract MDA903-78-C-0086; ARPA Order 2504)

(AD-A082538; SRI-JSR-79-14) Avail: NTIS HC A03/MF A01 CSCL 06/18

This report examines the physical basis for many of the thermal and non-thermal interactions between microwaves and the human body. Although a microwave beam incident on the human body dissipates, on the average, about the same amount of heat as does normal metabolism, it can actually dissipate considerably more heat in certain local regions of the body because of strong beam focusing effects (e.g., within the brain), flow of induced currents through small, constricted areas of the body (e.g., ankle, neck) and differences in electrical properties among body tissues. Since relatively large heat dissipation can occur on a local level, it would appear more rational to determine a maximum permissive radiation exposure in terms of maximum allowed dissipation in a specific sensitive part of the body rather than, as is presently done, in terms of external beam intensity (the present U.S. standard is 10 milliwatts/sq cm). For non-thermal processes, no special biological process or structure has been identified as likely to be especially sensitive to microwave fields or frequencies. The experimental results designed to explore the non-thermal effect of microwaves were studied. The results of all experiments purporting to demonstrate a significant non-thermal biological effect have been disputed. In fact, very few experiments in the entire field have ever been replicated; a situation which should be rectified. GRA

N80-30034# Kentucky Univ., Lexington.

RESPONSE OF THE CARDIOVASCULAR SYSTEM TO

VIBRATION AND COMBINED STRESSES Final Report, 1 Oct. 1978 - 30 Sep. 1979
Charles F. Knapp Nov. 1979 52 p refs
(Contract F49620-79-C-0034; AF Proj. 2312)
(AD-A081879; AFOSR-80-0203TR) Avail: NTIS
HC A04/MF A01 CSCL 06/19

Cardiovascular regulation of acceleration-induced pressure and flow disturbances entails a complex pattern of afferent and efferent neural activity. The global nature of the stress in the levels applied invokes a response from both low and high pressure sensory areas as well as possible mechano-vestibular mechanisms. In this light, it was felt that the dual activation of both peripheral and cardiac efferent activity in response to acceleration stress would disguise the contribution from either mechanisms separately and for that reason a preparation was sought which would allow for delineation of these reactions. As a result, a canine chronic preparation that included a surgically denervated heart thereby permitting a detailed analysis of the peripheral vascular contribution to barostatic regulation has been developed. GRA

N80-30035# Old Dominion Univ., Norfolk, Va. Performance Assessment Lab.
PHYSIOLOGICAL INFLUENCES UPON THE WORK PERFORMANCE OF MEN AND WOMEN Final Report, 1 Nov. 1977 - 31 Dec. 1979
Glynn D. Coates, Raymond H. Kirby, Nancy K. Eberhardt, and Sarah J. Miller Dec. 1979 121 p refs
(Grant AF-AFOSR-3512-78; AF Proj. 2312)
(AD-A081947; ITR-79-22; AFOSR-80-0201TR) Avail: NTIS
HC A06/MF A01 CSCL 06/19

The synthetic-work methodology of the Multiple Task Performance Battery (MTPB) was employed in a series of studies designed to determine the effects of 48 hours of continuous work and sleep loss on the work performance of four groups of female subjects and one group of male subjects. The specific female groups were defined in the design by a factorial combination of the phase of the menstrual cycle at the beginning of the sleep-loss period (i.e., Menstrual vs Mid-Cycle) and whether or not the subjects were using contraceptive pills (i.e., Pill vs Normally Cycling). The performances of these four groups of female subjects were compared with those of a group of male subjects who performed the tasks of the MTPB under identical conditions; comparisons were performed during training, during a baseline period, during the sleep-loss, continuous-work period, and during a post-recovery period. An extension of these studies subsequently compared the performances of two groups of female subjects (i.e., Normally Cycling and Pill) for an additional five weeks under normal work conditions; the purpose of this extension was to assess the effects of the phases of the menstrual cycle on work performance. GRA

N80-30036# Texas Univ. Health Science Center, San Antonio.
EFFECTS OF INSPIRED OXYGEN ON THE METABOLISM OF PULMONARY SURFACTANT Final Report, Jun. 1977 - Sep. 1979
Richard J. King, Marita King, and Helen Martin Oct. 1979 31 p refs
(Grant AF-AFOSR-3323-77; AF Proj. 2312)
(AD-A082006; AFOSR-80-0178TR) Avail: NTIS
HC A03/MF A01 CSCL 06/16

Exposure to 100% oxygen at 1 atm. pressure has compromising effects on the ability of the lung to carry out gas exchange. The initial stages of injury include decreases in lung compliance, fluid accumulation in interstitial and alveolar spaces, and alveolar atelectasis. It is unknown whether pulmonary surfactant undergoes compositional or functional changes prior to or during the observed pathophysiology. Such alterations, if occurring, would interfere with normal physiological function and could exacerbate other effects of the environmental challenge. In order to better define alterations in surfactant that may result from breathing enriched concentrations of oxygen we exposed pathogen-free Wistar rats to 100% oxygen for 48 hours. In separate experiments we injected 3H-palmitate into rats and followed its incorporation and metabolism in the DSPC of Type 2 cells, alveolar surfactant, and alveolar macrophages. The results indicated that the DSPC moved from Type 2 cells to the alveolus, and at least part was ingested by alveolar macrophages. Overall metabolic flux was unchanged in animals exposed to oxygen. We conclude that breathing 100% oxygen for 48 hours has direct effects on the amount of surfactant in the lung, but probably no effect on the metabolic pathways which regulate its phospholipid composition. These differences probably occur because of metabolic changes in catabolic processes associated with the clearance of surfactant. GRA

N80-30037# School of Aerospace Medicine, Brooks AFB, Tex. Aerospace Medical Div.
RADIOFREQUENCY RADIATION AND LIVING TISSUE: THEORETICAL STUDIES Interim Report, Jan. 1978 - May 1979
Richard A. Albanese and Earl L. Bell Dec. 1979 44 p refs
(AF Proj. 7757)
(AD-A085952; SAM-TR-79-41) Avail: NTIS
HC A03/MF A01 CSCL 06/18

Basic mechanisms whereby radiofrequency electromagnetic radiation can interact with living tissue were investigated. An elementary statistical physics model of tissue, viewed as a chemical mixture, was considered, followed by a nonquantum physics analysis of macromolecular motion in an electromagnetic field. These studies of basic mechanisms suggest that radiofrequency electromagnetic radiation may be important in its effect on living tissue without causing significant tissue-temperature rises. GRA

N80-30038*# National Aeronautics and Space Administration. Lyndon B. Johnson Space Center, Houston, Tex.
ASSESSMENT OF THE EFFECTS OF THE ZERO GRAVITY ENVIRONMENT ON THE HEALTH AND SAFETY OF SPACE WORKERS
18 Feb. 1980 17 p refs
(Contract DE-AI02-79CH-10025)
(NASA-TM-81122; DOE/CH-10025) Avail: NTIS
HC A02/MF A01 CSCL 06S

A review was conducted of currently available information relating to adverse effects to the health and safety that space power system (SPS) space workers may experience. Currently available information on the responses of humans to space flight is somewhat limited and was obtained under conditions which are grossly different from conditions to be experienced by future space workers. The limitations in information and differences in conditions were considered in the assessment of potential health and safety hazards to the SPS space workers. The study did not disclose any adverse effects that would result in long term deviations to the medical physiological health of space workers so long as proper preventive or ameliorating action were taken. DOE

N80-30039# National Technical Information Service, Springfield, Va.
BIONICS. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1970 - Apr. 1980
Brian Carrigan May 1980 138 p Supersedes NTIS/PS-79/0568; NTIS/PS-78/0550
(PB80-810641; NTIS/PS-79/0568; NTIS/PS-78/0550) Avail: NTIS HC $30.00/MF $30.00 CSCL 06D

Recent advances in visual information processing, electronic models of nerve cells, and biological sonar systems are discussed in these citations. Theory and applications are included, along with computerized simulation and signal processing. Electrophysiology and modelling of the central nervous system are also included. This updated bibliography contains 132 abstracts, 12 of which are new entries to the previous edition. GRA

N80-30040*# New Mexico Univ., Albuquerque. Technology Application Center.
CIRCADIAN RHYTHMS. CITATIONS FROM THE INTERNATIONAL AEROSPACE ABSTRACTS DATA BASE Progress Report, 1973 - Jan. 1980
George E. Zollars Apr 1980 42 p Sponsored by NASA and NTIS
(NASA-CR-163323; PB80-809908) Avail: NTIS
HC $30.00/MF $30.00 CSCL 06D

A bibliography containing citations to the international literature concerning circadian rhythms is presented. Topics covered are sleep, body temperature, work-rest cycles, hormone metabolisms, and human physiological responses to various activity cycles. GRA

N80-30041# Naval Aerospace Medical Research Lab., Pensacola, Fla.
A REVIEW OF DYNAMIC VISUAL ACUITY Interim Report
Tommy R. Morrison Mar. 1980 28 p refs
(MF51524004; MR0410103)
(AD-A085860; NAMRL-Monograph-28) Avail: NTIS HC A03/MF A01 CSCL 06/16

In many everyday situations relative motion exists between human beings and the visual information which they must acquire and resolve in order to perform their tasks successfully. In particular, tasks, such as flying aircraft, driving automobiles and other vehicles, and resolving moving information presented via visual displays, impose a requirement on the human operator to process moving information. Since Dynamic Visual Acuity (DVA) is a critical visual skill involved in performing such visual tasks, the present review was undertaken in order to better understand the visual skill and to provide a basis for continuing research in this area. GRA

N80-30042# Human Engineering Labs., Aberdeen Proving Ground, Md.
HUMAN PERFORMANCE: PSYCHOLOGICAL AND SEX DIFFERENCES, A SELECTED BIBLIOGRAPHY
Gerald A. Hudgens and Linda L. Torsani-Fatkin Feb. 1980 163 p
(AD-A085824) Avail: NTIS HC A08/MF A01 CSCL 05/10

The bibliography is a compilation of 1571 references dealing with, or related to, the effects of sex differences on human performance. The material is organized into four categories: An Overview of Sex Differences, Physiological Sex Differences, Sex Differences in Cognitive and Motor Abilities, and Sex Differences in Personality. The time period covered is roughly from the 1930's into 1979. An index of first authors is included. GRA

N80-30043*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
PRESSURE SUIT JOINT ANALYZER Patent Application
Hubert C. Vykukal and Bruce Webbon, inventors (to NASA) Filed 11 Jul. 1980 13 p
(NASA-Case-ARC-11314-1; US-Patent-Appl-SN-168943) Avail: NTIS HC A02/MF A01 CSCL 06Q

A measurement system for simultaneously measuring torque and angular flexure in a pressure suit joint. One end of a joint under test is held rigid, and a torque transducer is pivotably supported on the other movable end of the joint. A potentiometer is attached to the transducer by an arm. The wiper shaft of the potentiometer is gripped by a reference arm that rotates the wiper shaft the same angle as the flexure of joint. A signal, generated by the potentiometer, is representative of the joint flexure angle, and a compensation circuit coverts the output of the transducer to a signal representative of joint torque. NASA

N80-30044# Technology, Inc., San Antonio, Tex. Life Sciences Div.
PROCEDURAL TESTS FOR ANTI-G PROTECTIVE DEVICES. VOLUME 2: G-SENSITIVITY TESTS Final Report, 1 Oct. 1976 - 30 Jun. 1978
Roy W. Thompson, Carmen E. Galvin, James E. Allred, Paul E. Love, and Larry J. Meeker Dec. 1979 203 p
(Contract F33615-77-C-0610; AF Proj. 7930)
(AD-A085982; SAM-TR-79-31-Vol-2) Avail: NTIS HC A10/MF A01 CSCL 06/11

In this volume, an examination of anti-G valve failures is reported, as well as the results of 9 short term investigation dealing with acceleration protection equipment and studies on the USAFSAM Human Centrifuge. These studies involved: the CWU-9/P undergarments; the Statham PM131TC pressure transducer; the Ready Pressure Anti-G valve; the ALAR 'High flow' and 'Special' anti-G valves; accelerometer calibration, continuous ECG recording; control-center data distribution; closed-loop centrifuge control; and the Medilog recorder. GRA

N80-30045# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.
THERMAL AND ACCELERATION EFFECTS ON AIRCREW MEMBERS IN CHEMICAL DEFENSE GEAR Technical Report, Nov. 1978 - Jan. 1979
Ronald E. Yates, Clyde R. Replogle, and James H. Veghte Jan. 1980 36 p refs
(AF Proj. 6893)
(AD-A086026; AFAMRL-TR-79-71) Avail: NTIS HC A03/MF A01 CSCL 06/19

An experiment was conducted to determine the combined thermal and acceleration effects on aircrew members in chemical defense protective gear in a simulated air-to-ground mission. The subject flew two sorties per day in the Dynamic Environment Simulator. The environmental conditions simulated were typical of a 95th percentile hot summer central European day. Most of the responses seen in the subjects can be attributed to the thermal stress caused by the hot temperatures and the heavy protective clothing. GRA

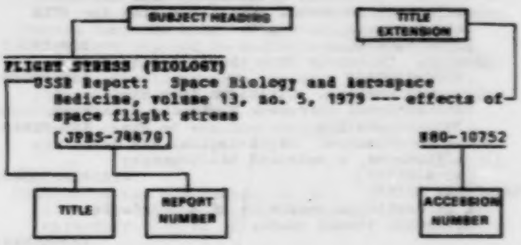
N80-30046# Essex Corp., Alexandria, Va.
HUMAN ENGINEERING DESIGN CRITERIA FOR MODERN CONTROL/DISPLAY COMPONENTS AND STANDARD PARTS Final Report
David R. Eike, Thomas B. Malone, Stephen A. Fleger, and Jimmie H. Johnson May 1980 171 p refs
(Contract DAAK40-79-C-0144)
(AD-A086139; DRSMI/RS-CR-80-1) Avail: NTIS HC A08/MF A01 CSCL 05/8

A study was conducted to identify requirements for modification of MIL-STD-1472B to include human engineering design criteria for modern controls and displays; and to reduce the incidence of requests for waiver of MIL-STD-1472 resulting from unavailability of standard parts. Recommended changes are presented with rationales and references. GRA

SUBJECT INDEX

AEROSPACE MEDICINE AND BIOLOGY */A Continuing Bibliography (Suppl. 212)* NOVEMBER 1980

Typical Subject Index Listing


SUBJECT HEADING
TITLE EXTENSION
FLIGHT STRESS (BIOLOGY)
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979 --- effects of space flight stress
[JPRS-74470]
N80-10752
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABSORBERS (MATERIALS)
Interaction of electromagnetic energy with absorptive material by thermally inducing elastic stress waves
N80-29908

ACCELERATION STRESSES (PHYSIOLOGY)
Effect of acceleration on circulatory and respiratory function in the domestic fowl
N80-29985
Quantifying the agression generated by low frequency vibrations
N80-29998
Human factors in Mirage 2000 missions
N80-30028
Response of the cardiovascular system to vibration and combined stresses
[AD-A081879] N80-30034
Thermal and acceleration effects on aircrew members in chemical defense gear
[AD-A086026] N80-30045

ACCELERATION TOLERANCE
Effect of acceleration on circulatory and respiratory function in the domestic fowl
N80-29985
Acceleration and Performance Modeling Workshop
[AD-A083700] N80-30032

ACOUSTIC MEASUREMENTS
Initial study on the effects of transformer and transmission line noise on people. Volume 3: Community reaction
[EPRI-EA-1240-VOL-3] N80-29033

ACTIVE CONTROL
Ride-bumpiness and the influence of active control systems
N80-29991

ACTIVITY (BIOLOGY)
From inanimate matter to living systems
[NASA-CR-163372] N80-29011

ADAPTATION
Effect of certain psychopharmacological preparations on adaptation under stress conditions
[NASA-TM-76185] N80-29016

ADAPTIVE CONTROL
Adaptive control of technological industrial robots for welding
A80-45693

ADIPOSE TISSUES
Blood flow to adipose tissues in the male Sprague-Dawley rat
N80-29983

AEROSPACE ENVIRONMENTS
Design opportunities - Zero gravity versus one gravity environments
A80-46398
Investigation of the effects of space flight factors on the emergence from the anabiotic state of turions of the great duckweed
A80-46811

AEROSPACE MEDICINE
Characterization of renal response to prolonged immersion in normal man
A80-47021

AGING (BIOLOGY)
A comparative study in molecular aging: Alterations to the nucleic acids of cells of a representative plant, invertebrate and vertebrate animal of various ages
N80-29987

AIR LAW
Pilots who drink - FAA regulations and policy, and the Air Line Pilots Association treatment program
A80-45025

AIR TO AIR MISSILES
Information transfer for improved pilot performance
N80-30025

AIRBORNE/SPACEBORNE COMPUTERS
Determination of the impact of digital data broadcast on flight technical error
[AD-A085177] N80-29045

AIRCRAFT COMPARTMENTS
Tornado - aircrew systems
N80-30024

AIRCRAFT DESIGN
Development in high-speed low-level flight: The pilot's viewpoint
N80-29993
Operational roles, aircrew systems and human factors in future high performance aircraft
[AGARD-CP-266] N80-30019
Addressing human factor options in conceptual design
N80-30027

AIRCRAFT LANDING
The effect of a predictive wind shear chart on pilot landing performance
[UTIAS-TN-220] N80-29039

AIRCRAFT MODELS
Cost effectiveness modeling for a total training system
[AIAA PAPER 80-1894] A80-45752

AIRCRAFT NOISE
Effects of aircraft noise on sleep: An in-situ experience
N80-29042

AIRCRAFT PILOTS
Pilots who drink - FAA regulations and policy, and the Air Line Pilots Association treatment program
A80-45025

ALDOSTERONE
Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men
A80-45974

ALGAE
An empirical study of factors affecting blue-green versus nonblue-green algal dominance in lakes
[PB80-169311] N80-29020

ALTITUDE ACCLIMATIZATION
Work capacity during 3-wk sojourn at 4,300 m - Effects of relative polycythemia
A80-47025

ALTITUDE SIMULATION
The role of the hypoxic factor at elevated temperatures and possible mechanisms of its development
A80-45093

AMMONIA

Design, fabrication and testing of a dual catalyst ammonia removal system for a urine VCD unit [NASA-CR-152372] N80-29023

ANTHROPOMETRY

Tornado - aircrew systems N80-30024

ANTIGRAVITY

Procedural tests for anti-G protective devices. Volume 2: G-sensitivity tests [AD-A085982] N80-30044

ANTISUBMARINE WARFARE

Decision aids for naval air ASW [AD-A085134] N80-29040

ASTROGRAPHY

A very long baseline interferometry sky survey N80-28812

ASTRONAUT TRAINING

Development of a multi-media crew-training program for the terminal configured vehicle mission simulator A80-44201

Astronaut training manual [NASA-CR-160758] N80-29024

ASTRONOMY

Ocular risks of astronomical observations A80-44593

ATMOSPHERIC MOISTURE

Thermic problems presented by high-speed, low-level flight N80-29995

ATMOSPHERIC PRESSURE

Environmental control and life support system: Analysis of STS-1 [NASA-TM-81032] N80-29043

AUDITORY PERCEPTION

The discreteness of auditory information A80-46962

Interaction of responses to acoustic and electric stimuli at the auditory cortex N80-30029

AUDITORY SIGNALS

The discreteness of auditory information A80-46962

AUDITORY STIMULI

Interaction of responses to acoustic and electric stimuli at the auditory cortex N80-30029

AUTOMATIC CONTROL

Use of active compliance in the control of legged vehicles A80-46550

AUTOMATION

Standard man-machine procedure of optimal synthesis in computer-aided design systems. II A80-45078

B

BACTERIA

Results of the experiment 'Microorganism growth' on the Soyuz-22 spacecraft A80-46804

The ultrastructure of Proteus vulgaris cells grown in orbit on board the Soyuz-22 spacecraft A80-46805

The effect of space flight factors on the characteristics of nutrient media for the bacterium Proteus vulgaris A80-46807

BACTERIOLOGY

Three-dimensional structure of Escherichia coli initiator tRNA/f//Met/ A80-44608

BARLEY

Genetic changes induced by space flight factors in barley seeds on Soyuz-5 and Soyuz-9 craft [NASA-TM-76201] N80-29013

BIBLIOGRAPHIES

Chemical identified in human biological media: A data base, volume 1, part 1, records 1-1580 [ORNL/EIS-163/V1-P1] N80-29029

Chemicals identified in human biological media: A data base, volume 1, part 2, records 1-1580 [ORNL/EIS-163/V1-P2] N80-29030

Aircraft sonic boom: Biological effects. Citations from the NTIS data base [PB80-810310] N80-29036

Hypothermia. Citations from the NTIS data base [PB80-180526] N80-29037

Research abstracts in the behavioural sciences, 1971 to 1975: A bibliography [FPRC-MEMO-259] N80-29038

Protective clothing: Arctic and tropical environments. Citations from the NTIS data base [PB80-809635] N80-29046

Protective clothing: Survival, aircraft, and combat environments. Citations from the NTIS data base [PB80-809650] N80-29047

Bionics. Citations from the NTIS data base [PB80-810641] N80-30039

Circadian rhythms. Citations from the International Aerospace Abstracts data base [NASA-CR-163323] N80-30040

Human performance: Psychological and sex differences, a selected bibliography [AD-A085824] N80-30042

BINOCULAR VISION

The axiomatic introduction of a metric in binocular visual space. I, II A80-46961

Experimental investigations of binocular space perception A80-46970

BIOASSAY

Paramecium tetraurelia: Prescreen for hazardous agents [DOE/EV-04477/1] N80-29017

BIOASTRONAUTICS

Biological studies on the Cosmos biosatellite --- Russian book A80-44125

Controlled ecological life support systems /CELSS/ and space habitats, anthropology, and psychology A80-46378

BIOCHEMISTRY

Three-dimensional structure of Escherichia coli initiator tRNA/f//Met/ A80-44608

The role of the hypoxic factor at elevated temperatures and possible mechanisms of its development A80-45093

From inanimate matter to living systems [NASA-CR-163372] N80-29011

BIODYNAMICS

A contribution to the biomechanics of master-slave manipulators A80-45691

Quantifying the agression generated by low frequency vibrations N80-29998

A method for studying human biodynamic responses to whole-body Z-axis N80-29999

Head movements induced by vertical vibrations N80-30000

The effect of reclined seating on the transmission of linear vibration to the head N80-30001

Clinical medical effects of head and neck response during biodynamic stress experiments N80-30005

BIOELECTRICITY

Magnetic study of the His-Purkinje conduction system in man A80-44195

Long-term biological effects of very intense 60 Hz electric field on mice A80-44196

BIOENGINEERING

Studies of carbon-surfaced polymeric, metallic and ceramic biomaterials [PB80-168859] N80-29035

Biomedical research, development and engineering at the Johns Hopkins University Applied Physics Laboratory [PB80-175268] N80-29989

BIOLOGICAL EFFECTS

Long-term biological effects of very intense 60 Hz electric field on mice A80-44196

Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels [NASA-TM-74109] N80-29014

Aircraft sonic boom: Biological effects. Citations from the NTIS data base [PB80-810310] N80-29036

Radiofrequency radiation and living tissue: Theoretical studies [AD-A085952] N80-30037

BIOLOGICAL MODELS (MATHEMATICS)

The axiomatic introduction of a metric in binocular visual space. I, II A80-46961

Thermal response model of a simulated cranial structure exposed to radiofrequency radiation A80-47064

Bionics. Citations from the NTIS data base [PB80-810641] N80-30039

BIOMAGNETISM

Magnetic study of the His-Purkinje conduction system in man A80-44195

BIOMEDICAL DATA

Changes in the QRS complex of the electrocardiogram during sleep and exercise [CSIR-ELEK-167] N80-29022

BIONICS

Experimental investigations of binocular space perception A80-46970

A computer implementation of a theory of human stereo vision [AD-A084696] N80-29027

Bionics. Citations from the NTIS data base [PB80-810641] N80-30039

BIOSATELLITES

Biological studies on the Cosmos biosatellite --- Russian book A80-44125

BIOTECHNOLOGY

Biotechnology challenges present in operational high-speed low-level flight N80-29994

BLOOD CIRCULATION

Effect of acceleration on circulatory and respiratory function in the domestic fowl N80-29985

BLOOD FLOW

Blood flow to adipose tissues in the male Sprague-Dawley rat N80-29983

BLOOD PLASMA

Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men A80-45974

Plasma testosterone during treadmill exercise A80-47023

BLOOD VESSELS

The effect of hypodynamia on the structure of the intraorganic blood vessels and the capacity of the blood stream in the diaphragm of white rats [NASA-TM-76140] N80-29012

BODY FLUIDS

Characterization of renal response to prolonged immersion in normal man A80-47021

BODY KINEMATICS

Quantifying the agression generated by low frequency vibrations N80-29998

BODY SIZE (BIOLOGY)

Blood flow to adipose tissues in the male Sprague-Dawley rat N80-29983

BODY TEMPERATURE

Thermic problems presented by high-speed, low-level flight N80-29995

Effects on performance of thermal strain encountered during high-speed, low-level flight N80-29996

Aircrew heat stress during high-speed, low-level flight N80-29997

BOND GRAPHS

Application of bond graphs to the synthesis and analysis of telechirics and robots A80-45682

C

CABIN ATMOSPHERES

Thermic problems presented by high-speed, low-level flight N80-29995

CARBON FIBERS

Studies of carbon-surfaced polymeric, metallic and ceramic biomaterials [PB80-168859] N80-29035

CARDIOLOGY

Maximal cardiac output during upright exercise - Approximate normal standards and variations with coronary heart disease A80-44249

CARDIOVASCULAR SYSTEM

The neural control of the coronary circulation during behavioral stress in conscious dogs N80-29986

Response of the cardiovascular system to vibration and combined stresses [AD-A081879] N80-30034

CATALYSIS

Design, fabrication and testing of a dual catalyst ammonia removal system for a urine VCD unit [NASA-CR-152372] N80-29023

CELLS (BIOLOGY)

The ultrastructure of Proteus vulgaris cells grown in orbit on board the Soyuz-22 spacecraft A80-46805

The effect of space flight conditions on higher plant cells in vitro culture A80-46809

The effects of simulated weightlessness on the reproductive capacity of the great duckweed in the norm and under irradiation A80-46812

The effects of low-intensity magnetic fields on plant cell reproduction A80-46813

CEREBRAL CORTEX

Cerebrovascular permeability to sucrose in the rat exposed to 2,450-MHz microwaves A80-47022

CHARACTER RECOGNITION

The effect of 3-25 Hz vibration on the legibility of numeric light emitting diode displays N80-30003

CHEMICAL TESTS

Paramecium tetraurelia: Prescreen for hazardous agents [DOE/EV-04477/1] N80-29017

CHEMICAL WARFARE

Thermal and acceleration effects on aircrew members in chemical defense gear [AD-A086026] N80-30045

CHEMOTHERAPY

Ulcers in restrained rats: Study of protective substances [NASA-TM-76184] N80-29015

CIRCADIAN RHYTHMS

Circadian rhythms. Citations from the International Aerospace Abstracts data base [NASA-CR-163323] N80-30040

CIRCULATORY SYSTEM

The neural control of the coronary circulation during behavioral stress in conscious dogs N80-29986

CLOSED ECOLOGICAL SYSTEMS

Controlled ecological life support systems /CELSS/ and space habitats, anthropology, and psychology A80-46378

Agriculture and food production A80-46393

COAGULATION

The structure of fibrinogen and its intermole associations N80-30030

COATINGS

Studies of carbon-surfaced polymeric, metallic and ceramic biomaterials [PB80-168859] N80-29035

COCHLEA

Low frequency asymptotics for a hydroelastic model of the cochlea A80-45623

COCKPITS
The influence of the design of displays on cockpit workload
N80-30008

CODING
The advantage of the color-code modality versus alphanumeric and symbol code
[AD-A084383] N80-29044

COLD TOLERANCE
Hypothermia. Citations from the NTIS data base
[PB80-180526] N80-29037

COLOR VISION
Colour displays: Their availability, performance and application to improved crew efficiency
N80-30009

COMBAT
Protective clothing: Survival, aircraft, and combat environments. Citations from the NTIS data base
[PB80-809650] N80-29047

COMMAND AND CONTROL
Decision aids for naval air ASW
[AD-A085134] N80-29040

COMPLEX SYSTEMS
Application of bond graphs to the synthesis and analysis of telechirics and robots
A80-45682

COMPOSITE MATERIALS
Studies of carbon-surfaced polymeric, metallic and ceramic biomaterials
[PB80-168859] N80-29035

COMPUTATIONAL FLUID DYNAMICS
Low frequency asymptotics for a hydroelastic model of the cochlea
A80-45623

COMPUTER GRAPHICS
Manipulation of large objects
A80-45687

COMPUTER TECHNIQUES
Decision aids for naval air ASW
[AD-A085134] N80-29040

COMPUTERIZED DESIGN
Standard man-machine procedure of optimal synthesis in computer-aided design systems. II
A80-45078

COMPUTERIZED SIMULATION
A rule-based model of human problem solving performance in fault diagnosis tasks
A80-46549

CONDITIONING (LEARNING)
The neural control of the coronary circulation during behavioral stress in conscious dogs
N80-29986

CONFERENCES
Symposium on Theory and Practice of Robots and Manipulators, 3rd, Udine, Italy, September 12-15, 1978, Proceedings
A80-45676
High-Speed, Low-Level Flight: Aircrew Factors
[AGARD-CP-267] N80-29990

CONTOURS
An information processing mechanism for systems with boundary contrast and some optical illusions
A80-46972

CONTRAST
Effects of background illumination and target contrast on flashblindness recovery time
[AD-A071906] N80-30031

CONTROL EQUIPMENT
Adaptive control of technological industrial robots for welding
A80-45693
Human engineering design criteria for modern control/display components and standard parts
[AD-A086139] N80-30046

CORONARY ARTERY DISEASE
Maximal cardiac output during upright exercise - Approximate normal standards and variations with coronary heart disease
A80-44249

COSMOS SATELLITES
Biological studies on the Cosmos biosatellite --- Russian book
A80-44125

COST EFFECTIVENESS
Cost effectiveness modeling for a total training system
[AIAA PAPER 80-1894] A80-45752

CREW STATIONS
Crew station assessment using the Bioman modeling system
N80-30014

D

DATA BASES
Chemical identified in human biological media: A data base, volume 1, part 1, records 1-1580
[ORNL/EIS-163/V1-P1] N80-29029
Chemicals identified in human biological media: A data base, volume 1, part 2, records 1-1580
[ORNL/EIS-163/V1-P2] N80-29030

DATA PROCESSING
Determination of the impact of digital data broadcast on flight technical error
[AD-A085177] N80-29045

DECISION MAKING
Decision aids for naval air ASW
[AD-A085134] N80-29040

DECISION THEORY
Decision aids for naval air ASW
[AD-A085134] N80-29040

DEEP SPACE NETWORK
A very long baseline interferometry sky survey
N80-28812

DESIGN ANALYSIS
The influence of the design of displays on cockpit workload
N80-30008

DETECTION
Automated psychological stress detection in an entry portal system
[SAND-80-7026] N80-29041

DIESEL ENGINES
Teratologic effects of long-term exposure to diesel exhaust emissions (rats)
[PB80-159965] N80-29018
Teratologic effects of long-term exposure to diesel exhaust emission (rabbits)
[PB80-168529] N80-29019

DIETS
Nutrition, diet and food processing in controlled environment life support systems
A80-46392
Agriculture and food production
A80-46393

DIGITAL SYSTEMS
Determination of the impact of digital data broadcast on flight technical error
[AD-A085177] N80-29045

DISPLAY DEVICES
The effect of a predictive wind shear chart on pilot landing performance
[UTIAS-TN-220] N80-29039
The advantage of the color-code modality versus alphanumeric and symbol code
[AD-A084383] N80-29044
The effect of 3-25 Hz vibration on the legibility of numeric light emitting diode displays
N80-30003
The influence of the design of displays on cockpit workload
N80-30008
Colour displays: Their availability, performance and application to improved crew efficiency
N80-30009
Weapons systems of the Mirage 2000: Man machine interface
N80-30023
A review of dynamic visual acuity
[AD-A085860] N80-30041
Human engineering design criteria for modern control/display components and standard parts
[AD-A086139] N80-30046

DISTANCE
Accuracy of visual estimate of the remoteness of an object in a space having no optical reference
A80-45273

DISTILLATION
Design, fabrication and testing of a dual catalyst ammonia removal system for a urine VCD unit
[NASA-CR-152372] N80-29023

DRUGS
Ulcers in restrained rats: Study of protective substances
[NASA-TM-76184] N80-29015

DUCTED FLOW
Low frequency asymptotics for a hydroelastic model of the cochlea A80-45623

DUMMIES
Crew station assessment using the Bioman modeling system N80-30014

DYNAMIC CONTROL
Use of active compliance in the control of legged vehicles A80-46550

DYNAMIC MODELS
A rule-based model of human problem solving performance in fault diagnosis tasks A80-46549

E

ECOLOGY
An empirical study of factors affecting blue-green versus nonblue-green algal dominance in lakes [PB80-169311] N80-29020

EFFECTIVE PERCEIVED NOISE LEVELS
Initial study on the effects of transformer and transmission line noise on people. Volume 3: Community reaction [EPRI-EA-1240-VOL-3] N80-29033

EFFERENT NERVOUS SYSTEMS
Vestibular compensation in the rat: A model for motor learning N80-29984

ELECTRIC CORONA
Initial study on the effects of transformer and transmission line noise on people. Volume 1: Annoyance [EPRI-EA-1240-VOL-1] N80-29031

ELECTRIC FIELDS
Long-term biological effects of very intense 60 Hz electric field on mice A80-44196

ELECTROCARDIOGRAPHY
Magnetic study of the His-Purkinje conduction system in man A80-44195
Theoretical analysis of error during signal averaging for detection of His-bundle activity, A80-47065
Changes in the QRS complex of the electrocardiogram during sleep and exercise [CSIR-ELEK-167] N80-29022

ELECTROENCEPHALOGRAPHY
Electroencephalographic changes in albino rats subjected to stress [NASA-TM-76118] N80-29010

ELECTROMAGNETIC RADIATION
Interaction of electromagnetic energy with absorptive material by thermally inducing elastic stress waves N80-29988

ELECTROMYOGRAPHY
The influence of temperature on the amplitude and frequency components of the EMG during brief and sustained isometric contractions A80-45975

ELECTRON MICROSCOPY
The ultrastructure of Proteus vulgaris cells grown in orbit on board the Soyuz-22 spacecraft A80-46805

ELECTROPHYSIOLOGY
Electroencephalographic changes in albino rats subjected to stress [NASA-TM-76118] N80-29010
Changes in the QRS complex of the electrocardiogram during sleep and exercise [CSIR-ELEK-167] N80-29022
Effects of aircraft noise on sleep: An in-situ experience N80-29042

ENERGY POLICY
Assessment of the effects of the zero gravity environment on the health and safety of space workers [NASA-TM-81122] N80-30038

ENVIRONMENT EFFECTS
The effect of space flight factors on the characteristics of nutrient media for the bacterium Proteus vulgaris A80-46807
The effects of orbital flight conditions on the formation of the generative organs in Muscari racemosum and Anethum graveolens A80-46810
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels [NASA-TM-74109] N80-29014
Health effects of low level radiation [DOE/TIC-11176] N80-29034

ENVIRONMENTAL CONTROL
Environmental control and life support system: Analysis of STS-1 [NASA-TM-81032] N80-29043

EQUIPMENT SPECIFICATIONS
The role of helmet mounted displays in high-speed low-level flight N80-30011

ERROR ANALYSIS
Theoretical analysis of error during signal averaging for detection of His-bundle activity, A80-47065

ERYTHROCYTES
Extremes of urine osmolality - Lack of effect on red blood cell survival A80-46196

ESCAPE SYSTEMS
Tornado - aircrew systems N80-30024

ESCHERICHIA
Three-dimensional structure of Escherichia coli initiator tRNA/f//Met/ A80-44608

EUTROPHICATION
An empirical study of factors affecting blue-green versus nonblue-green algal dominance in lakes [PB80-169311] N80-29020

EVOLUTION (DEVELOPMENT)
From inanimate matter to living systems [NASA-CR-163372] N80-29011

EXERCISE PHYSIOLOGY
Astronaut training manual [NASA-CR-160758] N80-29024

EXHAUST EMISSION
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels [NASA-TM-74109] N80-29014
Teratologic effects of long-term exposure to diesel exhaust emissions (rats) [PB80-159965] N80-29018
Teratologic effects of long-term exposure to diesel exhaust emission (rabbits) [PB80-168529] N80-29019

EXOBIOLOGY
Biological studies on the Cosmos biosatellite --- Russian book A80-44125
Interpretation of findings of the biological experiments of the Viking lander on Mars A80-44441
Results of the experiment 'Microorganism growth' on the Soyuz-22 spacecraft A80-46804
The effect of space flight conditions on higher plant cells in vitro culture A80-46809
The effects of orbital flight conditions on the formation of the generative organs in Muscari racemosum and Anethum graveolens A80-46810
Investigation of the effects of space flight factors on the emergence from the anabiotic state of turions of the great duckweed A80-46811

EXTRAGALACTIC RADIO SOURCES
A very long baseline interferometry sky survey N80-28812

EYE (ANATOMY)
Ocular risks of astronomical observations A80-44593

EYE MOVEMENTS
A review of dynamic visual acuity [AD-A085860] N80-30041

F

FAILURE ANALYSIS
- A rule-based model of human problem solving performance in fault diagnosis tasks A80-46549

FAILURE MODES
- Procedural tests for anti-G protective devices. Volume 2: G-sensitivity tests [AD-A085982] N80-30044

FEMALES
- Physiological responses of physically fit men and women to acclimation to humid heat A80-47024

FIBRINOGEN
- The structure of fibrinogen and its intermole associations N80-30030

FIGHTER AIRCRAFT
- Operational roles, aircrew systems and human factors in future high performance aircraft [AGARD-CP-266] N80-30019
- Information transfer for improved pilot performance N80-30025

FLASH BLINDNESS
- Effects of background illumination and target contrast on flashblindness recovery time [AD-A071906] N80-30031

FLEXING
- Pressure suit joint analyzer [NASA-CASE-ARC-11314-1] N80-30043

FLIGHT
- The effect of turbulence on helmet mounted sight aiming accuracies N80-30004
- Operational aspects of guidance and control advances versus pilot workload for low altitude, high speed flight N80-30006

FLIGHT CHARACTERISTICS
- High-Speed, Low-Level Flight: Aircrew Factors [AGARD-CP-267] N80-29990
- Ride-bumpiness and the influence of active control systems N80-29991
- Influences of geophysical factors (meteorological and topographical) on the pilot-aircraft-system in high speed low level flight (HSLLF) N80-29992
- Development in high-speed low-level flight: The pilot's viewpoint N80-29993
- Biotechnology challenges present in operational high-speed low-level flight N80-29994
- Effects on performance of thermal strain encountered during high-speed, low-level flight N80-29996
- Aircrew heat stress during high-speed, low-level flight N80-29997

FLIGHT CLOTHING
- Protective clothing: Survival, aircraft, and combat environments. Citations from the NTIS data base [PB80-809650] N80-29047
- Human factors aspects in high speed low level flight N80-30026

FLIGHT CONDITIONS
- Influences of geophysical factors (meteorological and topographical) on the pilot-aircraft-system in high speed low level flight (HSLLF) N80-29992
- Development in high-speed low-level flight: The pilot's viewpoint N80-29993
- Biotechnology challenges present in operational high-speed low-level flight N80-29994

FLIGHT CONTROL
- Operational aspects of guidance and control advances versus pilot workload for low altitude, high speed flight N80-30006

FLIGHT CREWS
- High-Speed, Low-Level Flight: Aircrew Factors [AGARD-CP-267] N80-29990
- Colour displays: Their availability, performance and application to improved crew efficiency N80-30009
- Human factors aspects in high speed low level flight N80-30026
- Thermal and acceleration effects on aircrew members in chemical defense gear [AD-A086026] N80-30045

FLIGHT FITNESS
- Astronaut training manual [NASA-CR-160758] N80-29024

FLIGHT SAFETY
- Crew station assessment using the Bioman modeling system N80-30014

FLIGHT SIMULATORS
- Cost effectiveness modeling for a total training system [AIAA PAPER 80-1894] A80-45752

FLIGHT STRESS (BIOLOGY)
- Thermic problems presented by high-speed, low-level flight N80-29995
- Effects on performance of thermal strain encountered during high-speed, low-level flight N80-29996
- Aircrew heat stress during high-speed, low-level flight N80-29997
- Human factors in Mirage 2000 missions N80-30028
- Response of the cardiovascular system to vibration and combined stresses [AD-A081879] N80-30034

FLIGHT TESTS
- Determination of the impact of digital data broadcast on flight technical error [AD-A085177] N80-29045

FLY BY WIRE CONTROL
- Addressing human factor options in conceptual design N80-30027

FOOD INTAKE
- Extremes of urine osmolality - Lack of effect on red blood cell survival A80-46196

FUNGI
- The survival rate of various species of dark-colored mushrooms under the influence of artificial solar radiation A80-46806

G

GASTROINTESTINAL SYSTEM
- Electroencephalographic changes in albino rats subjected to stress [NASA-TM-76118] N80-29010
- Effect of certain psychopharmacological preparations on adaptation under stress conditions [NASA-TM-76185] N80-29016

GENETICS
- Genetic changes induced by space flight factors in barley seeds on Soyuz-5 and Soyuz-9 craft [NASA-TM-76281] N80-29013

GEOPHYSICS
- Influences of geophysical factors (meteorological and topographical) on the pilot-aircraft-system in high speed low level flight (HSLLF) N80-29992

GOVERNMENT/INDUSTRY RELATIONS
- Pilots who drink - FAA regulations and policy, and the Air Line Pilots Association treatment program A80-45025

GRAVITATIONAL EFFECTS
- Design opportunities - Zero gravity versus one gravity environments A80-46398

H

HABITATS
- Controlled ecological life support systems /CELSS/ and space habitats, anthropology, and psychology A80-46378
- Design opportunities - Zero gravity versus one gravity environments A80-46398

HANDLING EQUIPMENT
On the grasping process for objects of irregular shape A80-45680
Application of bond graphs to the synthesis and analysis of telechirics and robots A80-45682
A contribution to the biomechanics of master-slave manipulators A80-45691
Adaptive control of technological industrial robots for welding A80-45693

HEAD (ANATOMY)
Thermal response model of a simulated cranial structure exposed to radiofrequency radiation A80-47064

HEAD MOVEMENT
Head movements induced by vertical vibrations N80-30000
The effect of reclined seating on the transmission of linear vibration to the head N80-30001
The effects of aircraft vibration on vision N80-30002

HEART FUNCTION
Magnetic study of the His-Purkinje conduction system in man A80-44195

HEART RATE
Maximal cardiac output during upright exercise - Approximate normal standards and variations with coronary heart disease A80-44249

HEAT ACCLIMATIZATION
Physiological responses of physically fit men and women to acclimation to humid heat A80-47024

HEAT TOLERANCE
Thermic problems presented by high-speed, low-level flight N80-29995

HELMET MOUNTED DISPLAYS
Helmet-mounted devices in low-flying high-speed aircraft N80-30010
The role of helmet mounted displays in high-speed low-level flight N80-30011
Research for visual enhancement for high speed low level flight sponsored by the Naval Air Systems Command N80-30012

HELMETS
The effect of turbulence on helmet mounted sight aiming accuracies N80-30004
Helmet-mounted devices in low-flying high-speed aircraft N80-30010

HEURISTIC METHODS
A rule-based model of human problem solving performance in fault diagnosis tasks A80-46549

HIGH ALTITUDE ENVIRONMENTS
Work capacity during 3-wk sojourn at 4,300 m - Effects of relative polycythemia A80-47025

HIGH PRESSURE
Hypothermia. Citations from the NTIS data base [PB80-180526] N80-29037

HIGH SPEED
The effect of turbulence on helmet mounted sight aiming accuracies N80-30004
Operational aspects of guidance and control advances versus pilot workload for low altitude, high speed flight N80-30006
Human factors aspects in high speed low level flight N80-30026

HIS BUNDLE
Magnetic study of the His-Purkinje conduction system in man A80-44195
Theoretical analysis of error during signal averaging for detection of His-bundle activity, A80-47065

HORMONE METABOLISMS
Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men A80-45974

HORMONES
Plasma testosterone during treadmill exercise A80-47023

HUMAN BEHAVIOR
Initial study on the effects of transformer and transmission line noise on people. Volume 2: Sleep interference [EPRI-EA-1240-VOL-2] N80-29032

HUMAN FACTORS ENGINEERING
A computer implementation of a theory of human stereo vision [AD-A084696] N80-29027
The effect of a predictive wind shear chart on pilot landing performance [UTIAS-TN-220] N80-29039
The advantage of the color-code modality versus alphanumeric and symbol code [AD-A084383] N80-29044
High-Speed, Low-Level Flight: Aircrew Factors [AGARD-CP-267] N80-29990
Biotechnology challenges present in operational high-speed low-level flight N80-29994
Operational roles, aircrew systems and human factors in future high performance aircraft [AGARD-CP-266] N80-30019
Tornado - aircrew systems N80-30024
Human factors aspects in high speed low level flight N80-30026
Addressing human factor options in conceptual design N80-30027
Human factors in Mirage 2000 missions N80-30028
A review of dynamic visual acuity [AD-A085860] N80-30041
Human engineering design criteria for modern control/display components and standard parts [AD-A086139] N80-30046

HUMAN PERFORMANCE
A rule-based model of human problem solving performance in fault diagnosis tasks A80-46549
A technique for establishing true levels of muscle strength exertion [AD-A083576] N80-29028
Physiological influences upon the work performance of men and women [AD-A081947] N80-30035
Human performance: Psychological and sex differences, a selected bibliography [AD-A085824] N80-30042

HUMAN REACTIONS
Magnetic study of the His-Purkinje conduction system in man A80-44195
Automated psychological stress detection in an entry portal system [SAND-80-7026] N80-29041
Assessment of the effects of the zero gravity environment on the health and safety of space workers [NASA-TM-81122] N80-30038

HUMAN TOLERANCES
Initial study on the effects of transformer and transmission line noise on people. Volume 1: Annoyance [EPRI-EA-1240-VOL-1] N80-29031
A method for studying human biodynamic responses to whole-body Z-axis N80-29999

HUMIDITY
The role of the hypoxic factor at elevated temperatures and possible mechanisms of its development A80-45093
Physiological responses of physically fit men and women to acclimation to humid heat A80-47024

HYDROELASTICITY
Low frequency asymptotics for a hydroelastic model of the cochlea A80-45623

HYPERTHERMIA

The role of the hypoxic factor at elevated temperatures and possible mechanisms of its development A80-45093

HYPODYNAMIA

The effect of hypodynamia on the structure of the intraorganic blood vessels and the capacity of the blood stream in the diaphragm of white rats [NASA-TM-76140] N80-29012

HYPOKINESIA

Effect of restricted mobility on RNA content and nucleotide composition and on protein content in motoneurons of spinal cord anterior horns [NASA-TM-76190] N80-29025

RNA content in spinal cord motoneurons during hypokinesia [NASA-TM-76200] N80-29026

HYPOTHERMIA

Hypothermia. Citations from the NTIS data base [PB80-180526] N80-29037

HYPOXIA

The role of the hypoxic factor at elevated temperatures and possible mechanisms of its development A80-45093

I

ICE ENVIRONMENTS

Protective clothing: Arctic and tropical environments. Citations from the NTIS data base [PB80-809635] N80-29046

IMAGE PROCESSING

An information processing mechanism for systems with boundary contrast and some optical illusions A80-46972

INJURIES

Crew station assessment using the Bioman modeling system N80-30014

INTOXICATION

Pilots who drink - FAA regulations and policy, and the Air Line Pilots Association treatment program A80-45025

INVENTIONS

Pressure suit joint analyzer [NASA-CASE-ARC-11314-1] N80-30043

INVESTIGATION

RNA content in spinal cord motoneurons during hypokinesia [NASA-TM-76200] N80-29026

IRRADIATION

Genetic changes induced by space flight factors in barley seeds on Soyuz-5 and Soyuz-9 craft [NASA-TM-76281] N80-29013

J

JOINTS (JUNCTIONS)

Pressure suit joint analyzer [NASA-CASE-ARC-11314-1] N80-30043

JUDGMENTS

Decision aids for naval air ASW [AD-A085134] N80-29040

L

LAKES

An empirical study of factors affecting blue-green versus nonblue-green algal dominance in lakes [PB80-169311] N80-29020

LEARNING

Vestibular compensation in the rat: A model for motor learning N80-29984

LIFE SCIENCES

Parallel visual pathways - A review A80-44765

The effect of the temperatures of different skin layers on the activity of cold thermoreceptors A80-45092

From inanimate matter to living systems [NASA-CR-163372] N80-29011

LIFE SUPPORT SYSTEMS

Controlled ecological life support systems /CELSS/ and space habitats, anthropology, and psychology A80-46378

Nutrition, diet and food processing in controlled environment life support systems A80-46392

Agriculture and food production A80-46393

Environmental control and life support system: Analysis of STS-1 [NASA-TM-81032] N80-29043

LIGHT EMITTING DIODES

Helmet-mounted devices in low-flying high-speed aircraft N80-30010

LONG TERM EFFECTS

Long-term biological effects of very intense 60 Hz electric field on mice A80-44196

LOW ALTITUDE

High-Speed, Low-Level Flight: Aircrew Factors [AGARD-CP-267] N80-29990

Thermic problems presented by high-speed, low-level flight N80-29995

Operational aspects of guidance and control advances versus pilot workload for low altitude, high speed flight N80-30006

Human factors aspects in high speed low level flight N80-30026

LUMINESCENCE

Effects of background illumination and target contrast on flashblindness recovery time [AD-A071906] N80-30031

M

MAGNETIC EFFECTS

The effects of low-intensity magnetic fields on plant cell reproduction A80-46813

MALES

Physiological responses of physically fit men and women to acclimation to humid heat A80-47024

MAN MACHINE SYSTEMS

Standard man-machine procedure of optimal synthesis in computer-aided design systems. II A80-45078

A contribution to the biomechanics of master-slave manipulators A80-45691

Use of active compliance in the control of legged vehicles A80-46550

The effect of a predictive wind shear chart on pilot landing performance [UTIAS-TN-220] N80-29039

The advantage of the color-code modality versus alphanumeric and symbol code [AD-A084383] N80-29044

Operational roles, aircrew systems and human factors in future high performance aircraft [AGARD-CP-266] N80-30019

Weapons systems of the Mirage 2000: Man machine interface N80-30023

Human factors in Mirage 2000 missions N80-30028

Human engineering design criteria for modern control/display components and standard parts [AD-A086139] N80-30046

MANIPULATORS

Symposium on Theory and Practice of Robots and Manipulators, 3rd, Udine, Italy, September 12-15, 1978, Proceedings A80-45676

On the grasping process for objects of irregular shape A80-45680

A contribution to the biomechanics of master-slave manipulators A80-45691

Use of active compliance in the control of legged vehicles A80-46550

MANNED SPACE FLIGHT

Characterization of renal response to prolonged immersion in normal man A80-47021

MARS (PLANET)
Interpretation of findings of the biological experiments of the Viking lander on Mars
A80-44441

MECHANICAL DEVICES
On the grasping process for objects of irregular shape
A80-45680

MEDICAL ELECTRONICS
Theoretical analysis of error during signal averaging for detection of His-bundle activity,
A80-47065

MERRITT ISLAND (FL)
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels
[NASA-TM-74109] N80-29014

METABOLISM
RNA content in spinal cord motoneurons during hypokinesia
[NASA-TM-76200] N80-29026

METRIC SPACE
The axiomatic introduction of a metric in binocular visual space. I, II
A80-46961

MICROANALYSIS
The structure of fibrinogen and its intermole associations
N80-30030

MICROPROCESSORS
Manipulation of large objects
A80-45687

MICROWAVES
Cerebrovascular permeability to sucrose in the rat exposed to 2,450-MHz microwaves
A80-47022
On the interaction of non-ionizing radiation with people
[AD-A082538] N80-30033

MILITARY OPERATIONS
Weapons systems of the Mirage 2000: Man machine interface
N80-30023

MILITARY PSYCHOLOGY
Research abstracts in the behavioural sciences, 1971 to 1975: A bibliography
[FPRC-MEMO-259] N80-29038

MIRAGE AIRCRAFT
Weapons systems of the Mirage 2000: Man machine interface
N80-30023
Human factors in Mirage 2000 missions
N80-30028

MISSILE CONTROL
Information transfer for improved pilot performance
N80-30025

MOLECULAR STRUCTURE
Three-dimensional structure of Escherichia coli initiator tRNA/f//Met/
A80-44608
The structure of fibrinogen and its intermole associations
N80-30030

MORPHOLOGY
The effect of hypodynamia on the structure of the intraorganic blood vessels and the capacity of the blood stream in the diaphragm of white rats
[NASA-TM-76140] N80-29012

MOTION PERCEPTION
Visually induced self-motion sensation adapts rapidly to left-right visual reversal
A80-44213

MRCA AIRCRAFT
Tornado - aircrew systems
N80-30024

MUSCULAR FATIGUE
The influence of temperature on the amplitude and frequency components of the EMG during brief and sustained isometric contractions
A80-45975

MUSCULAR FUNCTION
Quantifying the agression generated by low frequency vibrations
N80-29998

MUSCULAR STRENGTH
A technique for establishing true levels of muscle strength exertion
[AD-A083576] N80-29028

N

NECK (ANATOMY)
Clinical medical effects of head and neck response during biodynamic stress experiments
N80-30005

NETWORK SYNTHESIS
Standard man-machine procedure of optimal synthesis in computer-aided design systems. II
A80-45078

NEUROLOGY
The neural control of the coronary circulation during behavioral stress in conscious dogs
N80-29986

NEURONS
Parallel visual pathways - A review
A80-44765
Effect of restricted mobility on RNA content and nucleotide composition and on protein content in motoneurons of spinal cord anterior horns
[NASA-TM-76190] N80-29025
RNA content in spinal cord motoneurons during hypokinesia
[NASA-TM-76200] N80-29026

NEUROPHYSIOLOGY
Changes in the QRS complex of the electrocardiogram during sleep and exercise
[CSIR-ELEK-167] N80-29022

NOISE (SOUND)
Initial study on the effects of transformer and transmission line noise on people. Volume 2: Sleep interference
[EPRI-EA-1240-VOL-2] N80-29032

NOISE POLLUTION
Effects of aircraft noise on sleep: An in-situ experience
N80-29042

NOISE TOLERANCE
Initial study on the effects of transformer and transmission line noise on people. Volume 1: Annoyance
[EPRI-EA-1240-VOL-1] N80-29031
Initial study on the effects of transformer and transmission line noise on people. Volume 3: Community reaction
[EPRI-EA-1240-VOL-3] N80-29033

NUCLEIC ACIDS
A comparative study in molecular aging: Alterations to the nucleic acids of cells of a representative plant, invertebrate and vertebrate animal of various ages
N80-29987

NUMERICAL CONTROL
Use of active compliance in the control of legged vehicles
A80-46550

NUTRIENTS
The effect of space flight factors on the characteristics of nutrient media for the bacterium Proteus vulgaris
A80-46807

NUTRITION
Agriculture and food production
A80-46393

NUTRITIONAL REQUIREMENTS
Nutrition, diet and food processing in controlled environment life support systems
A80-46392

O

OPERATOR PERFORMANCE
TV operator performance in real time air-to-ground reconnaissance missions under task-loading conditions
N80-30007

OPTICAL ILLUSION
Visually induced self-motion sensation adapts rapidly to left-right visual reversal
A80-44213
An information processing mechanism for systems with boundary contrast and some optical illusions
A80-46972

OPTIMAL CONTROL
Standard man-machine procedure of optimal synthesis in computer-aided design systems. II
A80-45078

OSMOSIS
  Extremes of urine osmolality - Lack of effect on red blood cell survival
  A80-46196

OXYGEN CONSUMPTION
  Effects of inspired oxygen on the metabolism of pulmonary surfactant
  [AD-A082006] N80-30036

OXYGEN METABOLISM
  Plasma testosterone during treadmill exercise
  A80-47023

P

PARAMECIA
  Paramecium tetraurelia: Prescreen for hazardous agents
  [DOE/EV-04477/1] N80-29017

PATTERN RECOGNITION
  An information processing mechanism for systems with boundary contrast and some optical illusions
  A80-46972

PERFORMANCE PREDICTION
  Colour displays: Their availability, performance and application to improved crew efficiency
  N80-30009

PHOTORECEPTORS
  Research for visual enhancement for high speed low level flight sponsored by the Naval Air Systems Command
  N80-30012

PHYSICAL EXERCISE
  Maximal cardiac output during upright exercise - Approximate normal standards and variations with coronary heart disease
  A80-44249
  Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men
  A80-45974
  The influence of temperature on the amplitude and frequency components of the EMG during brief and sustained isometric contractions
  A80-45975
  Plasma testosterone during treadmill exercise
  A80-47023
  Changes in the QRS complex of the electrocardiogram during sleep and exercise
  [CSIR-ELEK-167] N80-29022
  Astronaut training manual
  [NASA-CR-160758] N80-29024

PHYSICAL FITNESS
  Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men
  A80-45974
  Physiological responses of physically fit men and women to acclimation to humid heat
  A80-47024
  Astronaut training manual
  [NASA-CR-160758] N80-29024

PHYSIOLOGICAL EFFECTS
  Extremes of urine osmolality - Lack of effect on red blood cell survival
  A80-46196
  Electroencephalographic changes in albino rats subjected to stress
  [NASA-TM-76118] N80-29010
  The effect of hypodynamia on the structure of the intraorganic blood vessels and the capacity of the blood stream in the diaphragm of white rats
  [NASA-TM-76140] N80-29012
  Effect of certain psychopharmacological preparations on adaptation under stress conditions
  [NASA-TM-76185] N80-29016
  Teratologic effects of long-term exposure to diesel exhaust emissions (rats)
  [PB80-159965] N80-29018
  Teratologic effects of long-term exposure to diesel exhaust emission (rabbits)
  [PB80-168529] N80-29019
  Chemical identified in human biological media: A data base, volume 1, part 1, records 1-1580
  [ORNL/EIS-163/V1-P1] N80-29029
  Chemicals identified in human biological media: A data base, volume 1, part 2, records 1-1580
  [ORNL/EIS-163/V1-P2] N80-29030
  Health effects of low level radiation
  [DOE/TIC-11176] N80-29034
  Aircraft sonic boom: Biological effects. Citations from the NTIS data base
  [PB80-810310] N80-29036
  Hypothermia. Citations from the NTIS data base
  [PB80-180526] N80-29037
  Effects of aircraft noise on sleep: An in-situ experience
  N80-29042
  Quantifying the agression generated by low frequency vibrations
  N80-29998
  Clinical medical effects of head and neck response during biodynamic stress experiments
  N80-30005

PHYSIOLOGICAL FACTORS
  Research abstracts in the behavioural sciences, 1971 to 1975: A bibliography
  [FPRC-MEMO-259] N80-29038
  Physiological influences upon the work performance of men and women
  [AD-A081947] N80-30035
  Human performance: Psychological and sex differences, a selected bibliography
  [AD-A085824] N80-30042

PHYSIOLOGICAL RESPONSES
  Long-term biological effects of very intense 60 Hz electric field on mice
  A80-44196
  The effect of the temperatures of different skin layers on the activity of cold thermoreceptors
  A80-45092
  Characterization of renal response to prolonged immersion in normal man
  A80-47021
  Cerebrovascular permeability to sucrose in the rat exposed to 2,450-MHz microwaves
  A80-47022
  Plasma testosterone during treadmill exercise
  A80-47023
  Physiological responses of physically fit men and women to acclimation to humid heat
  A80-47024
  Circadian rhythms. Citations from the International Aerospace Abstracts data base
  [NASA-CR-163323] N80-30040

PHYSIOLOGICAL TESTS
  A technique for establishing true levels of muscle strength exertion
  [AD-A083576] N80-29028

PHYSIOLOGY
  Parallel visual pathways - A review
  A80-44765

PILOT ERROR
  Pilots who drink - FAA regulations and policy, and the Air Line Pilots Association treatment program
  A80-45025

PILOT PERFORMANCE
  The effect of a predictive wind shear chart on pilot landing performance
  [UTIAS-TN-220] N80-29039
  Determination of the impact of digital data broadcast on flight technical error
  [AD-A085177] N80-29045
  Influences of geophysical factors (meteorological and topographical) on the pilot-aircraft-system in high speed low level flight (HSLLF)
  N80-29992
  Effects on performance of thermal strain encountered during high-speed, low-level flight
  N80-29996

PILOT TRAINING
  Cost effectiveness modeling for a total training system
  [AIAA PAPER 80-1894] A80-45752

PILOTS (PERSONNEL)
  Research abstracts in the behavioural sciences, 1971 to 1975: A bibliography
  [FPRC-MEMO-259] N80-29038
  Operational aspects of guidance and control advances versus pilot workload for low altitude, high speed flight
  N80-30006

PIPE FLOW
  Low frequency asymptotics for a hydroelastic model of the cochlea
  A80-45623

PLANTS (BOTANY)
The effect of space flight conditions on higher plant cells in vitro culture
A80-46809
The effects of orbital flight conditions on the formation of the generative organs in Muscari racemosum and Anethum graveolens
A80-46810
Investigation of the effects of space flight factors on the emergence from the anabiotic state of turions of the great duckweed
A80-46811
The effects of simulated weightlessness on the reproductive capacity of the great duckweed in the norm and under irradiation
A80-46812
The effects of low-intensity magnetic fields on plant cell reproduction
A80-46813
Genetic changes induced by space flight factors in barley seeds on Soyuz-5 and Soyuz-9 craft
[NASA-TM-76281] N80-29013
A comparative study in molecular aging: Alterations to the nucleic acids of cells of a representative plant, invertebrate and vertebrate animal of various ages
N80-29987

POINT SOURCES
Accuracy of visual estimate of the remoteness of an object in a space having no optical reference
A80-45273

POLYCYTHEMIA
Work capacity during 3-wk sojourn at 4,300 m - Effects of relative polycythemia
A80-47025

POTABLE WATER
Design, fabrication and testing of a dual catalyst ammonia removal system for a urine VCD unit
[NASA-CR-152372] N80-29023

PRESSURE SUITS
Pressure suit joint analyzer
[NASA-CASE-ARC-11314-1] N80-30043

PRESSURIZED CABINS
Environmental control and life support system: Analysis of STS-1
[NASA-TM-81032] N80-29043

PROBLEM SOLVING
A rule-based model of human problem solving performance in fault diagnosis tasks
A80-46549

PROSTHETIC DEVICES
Studies of carbon-surfaced polymeric, metallic and ceramic biomaterials
[PB80-168859] N80-29035

PROTECTIVE CLOTHING
Protective clothing: Arctic and tropical environments. Citations from the NTIS data base
[PB80-809635] N80-29046
Protective clothing: Survival, aircraft, and combat environments. Citations from the NTIS data base
[PB80-809650] N80-29047
Procedural tests for anti-G protective devices. Volume 2: G-sensitivity tests
[AD-A085982] N80-30044
Thermal and acceleration effects on aircrew members in chemical defense gear
[AD-A086026] N80-30045

PROTOBIOLOGY
From inanimate matter to living systems
[NASA-CR-163372] N80-29011

PSYCHOACOUSTICS
The discreteness of auditory information
A80-46962

PSYCHOLOGICAL FACTORS
Controlled ecological life support systems /CELSS/ and space habitats, anthropology, and psychology
A80-46378
Human performance: Psychological and sex differences, a selected bibliography
[AD-A085824] N80-30042

PSYCHOPHARMACOLOGY
Effect of certain psychopharmacological preparations on adaptation under stress conditions
[NASA-TM-76185] N80-29016
Automated psychological stress detection in an entry portal system
[SAND-80-7026] N80-29041

PSYCHOPHYSIOLOGY
Visually induced self-motion sensation adapts rapidly to left-right visual reversal
A80-44213
Automated psychological stress detection in an entry portal system
[SAND-80-7026] N80-29041
Research for visual enhancement for high speed low level flight sponsored by the Naval Air Systems Command
N80-30012

PULMONARY FUNCTIONS
Effects of inspired oxygen on the metabolism of pulmonary surfactant
[AD-A082006] N80-30036

PULMONARY LESIONS
Effects of inspired oxygen on the metabolism of pulmonary surfactant
[AD-A082006] N80-30036

R

RADIATION DOSAGE
Health effects of low level radiation
[DOE/TIC-11176] N80-29034

RADIATION EFFECTS
Ocular risks of astronomical observations
A80-44593
Cerebrovascular permeability to sucrose in the rat exposed to 2,450-MHz microwaves
A80-47022
Thermal response model of a simulated cranial structure exposed to radiofrequency radiation
A80-47064
Genetic changes induced by space flight factors in barley seeds on Soyuz-5 and Soyuz-9 craft
[NASA-TM-76281] N80-29013
Interaction of electromagnetic energy with absorptive material by thermally inducing elastic stress waves
N80-29988
On the interaction of non-ionizing radiation with people
[AD-A082538] N80-30033

RADIATION HAZARDS
On the interaction of non-ionizing radiation with people
[AD-A082538] N80-30033
Radiofrequency radiation and living tissue: Theoretical studies
[AD-A085952] N80-30037

RADIATION TOLERANCE
The survival rate of various species of dark-colored mushrooms under the influence of artificial solar radiation
A80-46806
On the interaction of non-ionizing radiation with people
[AD-A082538] N80-30033

RADIO ASTRONOMY
A very long baseline interferometry sky survey
N80-28812

RADIO FREQUENCIES
Radiofrequency radiation and living tissue: Theoretical studies
[AD-A085952] N80-30037

RADIO FREQUENCY HEATING
Thermal response model of a simulated cranial structure exposed to radiofrequency radiation
A80-47064

RATS
Ulcers in restrained rats: Study of protective substances
[NASA-TM-76184] N80-29015

READING
The effect of 3-25 Hz vibration on the legibility of numeric light emitting diode displays
N80-30003

REAL TIME OPERATION
TV operator performance in real time air-to-ground reconnaissance missions under task-loading conditions
N80-30007

RECONNAISSANCE
TV operator performance in real time air-to-ground reconnaissance missions under task-loading conditions
N80-30007

REGULATIONS
Pilots who drink - FAA regulations and policy, and the Air Line Pilots Association treatment program
A80-45025

REMOTE CONTROL
Manipulation of large objects
A80-45687

REMOTE HANDLING
Application of bond graphs to the synthesis and analysis of telechirics and robots
A80-45682

A contribution to the biomechanics of master-slave manipulators
A80-45691

REMOTE MANIPULATOR SYSTEM
Manipulation of large objects
A80-45687

RENAL FUNCTION
Characterization of renal response to prolonged immersion in normal man
A80-47021

REPRODUCTION (BIOLOGY)
The effects of simulated weightlessness on the reproductive capacity of the great duckweed in the norm and under irradiation
A80-46812

The effects of low-intensity magnetic fields on plant cell reproduction
A80-46813

Teratologic effects of long-term exposure to diesel exhaust emissions (rats)
[PB80-159965] N80-29018

Teratologic effects of long-term exposure to diesel exhaust emission (rabbits)
[PB80-168529] N80-29019

REPRODUCTIVE SYSTEMS
The effects of orbital flight conditions on the formation of the generative organs in Muscari racemosum and Anethum graveolens
A80-46810

RESPIRATION
Effect of acceleration on circulatory and respiratory function in the domestic fowl
N80-29985

RESPONSES
Interaction of responses to acoustic and electric stimuli at the auditory cortex
N80-30029

RIBONUCLEIC ACIDS
Three-dimensional structure of Escherichia coli initiator tRNA/f//Met/
A80-44608

Effect of restricted mobility on RNA content and nucleotide composition and on protein content in motoneurons of spinal cord anterior horns
[NASA-TM-76190] N80-29025

RNA content in spinal cord motoneurons during hypokinesia
[NASA-TM-76200] N80-29026

RIDING QUALITY
Ride-bumpiness and the influence of active control systems
N80-29991

ROBOTS
Symposium on Theory and Practice of Robots and Manipulators, 3rd, Udine, Italy, September 12-15, 1978, Proceedings
A80-45676

On the grasping process for objects of irregular shape
A80-45680

Application of bond graphs to the synthesis and analysis of telechirics and robots
A80-45682

Adaptive control of technological industrial robots for welding
A80-45693

S

SATELLITE SOLAR POWER STATIONS
Assessment of the effects of the zero gravity environment on the health and safety of space workers
[NASA-TM-81122] N80-30038

SECURITY
Automated psychological stress detection in an entry portal system
[SAND-80-7026] N80-29041

SEX FACTOR
Physiological influences upon the work performance of men and women
[AD-A081947] N80-30035

Human performance: Psychological and sex differences, a selected bibliography
[AD-A085824] N80-30042

SIGNAL PROCESSING
Theoretical analysis of error during signal averaging for detection of His-bundle activity,
A80-47065

SIGNAL TRANSMISSION
The discreteness of auditory information
A80-46962

SKIN TEMPERATURE (BIOLOGY)
The effect of the temperatures of different skin layers on the activity of cold thermoreceptors
A80-45092

SLEEP
Changes in the QRS complex of the electrocardiogram during sleep and exercise
[CSIR-ELEK-167] N80-29022

Effects of aircraft noise on sleep: An in-situ experience
N80-29042

SLEEP DEPRIVATION
Initial study on the effects of transformer and transmission line noise on people. Volume 2: Sleep interference
[EPRI-EA-1240-VOL-2] N80-29032

SOCIAL FACTORS
Controlled ecological life support systems /CELSS/ and space habitats, anthropology, and psychology
A80-46378

SOLAR RADIATION
The survival rate of various species of dark-colored mushrooms under the influence of artificial solar radiation
A80-46806

SOLID ROCKET PROPELLANTS
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels
[NASA-TM-74109] N80-29014

SONIC BOOMS
Aircraft sonic boom: Biological effects. Citations from the NTIS data base
[PB80-810310] N80-29036

SPACE COLONIES
Agriculture and food production
A80-46393

SPACE ENVIRONMENT SIMULATION
The effects of simulated weightlessness on the reproductive capacity of the great duckweed in the norm and under irradiation
A80-46812

SPACE FLIGHT
Genetic changes induced by space flight factors in barley seeds on Soyuz-5 and Soyuz-9 craft
[NASA-TM-76281] N80-29013

SPACE FLIGHT FEEDING
Nutrition, diet and food processing in controlled environment life support systems
A80-46392

Agriculture and food production
A80-46393

SPACE FLIGHT STRESS
The effect of space flight factors on the characteristics of nutrient media for the bacterium Proteus vulgaris
A80-46807

The effect of space flight conditions on higher plant cells in vitro culture
A80-46809

The effects of orbital flight conditions on the formation of the generative organs in Muscari racemosum and Anethum graveolens
A80-46810

Investigation of the effects of space flight factors on the emergence from the anabiotic state of turions of the great duckweed
A80-46811

SPACE FLIGHT TRAINING
Development of a multi-media crew-training program for the terminal configured vehicle mission simulator
A80-44201

SPACE MISSIONS
Development of a multi-media crew-training program for the terminal configured vehicle mission simulator
A80-44201
SPACE PERCEPTION
Accuracy of visual estimate of the remoteness of an object in a space having no optical reference
A80-45273
The axiomatic introduction of a metric in binocular visual space. I, II
A80-46961
Experimental investigations of binocular space perception
A80-46970
SPACE SHUTTLE ORBITERS
Environmental control and life support system: Analysis of STS-1
[NASA-TM-81032] N80-29043
SPACE SHUTTLES
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels
[NASA-TM-74109] N80-29014
SPACE SUITS
Pressure suit joint analyzer
[NASA-CASE-ARC-11314-1] N80-30043
SPACE TRANSPORTATION SYSTEM
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels
[NASA-TM-74109] N80-29014
SPACEBORNE EXPERIMENTS
Biological studies on the Cosmos biosatellite --- Russian book
A80-44125
Interpretation of findings of the biological experiments of the Viking lander on Mars
A80-44441
Results of the experiment 'Microorganism growth' on the Soyuz-22 spacecraft
A80-46804
The ultrastructure of Proteus vulgaris cells grown in orbit on board the Soyuz-22 spacecraft
A80-46805
SPACECRAFT CABIN ATMOSPHERES
Environmental control and life support system: Analysis of STS-1
[NASA-TM-81032] N80-29043
SPACECRAFT ENVIRONMENTS
Results of the experiment 'Microorganism growth' on the Soyuz-22 spacecraft
A80-46804
SPINAL CORD
Effect of restricted mobility on RNA content and nucleotide composition and on protein content in motoneurons of spinal cord anterior horns
[NASA-TM-76190] N80-29025
RNA content in spinal cord motoneurons during hypokinesia
[NASA-TM-76200] N80-29026
STEREOCHEMISTRY
From inanimate matter to living systems
[NASA-CR-163372] N80-29011
STEREOSCOPIC VISION
A computer implementation of a theory of human stereo vision
[AD-A084696] N80-29027
STRESS (PHYSIOLOGY)
Electroencephalographic changes in albino rats subjected to stress
[NASA-TM-76118] N80-29010
The effect of hypodynamia on the structure of the intraorganic blood vessels and the capacity of the blood stream in the diaphragm of white rats
[NASA-TM-76140] N80-29012
Effect of certain psychopharmacological preparations on adaptation under stress conditions
[NASA-TM-76105] N80-29016
The neural control of the coronary circulation during behavioral stress in conscious dogs
N80-29986
A method for studying human biodynamic responses to whole-body Z-axis
N80-29995
Clinical medical effects of head and neck response during biodynamic stress experiments
N80-30005
Acceleration and Performance Modeling Workshop
[AD-A083700] N80-30032
STRESS WAVES
Interaction of electromagnetic energy with absorptive material by thermally inducing elastic stress waves
N80-29988
STRUCTURAL DESIGN CRITERIA
Human engineering design criteria for modern control/display components and standard parts
[AD-A086139] N80-30046
SUBMERGED BODIES
Characterization of renal response to prolonged immersion in normal man
A80-47021
SUCROSE
Cerebrovascular permeability to sucrose in the rat exposed to 2,450-MHz microwaves
A80-47022
SURFACTANTS
Effects of inspired oxygen on the metabolism of pulmonary surfactant
[AD-A082006] N80-30036
SURVIVAL EQUIPMENT
Tornado - aircrew systems
N80-30024
SYSTEMS ANALYSIS
Application of bond graphs to the synthesis and analysis of telechirics and robots
A80-45682

T

TARGET RECOGNITION
Information transfer for improved pilot performance
N80-30025
TECHNOLOGY ASSESSMENT
Assessment of the effects of the zero gravity environment on the health and safety of space workers
[NASA-TM-81122] N80-30038
TECHNOLOGY UTILIZATION
Biomedical research, development and engineering at the Johns Hopkins University Applied Physics Laboratory
[PB80-175268] N80-29989
TELEOPERATORS
Manipulation of large objects
A80-45687
A contribution to the biomechanics of master-slave manipulators
A80-45691
TELEVISION EQUIPMENT
TV operator performance in real time air-to-ground reconnaissance missions under task-loading conditions
N80-30007
TEMPERATURE DEPENDENCE
The influence of temperature on the amplitude and frequency components of the EMG during brief and sustained isometric contractions
A80-45975
TEMPERATURE EFFECTS
The effect of the temperatures of different skin layers on the activity of cold thermoreceptors
A80-45092
TERMINAL CONFIGURED VEHICLE PROGRAM
Development of a multi-media crew-training program for the terminal configured vehicle mission simulator
A80-44201
TESTES
Plasma testosterone during treadmill exercise
A80-47023
THERMAL ENVIRONMENTS
The role of the hypoxic factor at elevated temperatures and possible mechanisms of its development
A80-45093
THERMAL PROTECTION
Protective clothing: Arctic and tropical environments. Citations from the NTIS data base
[PB80-809635] N80-29046
THERMAL STRESSES
Thermal and acceleration effects on aircrew members in chemical defense gear
[AD-A086026] N80-30045

THERMORECEPTORS
The effect of the temperatures of different skin layers on the activity of cold thermoreceptors
A80-45092

THREE DIMENSIONAL FLOW
Low frequency asymptotics for a hydroelastic model of the cochlea
A80-45623

TISSUES (BIOLOGY)
Radiofrequency radiation and living tissue: Theoretical studies
[AD-A085952] N80-30037

TORQUE
Pressure suit joint analyzer
[NASA-CASE-ARC-11314-1] N80-30043

TOXIC HAZARDS
Paramecium tetraurelia: Prescreen for hazardous agents
[DOE/EV-04477/1] N80-29017
Chemical identified in human biological media: A data base, volume 1, part 1, records 1-1580
[ORNL/EIS-163/V1-P1] N80-29029
Chemicals identified in human biological media: A data base, volume 1, part 2, records 1-1580
[ORNL/EIS-163/V1-P2] N80-29030

TOXICOLOGY
Teratologic effects of long-term exposure to diesel exhaust emissions (rats)
[PB80-159965] N80-29018
Teratologic effects of long-term exposure to diesel exhaust emission (rabbits)
[PB80-168529] N80-29019

TRAINING ANALYSIS
Cost effectiveness modeling for a total training system
[AIAA PAPER 80-1094] A80-45752

TRAINING SIMULATORS
Development of a multi-media crew-training program for the terminal configured vehicle mission simulator
A80-44201

TRANSFORMERS
Initial study on the effects of transformer and transmission line noise on people. Volume 1: Annoyance
[EPRI-EA-1240-VOL-1] N80-29031
Initial study on the effects of transformer and transmission line noise on people. Volume 3: Community reaction
[EPRI-EA-1240-VOL-3] N80-29033

TRANSMISSION LINES
Initial study on the effects of transformer and transmission line noise on people. Volume 1: Annoyance
[EPRI-EA-1240-VOL-1] N80-29031
Initial study on the effects of transformer and transmission line noise on people. Volume 3: Community reaction
[EPRI-EA-1240-VOL-3] N80-29033

TROPICAL REGIONS
Protective clothing: Arctic and tropical environments. Citations from the NTIS data base
[PB80-809635] N80-29046

TURBULENCE EFFECTS
The effect of turbulence on helmet mounted sight aiming accuracies
N80-30004

U

ULCERS
Electroencephalographic changes in albino rats subjected to stress
[NASA-TM-76110] N80-29010
Ulcers in restrained rats: Study of protective substances
[NASA-TM-76104] N80-29015
Effect of certain psychopharmacological preparations on adaptation under stress conditions
[NASA-TM-76105] N80-29016

ULTRAVIOLET RADIATION
The survival rate of various species of dark-colored mushrooms under the influence of artificial solar radiation
A80-46806

URINE
Extremes of urine osmolality - Lack of effect on red blood cell survival
A80-46196

Design, fabrication and testing of a dual catalyst ammonia removal system for a urine VCD unit
[NASA-CR-152372] N80-29023

V

VASCULAR SYSTEM
Cerebrovascular permeability to sucrose in the rat exposed to 2,450-MHz microwaves
A80-47022

VERY LONG BASE INTERFEROMETRY
A very long baseline interferometry sky survey
N80-28812

VESTIBULAR NYSTAGMUS
Vestibular compensation in the rat: A model for motor learning
N80-29984

VIBRATION EFFECTS
A method for studying human biodynamic responses to whole-body Z-axis
N80-29999
Head movements induced by vertical vibrations
N80-30000
The effect of reclined seating on the transmission of linear vibration to the head
N80-30001
The effects of aircraft vibration on vision
N80-30002
The effect of 3-25 Hz vibration on the legibility of numeric light emitting diode displays
N80-30003
Helmet-mounted devices in low-flying high-speed aircraft
N80-30010
Response of the cardiovascular system to vibration and combined stresses
[AD-A081879] N80-30034

VIBRATION MEASUREMENT
Head movements induced by vertical vibrations
N80-30000

VIBRATIONAL STRESS
Quantifying the agression generated by low frequency vibrations
N80-29998

VIKING LANDER SPACECRAFT
Interpretation of findings of the biological experiments of the Viking lander on Mars
A80-44441

VISION
Parallel visual pathways - A review
A80-44765
Research for visual enhancement for high speed low level flight sponsored by the Naval Air Systems Command
N80-30012

VISUAL ACUITY
A review of dynamic visual acuity
[AD-A085060] N80-30041

VISUAL FIELDS
The role of helmet mounted displays in high-speed low-level flight
N80-30011

VISUAL OBSERVATION
Accuracy of visual estimate of the remoteness of an object in a space having no optical reference
A80-45273

VISUAL PERCEPTION
A computer implementation of a theory of human stereo vision
[AD-A084696] N80-29027
The effects of aircraft vibration on vision
N80-30002

VISUAL TASKS
An information processing mechanism for systems with boundary contrast and some optical illusions
A80-46972
A review of dynamic visual acuity
[AD-A085060] N80-30041

W

WALKING MACHINES
Use of active compliance in the control of legged vehicles
A80-46550

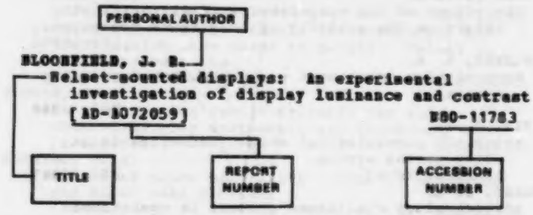
WATER BALANCE
  Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men
    A80-45974
WATER CONSUMPTION
  Extremes of urine osmolality - Lack of effect on red blood cell survival
    A80-46196
WATER RECLAMATION
  Design, fabrication and testing of a dual catalyst ammonia removal system for a urine VCD unit
  [NASA-CR-152372] N80-29023
WEAPON SYSTEMS
  Operational roles, aircrew systems and human factors in future high performance aircraft
  [AGARD-CP-266] N80-30019
  Weapons systems of the Mirage 2000: Man machine interface
    N80-30023
WEAPONS DELIVERY
  Information transfer for improved pilot performance
    N80-30025
WEIGHTLESSNESS
  Design opportunities - Zero gravity versus one gravity environments
    A80-46398
  Assessment of the effects of the zero gravity environment on the health and safety of space workers
  [NASA-TM-81122] N80-30030
  Procedural tests for anti-G protective devices. Volume 2: G-sensitivity tests
  [AD-A085982] N80-30044
WEIGHTLESSNESS SIMULATION
  The effects of simulated weightlessness on the reproductive capacity of the great duckweed in the norm and under irradiation
    A80-46812
WELDING MACHINES
  Adaptive control of technological industrial robots for welding
    A80-45693
WIND SHEAR
  The effect of a predictive wind shear chart on pilot landing performance
  [UTIAS-TN-220] N80-29039
WORK CAPACITY
  Work capacity during 3-wk sojourn at 4,300 m - Effects of relative polycythemia
    A80-47025
  Physiological influences upon the work performance of men and women
  [AD-A081947] N80-30035
WORKLOADS (PSYCHOPHYSIOLOGY)
  Operational aspects of guidance and control advances versus pilot workload for low altitude, high speed flight
    N80-30006
  The influence of the design of displays on cockpit workload
    N80-30008
  Human factors in Mirage 2000 missions
    N80-30028

blank page

PERSONAL AUTHOR INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 212)* **NOVEMBER 1980**

Typical Personal Author Index Listing


PERSONAL AUTHOR
BLOOMFIELD, J. R.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059]
N80-11783
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ALBANESE, R. A.
Radiofrequency radiation and living tissue: Theoretical studies
[AD-A085952] N80-30037

ALESHIN, G. V.
An information processing mechanism for systems with boundary contrast and some optical illusions
A80-46972

ALLAN, J. R.
Effects on performance of thermal strain encountered during high-speed, low-level flight
N80-29996

ALLEVARD, A. M.
Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men
A80-45974

ALLRED, J. E.
Procedural tests for anti-G protective devices. Volume 2: G-sensitivity tests
[AD-A085982] N80-30044

AMBROSE, J. T.
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels
[NASA-TM-74109] N80-29014

AMOORE, J. N.
Changes in the QRS complex of the electrocardiogram during sleep and exercise
[CSIR-ELEK-167] N80-29022

ANDERSON, N.
A method for studying human biodynamic responses to whole-body Z-axis
N80-29999

ANNAT, G.
Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men
A80-45974

ANTONENKO, A. L.
The survival rate of various species of dark-colored mushrooms under the influence of artificial solar radiation
A80-46806

ANTONENKO, V. T.
Adaptive control of technological industrial robots for welding
A80-45693

ASSOULINE, G.
Electroencephalographic changes in albino rats subjected to stress
[NASA-TM-76118] N80-29010

AUXIER, J. A.
Health effects of low level radiation
[DOE/TIC-11176] N80-29034

AVELLINI, B. A.
Physiological responses of physically fit men and women to acclimation to humid heat
A80-47024

B

BABSKII, V. G.
Results of the experiment 'Microorganism growth' on the Soyuz-22 spacecraft
A80-46804

The effect of space flight factors on the characteristics of nutrient media for the bacterium Proteus vulgaris
A80-46807

BALDAUF, R. F.
Chemical identified in human biological media: A data base, volume 1, part 1, records 1-1580
[ORNL/EIS-163/V1-P1] N80-29029

Chemicals identified in human biological media: A data base, volume 1, part 2, records 1-1580
[ORNL/EIS-163/V1-P2] N80-29030

BARNES, G. R.
The effects of aircraft vibration on vision
N80-30002

BECK, R. P.
Tornado - aircrew systems
N80-30024

BEJCZY, A. K.
Manipulation of large objects
A80-45687

BELL, R. L.
Thermal response model of a simulated cranial structure exposed to radiofrequency radiation
A80-47064

Radiofrequency radiation and living tissue: Theoretical studies
[AD-A085952] N80-30037

BENNETT, R. L.
Initial study on the effects of transformer and transmission line noise on people. Volume 1: Annoyance
[EPRI-EA-1240-VOL-1] N80-29031

Initial study on the effects of transformer and transmission line noise on people. Volume 2: Sleep interference
[EPRI-EA-1240-VOL-2] N80-29032

BIANCHI, G.
Symposium on Theory and Practice of Robots and Manipulators, 3rd, Udine, Italy, September 12-15, 1978, Proceedings
A80-45676

On the grasping process for objects of irregular shape
A80-45680

BILLMAN, G. E.
The neural control of the coronary circulation during behavioral stress in conscious dogs
N80-29986

BOCHAGOVA, O. P.
The ultrastructure of Proteus vulgaris cells grown in orbit on board the Soyuz-22 spacecraft
A80-46805

BOCK, O. L.
Visually induced self-motion sensation adapts rapidly to left-right visual reversal
A80-44213

BOGATINA, N. I.
The effects of low-intensity magnetic fields on plant cell reproduction
A80-46813

BORREDON, P.
Quantifying the agression generated by low frequency vibrations
N80-29998

BRIGGS, G. B.
Teratologic effects of long-term exposure to diesel exhaust emissions (rats)
[PB80-159965] N80-29018
Teratologic effects of long-term exposure to diesel exhaust emission (rabbits)
[PB80-168529] N80-29019

BRIGGS, R. L.
Use of active compliance in the control of legged vehicles
A80-46550

BRUCE, R. A.
Maximal cardiac output during upright exercise - Approximate normal standards and variations with coronary heart disease
A80-44249

BUCHE, L.
Ulcers in restrained rats: Study of protective substances
[NASA-TM-76184] N80-29015

BUDINIKAS, P.
Design, fabrication and testing of a dual catalyst ammonia removal system for a urine VCD unit
[NASA-CR-152372] N80-29023

BUREV, D. D.
Standard man-machine procedure of optimal synthesis in computer-aided design systems. II
A80-45078

BURR, J. G.
Thermal response model of a simulated cranial structure exposed to radiofrequency radiation
A80-47064

C

CAPRIHAN, A.
Theoretical analysis of error during signal averaging for detection of His-bundle activity,
A80-47065

CARRIGAN, B.
Bionics. Citations from the NTIS data base
[PB80-810641] N80-30039

CHAFFEE, V. W.
Teratologic effects of long-term exposure to diesel exhaust emissions (rats)
[PB80-159965] N80-29018

CHESTON, T. S.
Controlled ecological life support systems /CELSS/ and space habitats, anthropology, and psychology
A80-46378

CHISUM, G. T.
The role of helmet mounted displays in high-speed low-level flight
N80-30011
Research for visual enhancement for high speed low level flight sponsored by the Naval Air Systems Command
N80-30012

CLARK, J. F.
Nutrition, diet and food processing in controlled environment life support systems
A80-46392

COATES, G. D.
Physiological influences upon the work performance of men and women
[AD-A081947] N80-30035

COHEN, H. H.
Research for visual enhancement for high speed low level flight sponsored by the Naval Air Systems Command
N80-30012

COHOON, D. K.
Thermal response model of a simulated cranial structure exposed to radiofrequency radiation
A80-47064

COLEMAN, E. A.
Astronaut training manual
[NASA-CR-160758] N80-29024

COLIN, J.
Thermic problems presented by high-speed, low-level flight
N80-29995

CONE, M. V.
Chemical identified in human biological media: A data base, volume 1, part 1, records 1-1580
[ORNL/EIS-163/V1-P1] N80-29029
Chemicals identified in human biological media: A data base, volume 1, part 2, records 1-1580
[ORNL/EIS-163/V1-P2] N80-29030

D

DANILOVA, N. K.
The effect of the temperatures of different skin layers on the activity of cold thermoreceptors
A80-45092

DAULERIO, L. A.
Crew station assessment using the Bioman modeling system
N80-30014

DAVIS, J. G.
Automated psychological stress detection in an entry portal system
[SAND-80-7026] N80-29041

DEHART, R. L.
Biotechnology challenges present in operational high-speed low-level flight
N80-29994

DELL, J. L.
Human factors aspects in high speed low level flight
N80-30026

DENUNZIO, A. G.
Characterization of renal response to prolonged immersion in normal man
A80-47021

DEROUEN, T. A.
Maximal cardiac output during upright exercise - Approximate normal standards and variations with coronary heart disease
A80-44249

DOBORTSEVA, R. L.
Genetic changes induced by space flight factors in barley seeds on Soyuz-5 and Soyuz-9 craft
[NASA-TM-76281] N80-29013

E

EBERHARDT, N. K.
Physiological influences upon the work performance of men and women
[AD-A081947] N80-30035

ECLACHE, J. P.
Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men
A80-45974

EIKE, D. R.
Human engineering design criteria for modern control/display components and standard parts
[AD-A086139] N80-30046

ENGLE, R.
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels
[NASA-TM-74109] N80-29014

ENSMINGER, J. T.
Chemical identified in human biological media: A data base, volume 1, part 1, records 1-1580
[ORNL/EIS-163/V1-P1] N80-29029
Chemicals identified in human biological media: A data base, volume 1, part 2, records 1-1580
[ORNL/EIS-163/V1-P2] N80-29030

EPSTEIN, M.
Characterization of renal response to prolonged immersion in normal man
A80-47021

EWING, C. L.
A method for studying human biodynamic responses to whole-body Z-axis
N80-29999
Clinical medical effects of head and neck response during biodynamic stress experiments
N80-30005

F

FAM, W. Z.
Long-term biological effects of very intense 60 Hz electric field on mice
A80-44196

FARRELL, D. E.
Magnetic study of the His-Purkinje conduction system in man
A80-44195

FIDELL, S. A.
Initial study on the effects of transformer and transmission line noise on people. Volume 1: Annoyance
[EPRI-EA-1240-VOL-1] N80-29031
Initial study on the effects of transformer and transmission line noise on people. Volume 3: Community reaction
[EPRI-EA-1240-VOL-3] N80-29033

FLEGER, S. A.
Human engineering design criteria for modern control/display components and standard parts
[AD-A086139] N80-30046

FLEMING, J. E.
Extremes of urine osmolality - Lack of effect on red blood cell survival
A80-46196

FOMICHEVA, V. M.
The effects of low-intensity magnetic fields on plant cell reproduction
A80-46813

FONDARAI, J.
Electroencephalographic changes in albino rats subjected to stress
[NASA-TM-76118] N80-29010

FOWLER, W. E.
The structure of fibrinogen and its intermole associations
N80-30030

FOX, S. W.
From inanimate matter to living systems
[NASA-CR-163372] N80-29011

FRAENZLE, S.
Interpretation of findings of the biological experiments of the Viking lander on Mars
A80-44441

FRISCH, G. D.
Crew station assessment using the Bioman modeling system
N80-30014

FROLOV, K. V.
A contribution to the biomechanics of master-slave manipulators
A80-45691

G

GAGNEUX, J. M.
Effects of aircraft noise on sleep: An in-situ experience
N80-29042

GALLAIRE, D.
Ulcers in restrained rats: Study of protective substances
[NASA-TM-76184] N80-29015

GALVIN, C. E.
Procedural tests for anti-G protective devices. Volume 2: G-sensitivity tests
[AD-A085982] N80-30044

GAVRISH, T. G.
Results of the experiment 'Microorganism growth' on the Soyuz-22 spacecraft
A80-46804

GEELEN, G.
Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men
A80-45974

GERUS, A. I.
The effect of hypodynamia on the structure of the intraorganic blood vessels and the capacity of the blood stream in the diaphragm of white rats
[NASA-TM-76140] N80-29012

GHARIB, C.
Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men
A80-45974

GIBSON, T. M.
Effects on performance of thermal strain encountered during high-speed, low-level flight
N80-29996

GILBERT, N. S.
Clinical medical effects of head and neck response during biodynamic stress experiments
N80-30005

GLAISTER, D. H.
High-Speed, Low-Level Flight: Aircrew Factors
[AGARD-CP-267] N80-29990

GORBUNOVA, A. V.
Effect of restricted mobility on RNA content and nucleotide composition and on protein content in motoneurons of spinal cord anterior horns
[NASA-TM-76190] N80-29025
RNA content in spinal cord motoneurons during hypokinesia
[NASA-TM-76200] N80-29026

GRABINA, V. A.
An information processing mechanism for systems with boundary contrast and some optical illusions
A80-46972

GREEN, D.
Maximal cardiac output during upright exercise - Approximate normal standards and variations with coronary heart disease
A80-44249

GREEN, R. G.
Effects on performance of thermal strain encountered during high-speed, low-level flight
N80-29996

GRIMSON, W. E. L.
A computer implementation of a theory of human stereo vision
[AD-A084696] N80-29027

GRODZINSKII, D. M.
Investigation of the effects of space flight factors on the emergence from the anabiotic state of turions of the great duckweed
A80-46811
The effects of simulated weightlessness on the reproductive capacity of the great duckweed in the norm and under irradiation
A80-46812

GUIGNARD, J. C.
A method for studying human biodynamic responses to whole-body Z-axis
N80-29999

GUTIN, B.
Plasma testosterone during treadmill exercise
A80-47023

H

HARRISON, E. A.
Aircraft sonic boom: Biological effects. Citations from the NTIS data base
[PB80-810310] N80-29036
Hypothermia. Citations from the NTIS data base
[PB80-180526] N80-29037

HAUBOLD, A. D.
Studies of carbon-surfaced polymeric, metallic and ceramic biomaterials
[PB80-168859] N80-29035

HECK, W. W.
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels
[NASA-TM-74109] N80-29014

HENNE, S. P.
Teratologic effects of long-term exposure to diesel exhaust emission (rabbits)
[PB80-168529] N80-29019

HERR, C.
Paramecium tetraurelia: Prescreen for hazardous agents
[DOE/EV-04477/1] N80-29017

HOLMES, M. H.
Low frequency asymptotics for a hydroelastic model of the cochlea
A80-45623

HOLMES, R. H.
The influence of the design of displays on cockpit workload
N80-30008

HOOPS, H.
The advantage of the color-code modality versus alphanumeric and symbol code
[AD-A084383] N80-29044

HORONJEFF, R. D.
Initial study on the effects of transformer and transmission line noise on people. Volume 2: Sleep interference
[EPRI-EA-1240-VOL-2] N80-29032

HORSTMAN, D.
Work capacity during 3-wk sojourn at 4,300 m - Effects of relative polycythemia
A80-47025

HORVATH, S. M.
Plasma testosterone during treadmill exercise
A80-47023

HOSSACK, K. F.
Maximal cardiac output during upright exercise - Approximate normal standards and variations with coronary heart disease
A80-44249

HUANG, J.-K.
Visually induced self-motion sensation adapts rapidly to left-right visual reversal
A80-44213

HUDGENS, G. A.
Human performance: Psychological and sex differences, a selected bibliography
[AD-A085824] N80-30042

HUSSEY, D. W.
Colour displays: Their availability, performance and application to improved crew efficiency
N80-30009

I

IAMPIETRO, P. F.
Operational roles, aircrew systems and human factors in future high performance aircraft
[AGARD-CP-266] N80-30019

ILIN, E. A.
Biological studies on the Cosmos biosatellite
A80-44125

INFANTOSI, A. F. C.
Theoretical analysis of error during signal averaging for detection of His-bundle activity,
A80-47065

IVANOV, K. P.
The effect of the temperatures of different skin layers on the activity of cold thermoreceptors
A80-45092

J

JACKSON, R. E.
Work capacity during 3-wk sojourn at 4,300 m - Effects of relative polycythemia
A80-47025

JARRETT, D. N.
Helmet-mounted devices in low-flying high-speed aircraft
N80-30010

JARSAILLON, E.
Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men
A80-45974

JOHNSON, J. H.
Human engineering design criteria for modern control/display components and standard parts
[AD-A086139] N80-30046

JOHNSTON, M. E.
The effect of reclined seating on the transmission of linear vibration to the head
N80-30001

The effect of 3-25 Hz vibration on the legibility of numeric light emitting diode displays
N80-30003

JONES, J. G.
Ride-bumpiness and the influence of active control systems
N80-29991

K

KAMON, E.
Physiological responses of physically fit men and women to acclimation to humid heat
A80-47024

KEDZIOR, K.
Symposium on Theory and Practice of Robots and Manipulators, 3rd, Udine, Italy, September 12-15, 1978, Proceedings
A80-45676

KENRIG, IU. IU.
The role of the hypoxic factor at elevated temperatures and possible mechanisms of its development
A80-45093

KENTON, E.
Protective clothing: Arctic and tropical environments. Citations from the NTIS data base
[PB80-809635] N80-29046

Protective clothing: Survival, aircraft, and combat environments. Citations from the NTIS data base
[PB80-809650] N80-29047

KHRISTENKO, L. A.
The effects of orbital flight conditions on the formation of the generative organs in Muscari racemosum and Anethum graveolens
A80-46810

KING, M.
Effects of inspired oxygen on the metabolism of pulmonary surfactant
[AD-A082006] N80-30036

KING, R. J.
Effects of inspired oxygen on the metabolism of pulmonary surfactant
[AD-A082006] N80-30036

KIRBY, R. H.
Physiological influences upon the work performance of men and women
[AD-A081947] N80-30035

KLEIN, C. A.
Use of active compliance in the control of legged vehicles
A80-46550

KNAPP, C. F.
Response of the cardiovascular system to vibration and combined stresses
[AD-A081879] N80-30034

KNOTT, W. M.
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels
[NASA-TM-74109] N80-29014

KOBRINSKII, A. E.
A contribution to the biomechanics of master-slave manipulators
A80-45691

KONSHIN, N. I.
Results of the experiment 'Microorganism growth' on the Soyuz-22 spacecraft
A80-46804

The ultrastructure of Proteus vulgaris cells grown in orbit on board the Soyuz-22 spacecraft
A80-46805

Investigation of the effects of space flight factors on the emergence from the anabiotic state of turions of the great duckweed
A80-46811

KONSTANTINOV, V. A.
The effect of the temperatures of different skin layers on the activity of cold thermoreceptors
A80-45092

KORDIUM, E. L.
The ultrastructure of Proteus vulgaris cells grown in orbit on board the Soyuz-22 spacecraft
A80-46805

The effects of orbital flight conditions on the formation of the generative organs in Muscari racemosum and Anethum graveolens
A80-46810

KORDIUM, V. A.
Results of the experiment 'Microorganism growth' on the Soyuz-22 spacecraft
A80-46804

The effect of space flight factors on the characteristics of nutrient media for the bacterium Proteus vulgaris
A80-46807

KRAJEWSKI, J. T.
Physiological responses of physically fit men and women to acclimation to humid heat
A80-47024

KRABBS, E.
Influences of geophysical factors (meteorological and topographical) on the pilot-aircraft-system in high speed low level flight (HSLLF)
N80-29992

KROEMER, K. H. E.
A technique for establishing true levels of muscle strength exertion
[AD-A083576] N80-29028

KULIK, J. J.
Research for visual enhancement for high speed low level flight sponsored by the Naval Air Systems Command
N80-30012

KULWICKI, P. V.
Addressing human factor options in conceptual design
N80-30027

KUSHPIL, V. I.
Accuracy of visual estimate of the remoteness of an object in a space having no optical reference
A80-45273

KUSUMI, F.
Maximal cardiac output during upright exercise - Approximate normal standards and variations with coronary heart disease
A80-44249

KUTLAKHMEDOV, IU. A.
Investigation of the effects of space flight factors on the emergence from the anabiotic state of turions of the great duckweed
A80-46811
The effects of simulated weightlessness on the reproductive capacity of the great duckweed in the norm and under irradiation
A80-46812

L

LAWSON, C. J.
Effects on performance of thermal strain encountered during high-speed, low-level flight
N80-29996

LEE, J. J.
Development in high-speed low-level flight: The pilot's viewpoint
N80-29993

LEGROS, J. J.
Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men
A80-45974

LENNIE, P.
Parallel visual pathways - A review
A80-44765

LEON, H. A.
Extremes of urine osmolality - Lack of effect on red blood cell survival
A80-46196

LEWANDOWSKI, P. E.
Acceleration and Performance Modeling Workshop
[AD-A083700] N80-30032

LEWIS, A.
Research for visual enhancement for high speed low level flight sponsored by the Naval Air Systems Command
N80-30012

LIND, A. R.
The influence of temperature on the amplitude and frequency components of the EMG during brief and sustained isometric contractions
A80-45975

LITVIN, V. M.
The effects of low-intensity magnetic fields on plant cell reproduction
A80-46813

LIULICHEV, A. N.
The survival rate of various species of dark-colored mushrooms under the influence of artificial solar radiation
A80-46806

LOEPPKY, J. A.
Automated psychological stress detection in an entry portal system
[SAND-80-7026] N80-29041

LOPATCHENKO, B. K.
The axiomatic introduction of a metric in binocular visual space. I, II
A80-46961
Experimental investigations of binocular space perception
A80-46970

LOVE, P. R.
Procedural tests for anti-G protective devices. Volume 2: G-sensitivity tests
[AD-A085982] N80-30044

LUSTED, H. S.
Interaction of responses to acoustic and electric stimuli at the auditory cortex
N80-30029

LUTTER, R. N.
Information transfer for improved pilot performance
N80-30025

M

MACDONALD, G. J.
On the interaction of non-ionizing radiation with people
[AD-A082538] N80-30033

MAJEWSKI, P. L.
A method for studying human biodynamic responses to whole-body Z-axis
N80-29999
Clinical medical effects of head and neck response during biodynamic stress experiments
N80-30005

MALONE, T. B.
Human engineering design criteria for modern control/display components and standard parts
[AD-A086139] N80-30046

MANKO, V. G.
Results of the experiment 'Microorganism growth' on the Soyuz-22 spacecraft
A80-46804
The effect of space flight factors on the characteristics of nutrient media for the bacterium Proteus vulgaris
A80-46807

MARNS, B. J.
Blood flow to adipose tissues in the male Sprague-Dawley rat
N80-29983

MARKOS, A. T.
Development of a multi-media crew-training program for the terminal configured vehicle mission simulator
A80-44201

MARRAS, W. S.
A technique for establishing true levels of muscle strength exertion
[AD-A083576] N80-29028

MARTIN, F. N.
Chemical identified in human biological media: A data base, volume 1, part 1, records 1-1580
[ORNL/EIS-163/V1-P1] N80-29029
Chemicals identified in human biological media: A data base, volume 1, part 2, records 1-1580
[ORNL/EIS-163/V1-P2] N80-29030

MARTIN, H.
Effects of inspired oxygen on the metabolism of pulmonary surfactant
[AD-A082006] N80-30036

MASHINSKII, A. L.
Results of the experiment 'Microorganism growth' on the Soyuz-22 spacecraft
A80-46804
The effect of space flight conditions on higher plant cells in vitro culture
A80-46809
The effects of orbital flight conditions on the formation of the generative organs in Muscari racemosum and Anethum graveolens
A80-46810
Investigation of the effects of space flight factors on the emergence from the anabiotic state of turions of the great duckweed
A80-46811

MCCRIMMON, J. N.
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels
[NASA-TM-74109] N80-29014

MEEKER, L. J.
Procedural tests for anti-G protective devices. Volume 2: G-sensitivity tests
[AD-A085982] N80-30044

MELIN, B.
Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men
A80-45974

MERCIER, J.
Electroencephalographic changes in albino rats subjected to stress
[NASA-TM-76118] N80-29010

MERTENS, H.
Head movements induced by vertical vibrations
N80-30000

MEZENTSEVA, L. N.
Effect of certain psychopharmacological preparations on adaptation under stress conditions
[NASA-TM-76185] N80-29016

MILLER, S. J.
Physiological influences upon the work performance of men and women
[AD-A081947] N80-30035

MILLIGAN, J. R.
Cost effectiveness modeling for a total training system
[AIAA PAPER 80-1894] A80-45752

MORABITO, D. D.
A very long baseline interferometry sky survey
N80-28812

MORECKI, A.
Symposium on Theory and Practice of Robots and Manipulators, 3rd, Udine, Italy, September 12-15, 1978, Proceedings
A80-45676

MORRISON, T. R.
A review of dynamic visual acuity
[AD-A085860] N80-30041

MUTSCHLER, H.
TV operator performance in real time air-to-ground reconnaissance missions under task-loading conditions
N80-30007

MUZZY, W. H., III
A method for studying human biodynamic responses to whole-body Z-axis
N80-29999

N

NECHITAILO, G. S.
Investigation of the effects of space flight factors on the emergence from the anabiotic state of turions of the great duckweed
A80-46811

NELSON, D. R.
Effects of background illumination and target contrast on flashblindness recovery time
[AD-A071906] N80-30031

NETO, A. C.
Theoretical analysis of error during signal averaging for detection of His-bundle activity,
A80-47065

NGI, L. V.
The role of the hypoxic factor at elevated temperatures and possible mechanisms of its development
A80-45093

NORGREN, R.
Magnetic study of the His-Purkinje conduction system in man
A80-44195

NUNNELEY, S. A.
Aircrew heat stress during high-speed, low-level flight
N80-29997

NUZHDIN, N. I.
Genetic changes induced by space flight factors in barley seeds on Soyuz-5 and Soyuz-9 craft
[NASA-TM-76281] N80-29013

O

ODONNELL, C. A.
Design opportunities - Zero gravity versus one gravity environments
A80-46398

OMAN, C. M.
Visually induced self-motion sensation adapts rapidly to left-right visual reversal
A80-44213

OSCAR, K. J.
Interaction of electromagnetic energy with absorptive material by thermally inducing elastic stress waves
N80-29988

OSTGAARD, M. A.
Operational aspects of guidance and control advances versus pilot workload for low altitude, high speed flight
N80-30006

P

PARFENOV, G. P.
Biological studies on the Cosmos biosatellite
A80-44125

PEARSONS, K. S.
Initial study on the effects of transformer and transmission line noise on people. Volume 1: Annoyance
[EPRI-EA-1240-VOL-1] N80-29031
Initial study on the effects of transformer and transmission line noise on people. Volume 3: Community reaction
[EPRI-EA-1240-VOL-3] N80-29033

PELLEGRINO, S. J.
A rule-based model of human problem solving performance in fault diagnosis tasks
A80-46549

PELLIEUX, L.
Quantifying the agression generated by low frequency vibrations
N80-29998

PENN, J. W.
Thermal response model of a simulated cranial structure exposed to radiofrequency radiation
A80-47064

PETROFSKY, J. S.
The influence of temperature on the amplitude and frequency components of the EMG during brief and sustained isometric contractions
A80-45975

PHILLIPS, J. B.
Agriculture and food production
A80-46393

POLISHCHUK, L. P.
Results of the experiment 'Microorganism growth' on the Soyuz-22 spacecraft
A80-46804

POLIVODA, L. V.
Results of the experiment 'Microorganism growth' on the Soyuz-22 spacecraft
A80-46804
The effect of space flight factors on the characteristics of nutrient media for the bacterium Proteus vulgaris
A80-46807

POLSON, C. D. A.
A comparative study in molecular aging: Alterations to the nucleic acids of cells of a representative plant, invertebrate and vertebrate animal of various ages
N80-29987

POPOVA, A. F.
The ultrastructure of Proteus vulgaris cells grown in orbit on board the Soyuz-22 spacecraft
A80-46805
The effects of orbital flight conditions on the formation of the generative organs in Muscari racemosum and Anethum graveolens
A80-46810

PREFONTAINE, G.
Cerebrovascular permeability to sucrose in the rat exposed to 2,450-MHz microwaves
A80-47022

PRESTON, R.
Cerebrovascular permeability to sucrose in the rat exposed to 2,450-MHz microwaves
A80-47022

PRESTON, R. A.
A very long baseline interferometry sky survey
N80-28812

Q

QUANDIEU, P.
Quantifying the agression generated by low frequency vibrations
N80-29998

QUENTEL, G.
Ocular risks of astronomical observations
A80-44593

R

RAMACHANDRAN, N.
Characterization of renal response to prolonged immersion in normal man
A80-47021

RECKHOW, K. H.
An empirical study of factors affecting blue-green versus nonblue-green algal dominance in lakes
[PB80-169311] N80-29020

REPLOGLE, C. R.
Thermal and acceleration effects on aircrew members in chemical defense gear
[AD-A086026] N80-30045

RHOUCK, J. A.
Development of a multi-media crew-training program for the terminal configured vehicle mission simulator
A80-44201

RIBEIRO, J. R.
Theoretical analysis of error during signal averaging for detection of His-bundle activity,
A80-47065

RICH, A.
Three-dimensional structure of Escherichia coli initiator tRNA/f//Met/
A80-44608

RICHARDSON, D. W.
Determination of the impact of digital data broadcast on flight technical error
[AD-A085177] N80-29045

RODRIGUEZ-LOPEZ, E.
Acceleration and Performance Modeling Workshop
[AD-A083700] N80-30032

ROE, B. A.
Three-dimensional structure of Escherichia coli initiator tRNA/f//Met/
A80-44608

ROMANOV, L. A.
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels
[NASA-TM-74109] N80-29014

ROSENWASSER, F.
Research for visual enhancement for high-speed low level flight sponsored by the Naval Air Systems Command
N80-30012

ROUHET, J. C.
Quantifying the agression generated by low frequency vibrations
N80-29998

ROUSE, S. H.
A rule-based model of human problem solving performance in fault diagnosis tasks
A80-46549

ROUSE, W. B.
A rule-based model of human problem solving performance in fault diagnosis tasks
A80-46549

ROVETTA, A.
On the grasping process for objects of irregular shape
A80-45680

RUDENKO, N. B.
The effects of low-intensity magnetic fields on plant cell reproduction
A80-46813

RUDERMAN, M. A.
On the interaction of non-ionizing radiation with people
[AD-A082538] N80-30033

S

SAWYER, A. G.
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels
[NASA-TM-74109] N80-29014

SCHULTZ, M.
Crew station assessment using the Bioman modeling system
N80-30014

SCHWARTZ, E.
Head movements induced by vertical vibrations
N80-30000

SEDIN, A. A.
The effect of space flight factors on the characteristics of nutrient media for the bacterium Proteus vulgaris
A80-46807

SHARPE, J. E. E.
Application of bond graphs to the synthesis and analysis of telechirics and robots
A80-45682

SHIN, B. S.
Studies of carbon-surfaced polymeric, metallic and ceramic biomaterials
[PB80-168859] N80-29035

SHULGIN, I. V.
Experimental investigations of binocular space perception
A80-46970

SIDORENKO, P. G.
The effect of space flight conditions on higher plant cells in vitro culture
A80-46809

SIMONET, F.
Effects of aircraft noise on sleep: An in-situ experience
N80-29042

SIMPSON, J. T.
An empirical study of factors affecting blue-green versus nonblue-green algal dominance in lakes
[PB80-169311] N80-29020

SMEDLEY, D. C.
Effects of background illumination and target contrast on flashblindness recovery time
[AD-A071906] N80-30031

SMITH-SONNEBORN, J.
Paramecium tetraurelia: Prescreen for hazardous agents
[DOE/EV-04477/1] N80-29017

SOKIRKO, G. S.
Investigation of the effects of space flight factors on the emergence from the anabiotic state of turions of the great duckweed
A80-46811
The effects of simulated weightlessness on the reproductive capacity of the great duckweed in the norm and under irradiation
A80-46812

SOLOWKA, E. N.
The effect of a predictive wind shear chart on pilot landing performance
[UTIAS-TN-220] N80-29039

SPYNU, G. A.
Adaptive control of technological industrial robots for welding
A80-45693

STAHEL, E. P.
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels
[NASA-TM-74109] N80-29014

STANISHEVSKAYA, A. V.
Effect of certain psychopharmacological preparations on adaptation under stress conditions
[NASA-TM-76185] N80-29016

STEINES, G. J.
Environmental control and life support system: Analysis of STS-1
[NASA-TM-81032] N80-29043

STRIBLEY, R. F.
Aircrew heat stress during high-speed, low-level flight
N80-29997

STROHL, R. J.
Cost effectiveness modeling for a total training system
[AIAA PAPER 80-1894] A80-45752

T

TATHAM, N. O.
The effect of turbulence on helmet mounted sight aiming accuracies
N80-30004

TEFFETELLER, S. R.
Initial study on the effects of transformer and transmission line noise on people. Volume 2: Sleep interference
[EPRI-EA-1240-VOL-2] N80-29032
Initial study on the effects of transformer and transmission line noise on people. Volume 3: Community reaction
[EPRI-EA-1240-VOL-3] N80-29033

THOMAS, D. J.
A method for studying human biodynamic responses to whole-body Z-axis N80-29999
Clinical medical effects of head and neck response during biodynamic stress experiments N80-30005

THOMPSON, R. W.
Procedural tests for anti-G protective devices. Volume 2: G-sensitivity tests
[AD-A085982] N80-30044

TIMBAL, J.
Thermic problems presented by high-speed, low-level flight N80-29995

TIMOSHENKO, V. G.
Adaptive control of technological industrial robots for welding A80-45693

TORSANI-FATKIN, L. L.
Human performance: Psychological and sex differences, a selected bibliography
[AD-A085824] N80-30042

TRIMBLE, S.
Maximal cardiac output during upright exercise - Approximate normal standards and variations with coronary heart disease A80-44249

TRIPP, J. H.
Magnetic study of the His-Purkinje conduction system in man A80-44195

TYSON, J. D.
Response of selected plant and insect species to simulated solid rocket exhaust mixtures and to exhaust components from solid rocket fuels
[NASA-TM-74109] N80-29014

U

USENKO, S. A.
The discreteness of auditory information A80-46962

UVAROVA, S. A.
The effects of orbital flight conditions on the formation of the generative organs in Muscari racemosum and Anethum graveolens A80-46810

V

VALLET, M.
Effects of aircraft noise on sleep: An in-situ experience N80-29042

VANKIRK, E.
Paramecium tetraurelia: Prescreen for hazardous agents
[DOE/EV-04477/1] N80-29017

VARIN, G.
Weapons systems of the Mirage 2000: Man machine interface N80-30023

VASILEVSKAIA, A. I.
The survival rate of various species of dark-colored mushrooms under the influence of artificial solar radiation A80-46806

VEGHTE, J. H.
Acceleration and Performance Modeling Workshop
[AD-A083700] N80-30032
Thermal and acceleration effects on aircrew members in chemical defense gear
[AD-A086026] N80-30045

VENTERS, M. D.
Automated psychological stress detection in an entry portal system
[SAND-80-7026] N80-29041

VERKIN, B. I.
The effects of low-intensity magnetic fields on plant cell reproduction A80-46813

VESELOVA, E. K.
Accuracy of visual estimate of the remoteness of an object in a space having no optical reference A80-45273

VIEILLEFOND, H.
Human factors in Mirage 2000 missions N80-30028

VOGT, L.
Head movements induced by vertical vibrations N80-30000

VYKUKAL, H. C.
Pressure suit joint analyzer
[NASA-CASE-ARC-11314-1] N80-30043

W

WALGENBACH, S. C.
Effect of acceleration on circulatory and respiratory function in the domestic fowl N80-29985

WALTON, K. D.
Vestibular compensation in the rat: A model for motor learning N80-29984

WEBBON, B.
Pressure suit joint analyzer
[NASA-CASE-ARC-11314-1] N80-30043

WEED, R. D., III
Pilots who drink - FAA regulations and policy, and the Air Line Pilots Association treatment program A80-45025

WEISKOPF, R.
Work capacity during 3-wk sojourn at 4,300 m - Effects of relative polycythemia A80-47025

WERCHOWSKI, K. M.
Teratologic effects of long-term exposure to diesel exhaust emissions (rats)
[PB80-159965] N80-29018
Teratologic effects of long-term exposure to diesel exhaust emission (rabbits)
[PB80-168529] N80-29019

WHARF, J. H.
The effect of 3-25 Hz vibration on the legibility of numeric light emitting diode displays N80-30003

WIEDERREHBECKER, M. G.
Theoretical analysis of error during signal averaging for detection of His-bundle activity, A80-47065

WILKERSON, J. E.
Plasma testosterone during treadmill exercise A80-47023

WILLEMS, G. C.
A method for studying human biodynamic responses to whole-body Z-axis N80-29999

WOLBARSHT, M. L.
Research for visual enhancement for high speed low level flight sponsored by the Naval Air Systems Command N80-30012

WOO, N. H.
Three-dimensional structure of Escherichia coli initiator tRNA/f//Met/ A80-44608

Y

YATES, R. E.
Thermal and acceleration effects on aircrew members in chemical defense gear
[AD-A086026] N80-30045

Z

ZACHARY, W. W.
Decision aids for naval air ASW
[AD-A085134] N80-29040

ZEBIDI, A.
Plasma AVP, neurophysin, renin activity, and aldosterone during submaximal exercise performed until exhaustion in trained and untrained men A80-45974

ZHDANOVA, N. N.
The survival rate of various species of dark-colored mushrooms under the influence of artificial solar radiation
A80-46806
ZOLLARS, G. E.
Circadian rhythms. Citations from the International Aerospace Abstracts data base
[NASA-CR-163323] N80-30040

1. Report No.
NASA SP-7011 (212)

2. Government Accession No.

3. Recipient's Catalog No.

4. Title and Subtitle
AEROSPACE MEDICINE AND BIOLOGY
A Continuing Bibliography (Supplement 212)

5. Report Date
November 1980

6. Performing Organization Code

7. Author(s)

8. Performing Organization Report No.

9. Performing Organization Name and Address
National Aeronautics and Space Administration
Washington, D. C. 20546

10. Work Unit No.

11. Contract or Grant No.

12. Sponsoring Agency Name and Address

13. Type of Report and Period Covered

14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This bibliography lists 146 reports, articles, and other documents introduced into the NASA scientific and technical information system in October 1980.

17. Key Words (Suggested by Author(s))
Aerospace Medicine
Bibliographies
Biological Effects

18. Distribution Statement
Unclassified - Unlimited

19. Security Classif. (of this report)
Unclassified

20. Security Classif. (of this page)
Unclassified

21. No. of Pages
58

22. Price*
$7.00 HC

*For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1980

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to eleven special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley
COLORADO
University of Colorado, Boulder
DISTRICT OF COLUMBIA
Library of Congress
GEORGIA
Georgia Institute of Technology, Atlanta
ILLINOIS
The John Crerar Library, Chicago

MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge
MISSOURI
Linda Hall Library, Kansas City
NEW YORK
Columbia University, New York
OKLAHOMA
University of Oklahoma, Bizzell Library
PENNSYLVANIA
Carnegie Library of Pittsburgh
WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library
COLORADO
Denver Public Library
CONNECTICUT
Hartford Public Library
MARYLAND
Enoch Pratt Free Library, Baltimore
MASSACHUSETTS
Boston Public Library
MICHIGAN
Detroit Public Library
MINNESOTA
Minneapolis Public Library
MISSOURI
Kansas City Public Library
St. Louis Public Library
NEW JERSEY
Trenton Public Library

NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library
OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library
TENNESSEE
Memphis Public Library
TEXAS
Dallas Public Library
Fort Worth Public Library
WASHINGTON
Seattle Public Library
WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019.

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy of microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESA - Information Retrieval Service, European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

U.S.MAIL

NASA

POSTMASTER: **If Undeliverable (Section 158 Postal Manual) Do Not Return**

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP–7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP–7037	AERONAUTICAL ENGINEERING Engineering, design, and operation of aircraft and aircraft components	Monthly
NASA SP–7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP–7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP–7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP–7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

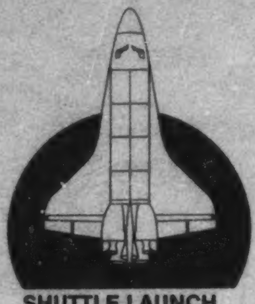
Washington, D.C. 20546

7011 (213)

NASA

Aerospace Medicine and Biology
A Continuing Bibliography with Indexes

NASA SP-7011 (213)
December 1980



SHUTTLE LAUNCH
MARCH 1981

National Aeronautics and Space Administration

NEWARK PUBLIC LIBRARY
FEB 6 1981
U. S. GOVT. PUBS.
DEPOSITORY 276

Aerospace Medicine & Biolog
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Ae
logy Aerospace Medicine & Bi
ine & Biology Aerospace Medi
ce Medicine & Biology Aerosp
Aerospace Medicine & Biolog
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Ae
logy Aerospace Medicine & Bi

NASA SP-7011 (213)
Aerospace Medicine and Biology
A Continuing Bibliography with Indexes
Pages 239 - 264
December 1980

NAS 1.21:

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series)	N80-30272 – N80-32322
IAA (A-10000 Series)	A80-47367 – A80-51201

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by PRC Data Services Company.

NASA SP-7011(213)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 213)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in November 1980 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA).*

Scientific and Technical Information Branch 1980
National Aeronautics and Space Administration
Washington, DC

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This supplement is available as NTISUB/123/093 from the National Technical Information Service (NTIS), Springfield, Virginia 22161 at the price of $7.00 domestic; $14.00 foreign.

INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 180 reports, articles and other documents announced during November 1980 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1980 Supplements.

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A80-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA), as follows: Paper copies of accessions are available at $7.00 per document up to a maximum of 40 pages. The charge for each additional page is $0.25. Microfiche(1) of documents announced in *IAA* are available at the rate of $3.00 per microfiche on demand, and at the rate of $1.25 per microfiche for standing orders for all *IAA* microfiche. The price for the *IAA* microfiche by category is available at the rate of $1.50 per microfiche plus a $1.00 service charge per category per issue. Microfiche of all the current AIAA Meeting Papers are available on a standing order basis at the rate of $1.50 per microfiche.

Minimum air-mail postage to foreign countries is $1.00 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

STAR ENTRIES (N80-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page viii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the * symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard $3.50 price, for those documents identified by a # symbol.)

---

(1) A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory.

Avail: DOE Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts*. Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center.

Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation.

Avail: USGS. Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction. The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction.

Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California. The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI.

Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown. (If none is given, inquiry should be addressed to the BLL.)

Avail: Fachinformationszentrum, Karlsruhe. Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM).

Avail: Issuing Activity, or Corporate Author, or no indication of availability. Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document.

Avail: U.S. Patent and Trademark Office. Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free.

Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is $50.00 domestic; $100.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics
and Astronautics
Technical Information Service
555 West 57th Street, 12th Floor
New York, New York 10019

British Library Lending Division,
Boston Spa, Wetherby, Yorkshire,
England

Commissioner of Patents and
Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service
ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Scientific and Technical Information
Facility
P.O. Box 8757
B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Branch (NST-41)
Washington, D.C. 20546

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, California 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey
1033 General Services Administration
Building
Washington, D.C. 20242

U.S. Geological Survey
601 E. Cedar Avenue
Flagstaff, Arizona 86002

U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

U.S. Geological Survey
Bldg. 25, Denver Federal Center
Denver, Colorado 80225

Fachinformationszentrum Energie, Physik,
Mathematik GMBH
7514 Eggenstein Leopoldshafen
Federal Republic of Germany

NTIS PRICE SCHEDULES

Schedule A

STANDARD PAPER COPY PRICE SCHEDULE

(Effective January 1, 1980)

Price Code	Page Range	North American Price	Foreign Price
A01	Microfiche	$ 3.50	$ 5.25
A02	001-025	5.00	10.00
A03	026-050	6.00	12.00
A04	051-075	7.00	14.00
A05	076-100	8.00	16.00
A06	101-125	9.00	18.00
A07	126-150	10.00	20.00
A08	151-175	11.00	22.00
A09	176-200	12.00	24.00
A10	201-225	13.00	26.00
A11	226-250	14.00	28.00
A12	251-275	15.00	30.00
A13	276-300	16.00	32.00
A14	301-325	17.00	34.00
A15	326-350	18.00	36.00
A16	351-375	19.00	38.00
A17	376-400	20.00	40.00
A18	401-425	21.00	42.00
A19	426-450	22.00	44.00
A20	451-475	23.00	46.00
A21	476-500	24.00	48.00
A22	501-525	25.00	50.00
A23	526-550	26.00	52.00
A24	551-575	27.00	54.00
A25	576-600	28.00	56.00
A99	601-up	-- 1/	-- 2/

1/ Add $1.00 for each additional 25 page increment or portion thereof for 601 pages up

2/ Add $2.00 for each additional 25 page increment or portion thereof for 601 pages and more

Schedule E

EXCEPTION PRICE SCHEDULE

Paper Copy & Microfiche

Price Code	North American Price	Foreign Price
E01	$ 5.50	$ 11.50
E02	6.50	13.50
E03	8.50	17.50
E04	10.50	21.50
E05	12.50	25.50
E06	14.50	29.50
E07	16.50	33.50
E08	18.50	37.50
E09	20.50	41.50
E10	22.50	45.50
E11	24.50	49.50
E12	27.50	55.50
E13	30.50	61.50
E14	33.50	67.50
E15	36.50	73.50
E16	39.50	79.50
E17	42.50	85.50
E18	45.50	91.50
E19	50.50	100.50
E20	60.50	121.50
E99 - Write for quote		
N01	28.00	40.00

TABLE OF CONTENTS

Page

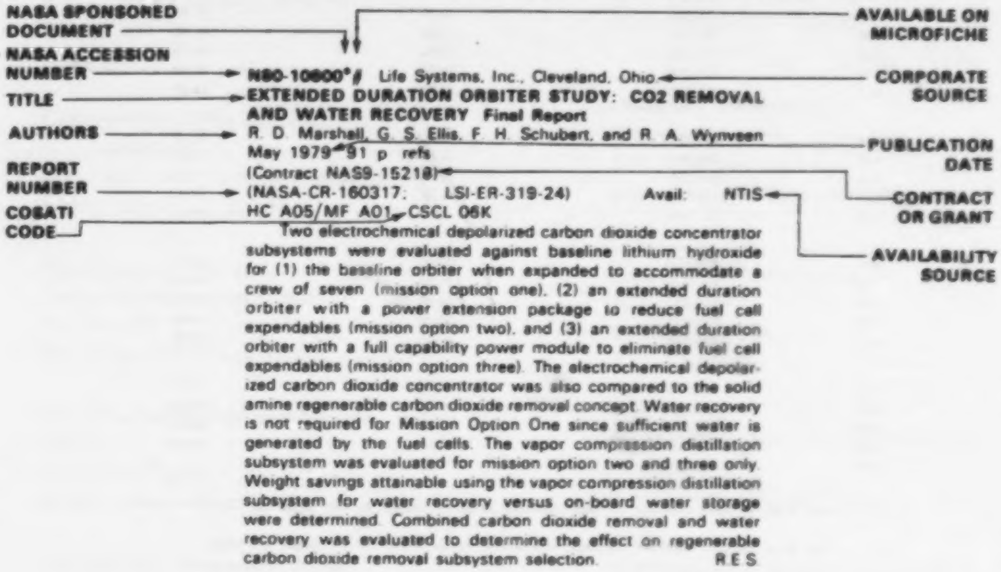
IAA ENTRIES (A80-10000) 239

STAR ENTRIES (N80-10000) 253

Subject Index I-1

Personal Author Index I-21

TYPICAL CITATION AND ABSTRACT FROM *STAR*

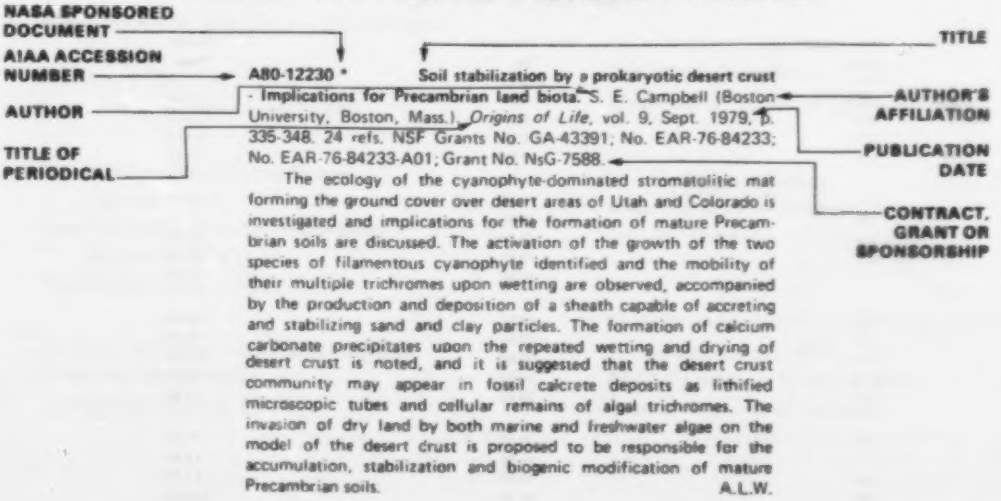


NASA SPONSORED DOCUMENT
NASA ACCESSION NUMBER
TITLE
AUTHORS
REPORT NUMBER
COSATI CODE
AVAILABLE ON MICROFICHE
CORPORATE SOURCE
PUBLICATION DATE
CONTRACT OR GRANT
AVAILABILITY SOURCE

N80-10800*# Life Systems, Inc., Cleveland, Ohio.
EXTENDED DURATION ORBITER STUDY: CO2 REMOVAL AND WATER RECOVERY Final Report
R. D. Marshall, G. S. Ellis, F. H. Schubert, and R. A. Wynveen
May 1979 91 p refs
(Contract NAS9-15218)
(NASA-CR-160317; LSI-ER-319-24) Avail: NTIS
HC A05/MF A01 CSCL 06K

Two electrochemical depolarized carbon dioxide concentrator subsystems were evaluated against baseline lithium hydroxide for (1) the baseline orbiter when expanded to accommodate a crew of seven (mission option one), (2) an extended duration orbiter with a power extension package to reduce fuel cell expendables (mission option two), and (3) an extended duration orbiter with a full capability power module to eliminate fuel cell expendables (mission option three). The electrochemical depolarized carbon dioxide concentrator was also compared to the solid amine regenerable carbon dioxide removal concept. Water recovery is not required for Mission Option One since sufficient water is generated by the fuel cells. The vapor compression distillation subsystem was evaluated for mission option two and three only. Weight savings attainable using the vapor compression distillation subsystem for water recovery versus on-board water storage were determined. Combined carbon dioxide removal and water recovery was evaluated to determine the effect on regenerable carbon dioxide removal subsystem selection. R.E.S.

TYPICAL CITATION AND ABSTRACT FROM *IAA*



NASA SPONSORED DOCUMENT
AIAA ACCESSION NUMBER
AUTHOR
TITLE OF PERIODICAL
TITLE
AUTHOR'S AFFILIATION
PUBLICATION DATE
CONTRACT, GRANT OR SPONSORSHIP

A80-12230 * Soil stabilization by a prokaryotic desert crust - Implications for Precambrian land biota. S. E. Campbell (Boston University, Boston, Mass.), *Origins of Life*, vol. 9, Sept. 1979, p. 335-348. 24 refs. NSF Grants No. GA-43391; No. EAR-76-84233; No. EAR-76-84233-A01; Grant No. NsG-7588.

The ecology of the cyanophyte-dominated stromatolitic mat forming the ground cover over desert areas of Utah and Colorado is investigated and implications for the formation of mature Precambrian soils are discussed. The activation of the growth of the two species of filamentous cyanophyte identified and the mobility of their multiple trichromes upon wetting are observed, accompanied by the production and deposition of a sheath capable of accreting and stabilizing sand and clay particles. The formation of calcium carbonate precipitates upon the repeated wetting and drying of desert crust is noted, and it is suggested that the desert crust community may appear in fossil calcrete deposits as lithified microscopic tubes and cellular remains of algal trichromes. The invasion of dry land by both marine and freshwater algae on the model of the desert crust is proposed to be responsible for the accumulation, stabilization and biogenic modification of mature Precambrian soils. A.L.W.

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 213)

DECEMBER 1980

IAA ENTRIES

A80-47692 # **Deformations of human skull produced by impact /experimental studies and modeling problems/. II - The dynamics of the skull base during impact loading of the vault (Deformatsii cherepa cheloveka pri udare /eksperimental'noe izuchenie i nekotorye problemy modelirovaniia/. II - Dinamika osnovaniia cherepa pri udarnom nagruzhenii svoda).** A. S. Barer, Iu. G. Konakhevich, L. N. Sholpo, V. Kh. Petliuk, and N. A. Uglanova. *(Vsesoiuznaia Konferentsiia po Problemam Biomekhaniki, 2nd, Riga, Latvian SSR, Apr. 1979.) Mekhanika Kompozitnykh Materialov,* May-June 1980, p. 525-529. 7 refs. In Russian.

A80-47693 # **Change of biomechanical properties of rat's bones produced by a 19-day spaceflight in the artificial satellite Cosmos-936 (Izmenenie biomekhanicheskikh svoistv kosti krys v rezul'tate 19-sutochnogo kosmicheskogo poleta na iskusstvennom sputnike zemli 'Kosmos-936').** G. P. Stupakov, A. I. Volozhin, V. V. Zasypkin, and S. M. Remizov. *(Vsesoiuznaia Konferentsiia po Problemam Biomekhaniki, 2nd, Riga, Latvian SSR, Apr. 1979.) Mekhanika Kompozitnykh Materialov,* May-June 1980, p. 530-537. 13 refs. In Russian.

A80-47763 # **Myocardial ischemia and its risk factors (Die ischämische Herzkrankheit und ihre Risikofaktoren).** I. Rademacher, B. Neeb, and J. Wirth (Medizinischer Dienst des Verkherswesens, East Germany). *Technisch-ökonomische Information der zivilen Luftfahrt,* vol. 16, no. 1, 1980, p. 60-64. In German.

The intrinsic features of ischemia are discussed with particular reference to the role of ischemia in aeronautical medicine, its manifestations, and diagnostics. Major risk factors, such as hypertonia, hypercholesterinemia, physical inactivity, overweight, and cigarette smoking are noted. V.P.

A80-47791 # **Symposium on human factors in civil aviation. II (Symposium 'Menschliche Faktoren in der zivilen Luftfahrt'. II).** *Technisch-ökonomische Information der zivilen Luftfahrt,* vol. 16, no. 2, 1980, p. 119-124. In German. (Translation).

The increased performance capability of aviation operations is discussed in light of steadily growing air travel, as well as the incorporation of larger and faster aircraft. Better aircraft construction, more automation, and improvements in the relationship between man and machine are recommended to achieve higher standards. Methods for assessing human performance are stressed. The role of the pilot, the importance of training and motivation, and occupational aptitude are discussed. R.C.

A80-47932 # **Mass measurement under conditions of weightlessness (Izmerenie massy v usloviiakh nevesomosti).** V. A. Sarychev, V. V. Sazonov, A. A. Zlatorunskii, I. A. Samorukov, V. R. Freidel', S. F. Khlopina, A. D. Egorov, and V. I. Somov. *Kosmicheskie Issledovaniia,* vol. 18, July-Aug. 1980, p. 536-549. 5 refs. In Russian.

The properties of a massmeter - a device for measuring the human mass during space missions - are examined, and the measurement accuracy is assessed. The calibration and testing of the device under terrestrial conditions are described, along with the measurement procedure under conditions of weightlessness. Some measurement data obtained for crew members of Salyut 5 and 6 are examined. V.P.

A80-48086 * # **Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling.** J. E. Greenleaf, W. Van Beaumont, P. J. Brock, L. D. Montgomery, J. T. Morse, E. Shvartz, and S. Kravik (NASA, Ames Research Center, Biomedical Research Div., Moffett Field, Calif.). *Aviation, Space, and Environmental Medicine,* vol. 51, Aug. 1980, p. 747-753. 28 refs.

The effects of head cooling on thermoregulation and associated plasma fluid and electrolyte shifts during rest and submaximal exercise in the heat are investigated. Thermoregulatory responses and plasma volume were measured in four male subjects fitted with liquid-cooled neoprene headgear during 60 min of rest, 60 min of ergometer exercise at 45% maximal oxygen uptake and 30 min of recovery in the supine position at 40.1 C and 40% relative humidity. It is found that, compared to control responses, head cooling decreased thigh sweating and increased mean skin temperature at rest and attenuated increases in thigh sweating, heart rate, rectal temperature and ventilation during exercise. During recovery, cooling is observed to facilitate decreases in sweat rate, heart rate, rectal temperature and forearm blood flow and enhance the increase in average temperature. Cooling had no effect on plasma protein, osmotic or electrolyte shifts, and decreased plasma volume losses. The findings indicate the effectiveness of moderate head cooling for the improvement of human performance during exercise in heat.

A.L.W.

A80-48087 # **Hypothermia induced by 5-thio-D-glucose - Effects on treadmill performance in the heat.** R. P. Francesconi and M. Mager (U.S. Army, Research Institute of Environmental Medicine, Natick, Mass.). *Aviation, Space, and Environmental Medicine,* vol. 51, Aug. 1980, p. 754-758. 25 refs.

A80-48088 # **Psychophysical comparison of vertical and angular vibrations.** R. W. Shoenberger (USAF, Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio). *Aviation, Space, and Environmental Medicine,* vol. 51, Aug. 1980, p. 759-762. 9 refs. Contract No. F33615-79-C-0509. (AMRL-TR-80-46)

Three psychophysical matching experiments were conducted to compare the perceived intensity of angular vibrations, in roll, pitch or yaw, with the perceived intensity of Z-axis translational vibrations. Seated subjects matched their perceptions of the intensity of Z-axis stimulus vibrations - at six frequencies from 2.5-8 Hz, at each of three intensity levels - by adjusting the intensity of angular response vibrations at the same frequencies. The results showed that the acceleration of the angular matching responses increased significantly as a function of both the frequency and the intensity of the stimulus vibrations. Since the stimuli were chosen from existing Z-axis equal intensity contours, the mean matching responses define equivalent contours for angular vibrations. Determination of relationships between translational and angular vibration is essential for the development of improved vibration exposure criteria applicable to complex vibration environments. (Author)

A80-48089 # **Altitude convulsion threshold and time to altitude convulsion in gold thioglucose obese mice.** H. J. Liu and H. S. Fang (National Taiwan University, Taipei, Nationalist China). *Aviation, Space, and Environmental Medicine*, vol. 51, Aug. 1980, p. 763-766. 8 refs. Research supported by the National Science Council of Nationalist China.

Gold thioglucose-induced hypothalamic obesity caused a higher altitude convulsion threshold and a decrease in the time to altitude convulsion. The average altitude convulsion threshold for the obese mice was 151 torr (38,500 ft). In contrast, the average value for the controls was 131 torr (41,500 ft). It was also observed that at 206 torr (32,000 ft), the average time until altitude convulsion of the obese mice was 69 s; at 179 torr (35,000 ft), 27 s; at 141 torr (40,000 ft), 17 s; at 111 torr (45,000 ft), 10 s; at 87 torr (50,000 ft), 9 s; and at 69 torr (55,000 ft), 8 s. On the other hand, the average control time until altitude convulsion at the above-mentioned altitudes was 97, 37, 26, 11, 9, and 8 s, respectively. Moreover, the average accumulation of fat between pleura and lungs in obese mice was 154 or 181 mg, while the value of the control group was only 72 or 67 mg. Such an increase of fat accumulation in the thoracic cage could decrease the tidal volume. The altitude convulsion threshold and the time until altitude convulsion might thus be changed. The time until altitude convulsion may be regarded as a convenient objective measure of altitude tolerance in mice. (Author)

A80-48090 # **The oxygen-adapted rat model - Tolerance to oxygen at 1.5 and 2 ATA.** G. Kravetz, A. B. Fisher, and H. J. Forman (Pennsylvania, University, Philadelphia, Pa.). *Aviation, Space, and Environmental Medicine*, vol. 51, Aug. 1980, p. 775-777. 18 refs. Grants No. NIH-HL-15061; No. NIH-HL-15013.

The effect of pre-exposure to graded hyperoxia on subsequent survival under hyperbaric conditions was investigated in 250-300 g male Sprague-Dawley rats. The average survival of normal rats was approximately 4 d in 1 ATA O2, 1 d in 1.5 ATA O2, and 16 h in 2 ATA O2. Rats pre-exposed to O2 at 0.8 ATA for one week became O2 tolerant and survived a subsequent one week in O2 at 1 ATA with zero mortality. These O2-tolerant rats had a three-fold increase of survival duration in O2 at 1.5 ATA, but showed no significant prolongation of survival in 2 ATA O2. Pre-exposure to 0.8 ATA O2 for two weeks had no further effect on tolerance. However, rats pre-exposed to O2 at 0.8 ATA for one week followed by exposure to O2 at 1 ATA for a second week demonstrated approximately a three-fold increase in subsequent survival at 2 ATA O2. The results indicate that oxygen-tolerant rats remain susceptible to mortality in 1.5-2 ATA O2 and that graded tolerance to O2 develops as a function of the oxygen exposure regimen. (Author)

A80-48091 # **Effects of whole-body vibrations on standing posture in man.** B. Martin, G. M. Gauthier, J. P. Roll, M. Hugon, and F. Harlay (Aix-Marseille I, Université, Marseille, France). *Aviation, Space, and Environmental Medicine*, vol. 51, Aug. 1980, p. 778-787. 34 refs. Research supported by the Société Nationale Industrielle Aérospatiale; Centre Nationale de la Recherche Scientifique Grant No. ERA-272.

The effects of vibrations of amplitude and frequency similar to those encountered in cruising helicopters on human postural adjustment are investigated. Twenty male and female subjects were successively submitted to whole-body vibration, head-trunk vibration, leg vibration, head vibration and control situations, all in the seated position, and tested for postural responses on a stabilometer prior to, immediately after and 30 min after the 30-min vibration period. In addition, the per-vibration effects on postural equilibrium were studied for six subjects tested in a standing position on a vibrating platform. Results indicate that whole-body and leg vibration induce highly significant disturbances in postural control mechanisms, as evidenced by shifts in resting position and increases in oscillation amplitudes, although the subjects were not aware of any alterations. Results thus suggest that the site of action of vibration is essentially limited to the legs, where the muscle spindles are particularly affected. A.L.W.

A80-48092 # **Effect of alcohol on man's response to mild physical activity in a cold environment.** T. Graham and J. Dalton (Guelph, University, Guelph, Ontario, Canada). *Aviation, Space, and Environmental Medicine*, vol. 51, Aug. 1980, p. 793-796. 32 refs. Research supported by the Distilled Spirits Council of the United States.

A80-48093 # **A human performance/workload evaluation of the AN/PVS-5 bifocal night vision goggles.** L. W. Stone, M. G. Sanders, D. D. Glick, R. W. Wiley, and K. A. Kimball (U.S. Army, Aeromedical Research Laboratory, Fort Rucker, Ala.). *Aviation, Space, and Environmental Medicine*, vol. 51, Aug. 1980, p. 797-804. 15 refs.

Eight experienced U.S. Army aviators performed various maneuvers in an instrumented helicopter to test the relative usability of two bifocal-configured night vision goggles. Both configurations were statistically better than the unmodified arrangement when looking at a pilot's ability to fly a standard traffic pattern and to hold a precise altitude at night. The subjective data, supported by comparative flight performances with the two bifocals, further suggested that a 24% bifocal version was more desirable than a 14% configuration. The inference is that the reduced inside field of view presented by the 14% bifocal interferes with a pilot's ability to readily locate instruments once he has directed his attention inside the cockpit. (Author)

A80-48094 * # **Space motion sickness - Skylab revisited.** A. Graybiel (U.S. Naval Aerospace Medical Center, Naval Aerospace Medical Research Laboratory, Pensacola, Fla.). *Aviation, Space, and Environmental Medicine*, vol. 51, Aug. 1980, p. 814-822. 8 refs. NASA Order T-3384-G.

Biomedical findings in the area of space motion sickness of the Skylab missions are reviewed and compared with the results of laboratory simulations. The motion sickness experiences of the three Skylab crews are related, and it is pointed out that of the nine astronauts, four were not sick at all, and of the five who were sick, only two vomited. In addition, it is noted that soon after recovery all five were immune in a provocative test based on the generation of cross-coupled angular accelerations while they executed head movements during rotation, in which they had manifested symptoms before the flight. Is is concluded that the findings indicate that susceptibility to motion sickness on earth is not a reliable predictor of susceptibility to motion sickness in orbit, and that free fall is a partial motion environment. Difficulties in dealing with motion sickness under operational conditions and the limitations of anti-motion sickness remedies are noted. A.L.W.

A80-48095 # **Noise-induced hearing loss and vestibular dysfunction.** W. J. Oosterveld, A. R. Polman, and J. Schoonheyt (KLM - Royal Dutch Airlines, Medical Dept.; Amsterdam, Universiteit, Amsterdam, Netherlands). *Aviation, Space, and Environmental Medicine*, vol. 51, Aug. 1980, p. 823-826. 43 refs.

In a group of 29 technicians of the maintenance department of Royal Dutch Airlines, all with an industrial type of hearing loss, the vestibular function was examined. From these 29 persons, 18 showed a spontaneous nystagmus and 24 had a positional nystagmus exceeding a velocity of 5 deg/s in three or more positions. A cervical nystagmus could be provoked in 17 subjects. In seven persons, the rotational test proved a nystagmus preponderance of more than 20%. A difference in excitability between the labyrinths of more than 20% appeared in seven cases. The tests for central vestibular disorders did not show pathology in any of the subjects. According to their hearing loss, the subjects were divided into four groups. There was no correlation between the grade of hearing loss and the vestibular function disturbance. An explanation can be sought in the adaptation capability of the vestibular system. All technicians showed pathology in one or more of the vestibular tests. This means that noise exposure not only damages the cochlea, but threatens the vestibular organs too. (Author)

A80-48096 # **Coincident loss of consciousness and ventricular tachycardia during +Gz stress.** J. E. Whinnery, M. H. Laughlin, and G. S. Uhl (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine*, vol. 51, Aug. 1980, p. 827-831. 24 refs.

An episode of ventricular tachycardia coincident with loss of consciousness has been observed in an apparently healthy aircrewman during high +Gz training in a human centrifuge. The implications of these events to the balance of the sympathetic and parasympathetic branches of the autonomic nervous system and to the etiology of ventricular tachycardia are discussed. It is pointed out that the patient evidenced a high vagal (parasympathetic) tone attributed to a daily exercise program as well as an excessive amount of sympathetic input during testing, due to stress and loss of consciousness in agreement with the current understanding of the interaction of vagal and sympathetic stimulation in provoking ventricular tachycardia. The importance of identifying pilots at an increased risk of incapacitation under stressful flight conditions is emphasized. A.L.W.

A80-48137 **Man, aircraft and navigation systems - An evaluation for the 80s.** F. Sguerri (Aeronautica Militare, Rome, Italy). In: Man and navigation; Proceedings of the International Congress, Brighton, England, September 10-14, 1979. Volume 1. London, Royal Institute of Navigation, 1979, p. 186-196.

It is predicted that the 1980's will be a period of transition in air navigation. Advanced technologies will bring about a complete revolution in aircraft operations and in the pilot's traditional role. The role of microelectronics and navigation satellites in the 1980's is discussed. B.J.

A80-48518 **Velocity specificity of the flicker to pattern sensitivity ratio in human vision.** M. G. Harris (Bristol, University, Bristol, England). *Vision Research*, vol. 20, no. 8, 1980, p. 687-691. 14 refs.

Flicker and pattern sensitivities were compared for sine-wave gratings drifting at different rates. Relative sensitivity was found to be constant at each velocity, irrespective of spatial and temporal frequencies, and to vary monotonically with velocity. At velocities below 1 deg/sec, pattern sensitivity exceeded flicker sensitivity. At higher velocities the reverse was true. (Author)

A80-48519 **Wavelength difference limit for binocular color fusion.** M. Ikeda and Y. Nakashima (Tokyo Institute of Technology, Yokohama, Japan). *Vision Research*, vol. 20, no. 8, 1980, p. 693-697. 15 refs.

A80-48520 **Foveal and peripheral displacement thresholds as a function of stimulus luminance, line length and duration of movement.** C. A. Johnson and R. P. Scobey (California, University, Davis, Calif.). *Vision Research*, vol. 20, no. 8, 1980, p. 709-715. 17 refs. Grant No. NIH-EY-01495.

Displacement thresholds for moving line targets were determined in the fovea and periphery (18 deg eccentricity) as a function of duration of movement, line length and stimulus luminance. At both visual field locations, displacement thresholds were essentially constant for durations of movement between 5 and 500 msec. Longer durations of movement produced progressively higher displacement thresholds and greater response variability. Stimulus luminance and line length displayed little or no influence on foveal displacement thresholds. In contrast, peripheral displacement thresholds became significantly reduced as a function of both increasing line length and higher luminance values. Preliminary comparisons are drawn between the current psychophysical findings and retinal receptive field properties. (Author)

A80-48611 # **The effects of water-salt stresses on orthostatic test endurance under conditions of hypoxia (Vliianie vodno-solevykh nagruzok na perenosimost' ortostaticheskoi proby v usloviiakh gipoksii).** I. S. Balakhovskii, I. G. Dlusskaia, V. A. Karpusheva, P. Ia. Azhevskii, V. N. Poliakov, and V. K. Stepanov. *Fiziologiia Cheloveka*, vol. 6, July-Aug. 1980, p. 651-655. 8 refs. In Russian.

A80-48612 # **Changes in alpha activity during decreases in human operator work capacity (Izmeneniia al'fa-aktivnosti pri snizhenii rabotosposobnosti cheloveka-operatora).** L. A. Vlaskina, V. N. Dumbai, S. D. Medvedev, and G. L. Fel'dman (Rostovskii Gosudarstvennyi Universitet, Rostov-on-Don, USSR). *Fiziologiia Cheloveka*, vol. 6, July-Aug. 1980, p. 672-678. 18 refs. In Russian.

Changes in electroencephalographic alpha waves during decreases in work capacity brought on by fatigue and drowsiness are investigated. EEGs, reaction times and errors were measured for subjects engaged in a complex discrete tracking task, and the alpha index, amplitude, wave period, dispersion and phase relations were determined for periods before the task and during work at optimal and decreased capacity. Results of the analysis reveal decreases of work capacity to be accompanied by increases in the duration and dispersion of alpha waves and the phase shifts between alpha waves of different regions. The directions as well as the magnitudes of these changes in alpha wave patterns are considered to be useful in the assessment of operator conditions. A.L.W.

A80-48613 # **The effects of various regimes of work and rest following a 64-72 hour period of wakefulness on sleep dynamics (Vliianiia na dinamiku sna razlichnykh rezhimov truda i otdykha posle 64-72-chasovogo bodrstvovaniia).** A. N. Litsov. *Fiziologiia Cheloveka*, vol. 6, July-Aug. 1980, p. 686-694. 19 refs. In Russian.

A80-48614 # **The structure of oxygen debt in humans following prolonged hypokinesis (Struktura kislorodnogo dolga u cheloveka posle dlitel'noi gipokinezii).** B. S. Katkovskii and S. S. Kaniovskii. *Fiziologiia Cheloveka*, vol. 6, July-Aug. 1980, p. 695-700. 25 refs. In Russian.

The effects of a prolonged limitation of motor activity on total oxygen debt and its lactate and alactate components are investigated. Twenty healthy but poorly conditioned male subjects were put on a regimen of strict bed rest in an antiorthostatic position for a period of seven weeks, prior to and following which their physiological responses to bicycle ergometer stresses were measured. A graphical analysis of oxygen uptake and heart rate during exercise testing reveals that after 8 min of physical work at a level of 100 W, 19 of the subjects did not exhibit a lactate oxygen debt component prior to the bed rest period. Following hypokinesis, the lactate fraction is observed to increase in all subjects and the alactate fraction to decrease in most. It is concluded that the dynamics of the structure of oxygen debt following moderate exercise allow the evaluation of human conditioning. A.L.W.

A80-48615 # **Changes in the system of external respiration /respiration mechanics/ during cold adaptation (Izmeneniia v sisteme vneshnego dykhaniia /mekhaniki dykhaniia/ pri adaptatsii k kholodu).** I. V. Landysheva, V. F. Ushakov, and E. N. Ias'kov (Blagoveshchenskii Meditsinskii Institut, Blagoveshchensk, USSR). *Fiziologiia Cheloveka*, vol. 6, July-Aug. 1980, p. 701-706. 28 refs. In Russian.

A80-48796 # **Astronauts keep queuing up for Space Shuttle.** D. Dooling. *Astronautics and Aeronautics*, vol. 18, Sept. 1980, p. 24, 25, 72.

New guidelines in selection processes of crew members for the Space Shuttle are described. New astronauts selected in 1978 and 1980 outnumber other astronauts by two to one. Of the 26 remaining elders, only 9 have flight experience. Selection processes are different from those used in picking the original 7 in 1959. While NASA's physical standards have remained nearly the same, less stringent academic criteria have allowed men and women to mold their educations and careers to match the anticipated needs of the space program. The proposed numbers of annual flights by specific types of astronauts are outlined. NASA's new selection process for payload scientists in conjunction with the IWG is explained. Additional revised NASA regulations regarding the crew for the operational Space Shuttle are included. A.C.W.

A80-48949 * **A design tool for estimating passenger ride discomfort within complex ride environments.** J. D. Leatherwood, T. K. Dempsey, and S. A. Clevenson (NASA, Langley Research Center, Hampton, Va.). *Human Factors,* vol. 22, June 1980, p. 291-312. 31 refs.

A series of experimental studies utilizing approximately 2200 test subjects has led to the development of a general empirical model for the prediction of passenger ride discomfort in the presence of complex noise and vibration inputs. The ranges of vibration and noise stimuli used to derive the model included the amplitudes and frequencies that are known to most influence passenger comfort. The ride quality model accounts for the effects of combined axis vibrations (up to three axes simultaneously) and includes corrections for the effect of vibration duration and interior noise. Output of the model consists of an estimate of the passenger discomfort produced by a given noise and/or vibration environment. The discomfort estimate is measured along a continuous scale that spans the range from below discomfort threshold to values of discomfort that are far above discomfort threshold. (Author)

A80-48950 * **Response time effects of alerting tone and semantic context for synthesized voice cockpit warnings.** C. A. Simpson and D. H. Williams (Psycho-Linguistic Research Associates, Menlo Park, Calif.). *Human Factors,* vol. 22, June 1980, p. 319-330. 24 refs. Grants No. NGL-05-046-002; No. NGR-45-003-108.

Some handbooks and human factors design guides have recommended that a voice warning should be preceded by a tone to attract attention to the warning. As far as can be determined from a search of the literature, no experimental evidence supporting this exists. A fixed-base simulator flown by airline pilots was used to test the hypothesis that the total 'system-time' to respond to a synthesized voice cockpit warning would be longer when the message was preceded by a tone because the voice itself was expected to perform both the alerting and the information transfer functions. The simulation included realistic ATC radio voice communications, synthesized engine noise, cockpit conversation, and realistic flight routes. The effect of a tone before a voice warning was to lengthen response time; that is, responses were slower with an alerting tone. Lengthening the voice warning with another work, however, did not increase response time. (Author)

A80-49020 # **The effect of mountain conditions on work capacity and acclimatization times (Vliianie uslovii vysokogor'ia na rabotosposobnost' i sroki akklimatizatsii).** P. A. Pal'chikov, L. P. Pukach, and V. P. Uzhva. *Voenno-Meditsinskii Zhurnal,* June 1980, p. 51-53. In Russian.

Ninety-eight healthy males were tested for adaptation and physical work capacity in high-altitude conditions (3300-3600 meters above sea level). The criterion of work capacity and adaptation was the ability to withstand sufficiently intense physical loads without unfavorable symptoms. Data are presented on functional changes of the cardiovascular and respiratory systems. B.J.

A80-49021 # **Psychological features of the pilot's personality in the case of diseases of the gastrointestinal tract (Psikhologicheskie osobennosti lichnosti letchika pri zabolevaniiakh zheludochno-kishechnogo trakta).** N. F. Luk'ianova and E. N. Lobova. *Voenno-Meditsinskii Zhurnal,* June 1980, p. 54-57. 6 refs. In Russian.

A80-49022 **Implications of probability analysis on the strategy used for noninvasive detection of coronary artery disease.** S. E. Epstein (National Institutes of Health, National Heart, Lung and Blood Institute, Bethesda, Md.). *American Journal of Cardiology,* vol. 46, Sept. 1980, p. 491-499. 41 refs.

The implications of a pretest analysis of disease probability to noninvasive screening studies involving electrocardiographic exercise testing, radionuclide cineangiography and thallium perfusion scanning for the detection of coronary artery disease are reviewed. The consequences of Bayes' theorem, which states that a less than perfect test cannot be adequately interpreted without reference to the prevalence of the disease in the population under study, for exercise testing of symptomatic and asymptomatic patients are examined. Means for the determination of pretest probabilities of coronary artery disease in individual subjects, the likelihood of noninvasive screening studies resulting in useful information and the advisability of combinations of noninvasive studies to define more accurately the likelihood of coronary artery disease are then presented. A.L.W.

A80-49401 **On human response to prolonged repeated whole-body vibration.** H. Seidel, R. Bastek, D. Bräuer, Ch. Buchholz, A. Meister, A.-M. Metz, and R. Rothe (Zentralinstitut für Arbeitsmedizin, Berlin, East Germany). *Ergonomics,* vol. 23, Mar. 1980, p. 191-211. 43 refs.

The experiment was aimed at investigating human response to different doses of whole-body vibration (WBV), at checking adaptation to repeated exposures, at further evaluating the frequency weighting, and at examining the effect of a distinct interruption of prolonged exposure. Eight male seated subjects were exposed for 3 h to sinusoidal WBV in the z-axis with frequencies 4 Hz and 8 Hz, at a constant acceleration level of 1.0 m/sec per sec rms, each frequency being repeated four times on consecutive days. Transmissibility, impedance, bioelectrical activity of trunk muscles, postural sway, performance in vigilance tasks, and the subjectively assessed psychological state, efforts, and stress experienced in performing the tasks were investigated. The transmissibility decreased during exposure time at 4 Hz and increased at 8 Hz when a controlled posture was maintained. The power-spectral density distribution and amplitude of postural sway were affected by WBV, depending on both duration and frequency. Performance data and rating data exhibited decrements and adverse effects, being greater beyond the fatigue-decreased proficiency boundary (FDPB); adaptation and habituation were more pronounced at the FDPB dose. Generally, there were no cumulative effects. A pause for 20 min did not essentially affect the reactions investigated. (Author)

A80-49425 # **Paths of the origin of life (Puti vozniknoveniia zhizni).** A. I. Oparin. *Akademiia Nauk SSSR, Vestnik,* no. 6, 1980, p. 57-64. In Russian.

Various paths to the origin of life in the chemical and prebiological stages of evolution are discussed. Consideration is given to the abiotic formation of organic compounds on the primitive earth and in other regions of the universe, and it is pointed out that whether it was proteins or nucleic acids that evolved first, neither could have performed their present-day functions until the transition to biological evolution and the formation of phase-separated systems (probionts). Means for the study of these systems, which were capable of interactions with their environment, making use of energy and matter, growing, multiplying and undergoing natural selection, are examined, with attention given to the bubbles, microspheres, marigranules, liposomes and coacervate droplets created by investigators as models of the probionts. A.L.W.

A80-49849 **Temporal precision in circadian systems - A reliable neuronal clock from unreliable components.** J. T. Enright (California, University, La Jolla, Calif.). *Science,* vol. 209, Sept. 26, 1980, p. 1542-1545. 12 refs. NSF Grants No. GB-2469; No. GB-5471; No. GB-23949; No. GB-3750; No. PCM-77-19949.

It is proposed that mutual coupling among the less reliable component oscillators of an ensemble may explain the unusually high precision of the circadian rhythms of higher vertebrates. Consideration is given to the implications of ergodic theory for the frequency stability of coupled circadian oscillators, and an elementary model of relaxation-oscillator dynamics is invoked in an examination of the behavior of an idealized array of pacemakers triggered by reciprocal excitatory coupling in which all pacemakers have identical intrinsic frequency and each element has an equal opportunity to trigger the rest. It is shown that the improvements in temporal precision possible in such an array relative to single components are limited. However, if the resetting of the ensemble is evoked by an appreciable fraction of the pacemakers present, circadian precision can be derived from oscillators that are intrinsically sloppy. Such a system would require that the output of the individual components be summed, and that mutual triggering be mediated by a threshold. A.L.W.

A80-49868 **Irradiation of prolate spheroidal models of humans in the near field of a short electric dipole.** M. F. Iskander, P. W. Barber, C. H. Durney, and H. Massoudi (Utah, University, Salt Lake City, Utah). *IEEE Transactions on Microwave Theory and Techniques*, vol. MTT-28, July 1980, p. 801-807. 16 refs.

A80-49871 * **Clays in prebiological chemistry.** M. Rao, J. Oro (Houston, University, Houston, Tex.), and D. G. Odom (Cornell College, Mount Vernon, Iowa). *Journal of Molecular Evolution*, vol. 15, Aug. 1980, p. 317-331. 73 refs. Grant No. NGR-44-005-002.

The ways in which clays have been utilized in studies of prebiological chemistry are reviewed, and an assessment is given of the possible role of clays in prebiological systems. The adsorption of organic molecules on clays has been demonstrated, as has the synthesis of bioorganic monomers in the presence of clays. For instance, amino acids, purines and pyrimidines have been obtained from carbon monoxide and nitric acid in the presence of clays at relatively high temperatures (250-325 C). The oligomerization of biochemical monomers, mediated by clays, has also been shown to result in the formation of polymer molecules basic to life. Clays have also been found to affect the condensation of mononucleotides to oligonucleotides. S.S.

A80-49872 * **Studies of the chemical basis of the origin of protein synthesis - Initiation and direction of peptide growth.** D. W. Mullins, Jr. and J. C. Lacey, Jr. (Alabama, University, Birmingham, Ala.). *Journal of Molecular Evolution*, vol. 15, Aug. 1980, p. 339-345. 18 refs. Grant No. NGR-01-010-001.

The data presented in this paper show that the ease of nonenzymatic activation of carboxylic acids by ATP at pH 5 varies directly with the pKa of the carboxyl group, and is consistent with the idea that it is the protonated form of the carboxyl group which participates in the activation reaction. Consequently, since most N-blocked amino acids have higher pKas than do their unblocked forms, they are activated more readily, and it has been demonstrated that this principle applies to peptides as well, which are activated more rapidly than single amino acids. It is proposed that this fact may be partly responsible for the origin of two important features still observed in contemporary protein synthesis: (1) initiation in prokaryotes is accomplished with an N-blocked amino acid, and (2) elongation in all living systems occurs at the carboxyl end of the growing peptide. (Author)

A80-49873 * **Template-directed synthesis and selective adsorption of oligoadenylates in hydroxyapatite.** D. Gibbs, R. Lohrmann, and L. E. Orgel (Salk Institute for Biological Studies, San Diego, Calif.). *Journal of Molecular Evolution*, vol. 15, Aug. 1980, p. 347-354. 10 refs. Grants No. NIH-GM-13435; No. NGR-05-067-001.

Polyuridylic acid is adsorbed completely from aqueous solution by hydroxyapatite under conditions that permit template-directed synthesis of oligoadenylates in free solution. The yield of oligoadenylates is enhanced to almost the same extent by poly(U) in the presence or the absence of hydroxyapatite. Under very similar conditions small quantities of hydroxyapatite adsorb higher-molecular-weight oligoadenylates selectively from a mixture of oligomers. On the basis of these results a mechanism for prebiotic oligonucleotide formation is proposed in which selective adsorption on hydroxyapatite or some other immobilized anion-exchanging material plays a major role. Monomers are released from the surface for reactivation, while oligomers are retained in a protected environment by adsorption to the apatite surface. (Author)

A80-50051 **Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979.** Meeting sponsored by COSPAR. Edited by R. Holmquist (California, University, Berkeley, Calif.). Oxford and Elmsford, N.Y., Pergamon Press, 1980. 230 p. In English and French. $40.

The volume covers the following subjects: organic molecules in space, planetary research, early biological evolution, radiation biology, and gravitational biology. Papers are presented on the origin and chemistry of planets, on the possibility of life on Mars, the influence of life on the evolution of the atmosphere, the genetic effect of space hadrons on bacteriophage under alpine conditions, and physiological aspects of automatic physical training control by biofeedback in weightlessness. V.L.

A80-50056 **On the possibility of life on Mars.** A. A. Imshenetskii, B. G. Murzakov, M. D. Evdokimova, I. K. Dorofeeva, L. A. Kuziurina, and V. M. Iakshina (Akademiia Nauk SSSR, Institut Mikrobiologii, Moscow, USSR). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 45-51. 14 refs.

It is possible to assume that there are hydrated iron oxides (of the limonite type) and frozen H2O2 on Mars based on studies carried out to explain the data collected by the Viking landers. Despite the strong biocidal effect of H2O2 on microorganisms, it also promotes the extraction of organic nutrients in chernozem (black earth), which are consumed by surviving microorganisms. The increase of CO2, along with a decrease of O2, is evidence for active metabolic processes of soil aerobic microorganisms in chernozem. Organisms stable to H2O2 action and capable of induced synthesis of catalase (which breaks down H2O2) may explain the increase of O2 in desert soil; this increase of O2 persists after adding nutrient medium to the desert soil, when an increase in CO2 is also observed. The addition of limonite seems to decrease the toxic effect of H2O2 on microorganisms. R.C.

A80-50057 **Description of an apparatus for studying micro-organisms in the upper atmosphere.** S. V. Lysenko, G. A. Kazakov (Akademiia Nauk SSSR, Institut Mikrobiologii, Moscow, USSR), and A. V. Fedynskii (Tsentral'naia Aerologicheskaia Observatoriia, Dolgoprudny, USSR). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 53-58. 5 refs.

An apparatus and technique for measuring microorganisms at 52-83 km altitude with the aid of a special impactor mounted on the M-100B meteorological rocket are described. The results obtained in six successful launchings in the middle latitudes of the USSR are consistent with existent data on quantity and species of microorganisms at these altitudes. (Author)

A80-50058 **Further studies on the environmental capabilities of fungi - Interactions of salinity, ultraviolet irradiation, and temperature in Penicillium.** B. Z. Siegel and S. M. Siegel (Hawaii, University, Honolulu, Hawaii). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 59-64. 10 refs.

A strain of Penicillium currently under study has revealed some unexpected features in response to salts and UV-radiation. These responses include: (a) stimulation of growth by one molar NaCl and

KCl at 23 but not at 5 C, (b) total inhibition by LiCl and RbCl at 5 but not at 23 C, (c) stimulation by 254 nm radiation (2 million erg/sq cm min, 30-90 minutes) at 23 and 5 C, and (d) very elevated growth rates at 23 after incubation at 5 C. (Author)

A80-50060 * The possible role of metal ions and clays in prebiotic chemistry. J. G. Lawless (NASA, Ames Research Center, Extraterrestrial Research Div., Moffett Field, Calif.) and E. H. Edelson (Southern California, University, Los Angeles, Calif.). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 83-88. 17 refs.

Eight homoionic bentonites were prepared using alkali, alkaline earth, and transition metal ions as counterions. The interaction of the clays with 5'-AMP was studied and it was found that the alkali metal-substituted clays did not remove any nucleotide from dilute solution, and that zinc-bentonite adsorbed the most (98%). In addition, study of the interaction of seven other nucleotides with zinc-bentonite showed that the purine nucleotides were more strongly absorbed than the pyrimidine nucleotides. Langmuir isotherms were obtained for these systems and the adsorption data were explained by the adsorption coefficient and the accessibility of metal for binding. (Author)

A80-50061 The influence of life on the evolution of the atmosphere. J. C. G. Walker (Arecibo Observatory, Arecibo, P.R.). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 89-100. 84 refs.

The early history of life on earth may have been characterized by coevolution of microbial metabolism and atmospheric composition. Metabolic developments affected the composition of the atmosphere, and the resulting changes in the atmosphere stimulated the evolution of new metabolic capabilities. The first organisms eked out an existence by deriving energy from the fermentation of organic compounds abiotically synthesized. The abiotic source was meager, however, and when autotrophy arose, life was freed from its dependence on abiotic synthesis. The expanded level of biological activity made possible by autotrophy resulted in an increased rate of burial of reduced organic matter in sea floor sediments. The resultant drain on the concentration of electron donors in the biosphere caused a decline in the hydrogen content of the atmosphere. Biological productivity was limited by the supply of reduced compounds. This paper explores the biogeochemical circulation of electron donors in the primitive anaerobic ocean, concluding that their shortage was so critical as to provide strong selective pressure for the evolution of algal photosynthesis. (Author)

A80-50062 * Early photosynthetic microorganisms and environmental evolution. S. Golubic (Boston University, Boston, Mass.). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 101-107. 51 refs. NSF Grant No. GA-43391; Grant No. NsG-7588.

Microfossils which are preserved as shrivelled kerogenous residues provide little information about cellular organization and almost none about the metabolic properties of the organisms. The distinction between prokaryotic vs eukaryotic, and phototrophic vs chemo- and organotrophic fossil microorganisms rests entirely on morphological comparisons with recent counterparts. The residual nature of the microbial fossil record promotes the conclusion that it must be biased toward (a) most abundant organisms, (b) those most resistant to degradation, and (c) those inhabiting environments with high preservation potential e.g., stromatolites. These criteria support the cyanophyte identity of most Precambrian microbial fossils on the following grounds: (1) as primary producers they dominate prokaryotic communities in modern extreme environments, e.g., intertidal zone; (2) several morphological counterparts of modern cyanophytes and microbial fossils have been established based on structure, cell division patterns and degradation sequences. The impact of anaerobic and oxygenic microbial photosynthesis on the evolution of Precambrian environments is discussed. (Author)

A80-50063 * Lipids as a principle for the identification of Archaebacteria. T. G. Tornabene, R. E. Lloyd (Colorado State University, Fort Collins, Colo.), G. Holzer, and J. Oro (Houston, University, Houston, Tex.). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 109-121. 39 refs. Contract No. EE-77-5-02-4478; Grant No. NGR-44-005-002.

The 'Archaebacteria' consist of several distinct subgroups including methanogens, extreme halophiles and specific thermoacidophiles. These bacteria are distinct from other bacteria with respect to their characteristic RNA compositions, the absence of muramic acid in the cell walls and the predominance of nonsaponifable lipids. The lipid composition of the Archaebacteria consists of isoprenoid and hydroisoprenoid hydrocarbons and isopranyl glycerol ether lipids. The pathways for the biosynthesis of the lipid components are those shared by most microorganisms and demonstrate a close relationship; however, an independent line of descent is indicated by the formation of the isopranyl glycerol ether lipids. This discontinuity formulates a point for delineating the early stages of biological evolution and for dividing bacteria into two subgroups. (Author)

A80-50065 * Late degeneration in rabbit tissues after irradiation by heavy ions. J. T. Lett, A. B. Cox, P. C. Keng, A. C. Lee, C. M. Su, and D. S. Bergtold (Colorado State University, Fort Collins, Colo.). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 131-142. 10 refs. Research supported by the Department of Energy; Grants No. NsG-9045; No. NIH-AG-00005; No. NIH-CA-05450; No. NIH-CA-09236.

Results are presented for investigations of the late effects of heavy-ion irradiation on rabbit tissues which were undertaken to assess the hazards associated with the long-term exposure of humans to heavy ions in space during such activities as the construction of solar power stations or voyages to Mars. White rabbits approximately six weeks old were exposed to various doses of collimated beams of 400-MeV/n Ne ions, 570 MeV/n Ar ions and Co-60 gamma rays directed through both eyes, and the responses of the various tissues (hair follicles, skin, cornea, lens, retina, Harderian glands, bone and forebrain) were examined. Proliferating tissues are found to exhibit high damage levels in the early and late periods following irradiation, while terminally differentiating tissues repond to radiation most intensely in the late period, years after irradiation, with no intermediate recovery. The results obtained from rabbits are used to predict the occurrence of late tissue degeneration in the central nervous system, terminally differentiating systems and stem cells of humans one or more decades following exposure to radiation levels anticipated during long-duration space flights. The studies also indicate that tissues may be prematurely aged in the sense that tissue life spans may be shortened without the development of malignancies. A.L.W.

A80-50066 Predicted LET-spectra of HZE-particles for the Free Flyer Biostack Experiment on the Long Duration Exposure Facility mission. W. Heinrich (Seigen, Universitat, Seigen, West Germany). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 143-152. 16 refs.

The LDEF (long duration exposure facility) mission, scheduled for a launch on the Space Shuttle in 1981, will fly for about 9 months in a near-earth orbit with an inclination angle of 28 deg. In this flight the Free Flyer Biostack Experiment has the objective of measuring the biological effects of individual heavy ions from cosmic radiation (HZE particles). This paper presents results of a calculation of LET-spectra in free space and within the absorber of the experiment. The calculation considers the geomagnetic shielding of the spacecraft against charged particles with low energies and the disintegration of the heavy ions within the absorbing material by fragmentation. For this mission the LET spectra turn out to differ from those of previous experiments. The steepness of the spectra changes significantly with LET and also with depth of absorber. (Author)

A80-50067 **A sclerocorneal electrode for the study of the characteristics of primate vision under condition of space flight.** Y. Grall, R. Dudragne, J. Keller, C. Menguy (Paris VII, Université, Paris, France), and C. Milhaud (Centre de Recherche de Médecine Aérospatiale, Paris, France). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 153-157. 8 refs.

A sclerocorneal contact lens electrode has been developed to allow the recording of the electroretinographic responses of primates under space flight conditions. The lens includes a metallic electrode together with an optical fiber to produce a calibrated stimulus exactly at the surface of the pupil of the eye, and is part of a system consisting of a primate containing system, a stimulation system with colored filters, optical fibers and a recording system. Preliminary investigations have been performed to verify component performance and study system possibilities, and further investigations have shown the system to provide more sensitive, less noisy results than classical electrode systems. A data system has also been developed for the treatment of electroretinographic data. The optical fiber system also may permit the determination of thresholds for response to the variation of environmental conditions. A.L.W.

A80-50068 **Genetic effects of space hadrons on bacteriophage under Alpine conditions.** S. S. Iurov, G. A. Leont'eva, I. N. Kniazeva, E. G. Mozgovoi, A. M. Kuzin, I. G. Akoev (Akademiia Nauk SSSR, Institut Biologicheskoi Fiziki, Pushchino, USSR), and V. S. Belkin (Tadzhik Academy of Sciences, Dyushambe, Tadzhik SSR). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 159-165. 8 refs.

A dried film culture of bacteriophage T4Br(+) was kept in a lead bioblock for 366 days under Alpine conditions at an altitude of 6100 m above sea level to study the genetic effect of space hadrons. In the gelatin-like film under study some film plots with markedly reduced bacteriophage survival were discovered. In such plots, the mutation frequency exceeded the spontaneous background mutation rate 60-100 times. The spectrum of r mutations as classified into standard groups rI, rII and rIII differred from that found for other model radiation systems such as gamma-ray radiation in buffer or nutrient broth, and hadron and HZE particle radiation under space flight conditions. (Author)

A80-50069 **Physiological aspects of automatic physical training control by biofeedback in weightlessness.** S. Baranski, L. Markiewicz, and Z. Sarol (Wojskowy Instytut Medycyny Lotniczej, Warsaw, Poland). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979.
Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 169-173. 5 refs.

An automatically regulated biofeedback apparatus 'UN-1' is described for enabling astronauts to maintain specified levels of exercise or lower body negative pressure within acceptable limits of cardiac function. The apparatus was also used to assess the workload tolerance of cosmonauts during space flight. Under these conditions the cosmonaut was unable to exercise on the cycloergometer when his heart rate reached 140 beats/minute steady state. (Author)

A80-50070 **Physiological reactions during acute adaptation to reduced gravity.** E. B. Shulzhenko, R. A. Tigranian, V. E. Panfilov, and I. I. Bzhalava (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 175-179. 9 refs.

Experiments were carried out on healthy volunteers exposed to a 7-day water immersion. The subjects were kept dry by use of a water proof, highly elastic cloth. During the experiment different cardiovascular, fluid-electrolyte and biochemical parameters were recorded. The experimental results suggest that the hypophyseal-adrenal system and renal function are closely coupled regulatory mechanisms for adaptive reactions of the cardiovascular system and for fluid-electrolyte metabolism during acute adaptation of the human body to reduced gravity. (Author)

A80-50071 **A preliminary study of vestibular equilibrium in primates under space flight conditions (Etude préliminaire de l'équilibre vestibulaire chez le primate dans les conditions de vol spatial).** M. Burgeat, D. Loth, C. Menguy, M. Toupet (Paris VII, Université, Paris, France), and P. C. Pesquies (Centre de Recherche de Médecine Aéronautique, Paris, France). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 181-185. 8 refs. In French.

Preliminary studies concerning the application of a rotatory stimulation and vestibular response recording technique to be used with the proposed two-primate module for the investigation of the responses of monkeys to rotation under space flight conditions are presented. The technique involves the making of a classical electronystagmographic recording using conventional periocular surface electrodes during controlled oscillations and rotations in a rotating armchair. The technique has been found to give excellent results in determining vestibulo-ocular as well as optokinetic ocular responses in baboons, and a technique for calibrating the electrophysiological nystagmus response to the actual angular eye motion in the monkey has been developed based on the use of a television camera. Future plans include the use of implanted periocular electrodes and a head restraint system. A.L.W.

A80-50072 **Variations in the recombination rate of Drosophila melanogaster induced by balloon flight.** J. Proust, C. Prudhommeau (Paris XI, Université, Orsay, Essonne, France), M. C. Giess, and H. Planel (Toulouse III, Université, Toulouse, France). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 187-191. 7 refs.

A80-50073 **Gravity and land plant evolution - Experimental induction of lignification by simulated hypergravity and water stress.** N. Chen, S. M. Siegel, and B. Z. Siegel (Hawaii, University, Honolulu, Hawaii). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979.
Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 193-198. 17 refs.

A80-50074 **Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions.** V. A. Kordium, A. L. Mashinskii (Ukrainian Academy of Sciences, Institute of Molecular Biology and Genetics, Kiev, Ukrainian SSR), E. Ia. Shepelev, G. I. Meleshko (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR), I. Setlik

(Ceskoslovenska Akademie Ved, Mikrobiologicky Ustav, Trebon, Czechoslovakia), E. L. Kordium, K. M. Sytnik, A. F. Popova (Ukrainian Academy of Sciences, Institute of Botany, Kiev, Ukrainian SSR), N. P. Dubinin, and E. N. Vaulina (Akademiia Nauk SSSR, Institut Obshchei Genetiki, Moscow, USSR). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 199-204. 5 refs.

The paper reports data from an electron microscopic analysis of Chlorella pyrenoidosa (LARG-1) cultures after five days of growth in the dark on a semiliquid mineral/glucose medium in the IFS-2 device on board the Soyuz 27-Salyut 6-Soyuz 28 orbital research complex (Soviet-Czechoslovak experiment 'Chlorella-1'). For a space flight of five days duration the ultrastructural cellular organization of the flight and control cultures were similar. This testifies to normal cell function. (Author)

A80-50075 **Development of higher fungi under weightlessness.** T. B. Kasatkina, G. G. Zharikova, A. B. Rubin, L. R. Palmbakh, E. N. Vaulina, and A. L. Mashinskii (Moskovskii Gosudarstvennyi Universitet; Akademiia Nauk SSSR, Institut Obshchei Genetiki, Moscow, USSR). In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 205-211. 5 refs.

The development of Polyporus brumalis basidomycete cultures, both in the dark and in the light, was studied in the 17-day experiment on the orbital station Salyut 5 and in the 20-day experiment on the orbital station Salyut 6. In the first experiment the test tube cultures were exposed to weightlessness beginning from the stage of the fruiting body primordium. In the second experiment the culture was exposed in large containers at the stage of mycelium growth. In the first experiment fruiting bodies that had formed in light had stems and caps approximating the appearance and anatomical structure of the control culture. The fruiting bodies and caps were oriented towards the light. Some structural changes in the hymenophore were observed. Fruiting bodies developed in the dark had twisted stems and no caps. In the second experiment no fruiting bodies were formed in the dark. Light-optical and electron-microscopic studies of Polyporus brumalis growth under weightlessness were carried out. (Author)

A80-50076 **Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus.** V. A. Kordium, A. L. Mashinskii, V. G. Man'ko, V. G. Babskii (Ukrainian Academy of Sciences, Institute of Molecular Biology and Genetics, Kiev, Ukrainian SSR), K. M. Sytnik, E. L. Kordium, O. P. Bochagova (Ukrainian Academy of Sciences, Institute of Botany, Kiev, Ukrainian SSR), Iu. L. Nefedov, V. I. Kozharinov (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR), and G. M. Grechko. In: Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979. Oxford and Elmsford, N.Y., Pergamon Press, 1980, p. 213-218. 7 refs.

Growth data and electron-microscopic analyses are presented for Proteus vulgaris cultures which were grown during space flight in polyethylene packets in a semisolid medium with Tryptose for 96 h. In the suboptimal culture conditions the growth and morphological characteristics of the flight and ground control variants were nearly identical, but it was possible to detect a number of differences between the cellular ultrastructure of these variants. These differences testify to changes in the bacterial cell metabolism during space flight. (Author)

A80-50101 **Joint Committee on Aviation Pathology, Scientific Session, 11th, U.S. Naval Academy, Annapolis, Md., September 5-8, 1978, Proceedings.** *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980. 126 p.

Papers are presented concerning the types of pathologies encountered in aviation. Specific topics include the effects of alcohol on body heat loss, acceleration forces on human subjects, the analysis of tissues for thiazide diuretics, the organization of pathologic identification in mass disasters, blood group determination from teeth, a technique for the identification of crash hazards in army aircraft, the significance of asymptomatic atherosclerotic occlusive vascular disease in the evaluation of aircrew members and the mechanism of extremity injuries during ejection from F-4 aircraft. A.L.W.

A80-50102 **The effect of alcohol on body heat loss.** S. D. Livingstone, L. A. Kuehn, R. E. Limmer, and B. Weatherson (Defence and Civil Institute of Environmental Medicine, Downsview, Ontario, Canada). *(Joint Committee on Aviation Pathology, Scientific Session, 11th, Annapolis, Md., Sept. 5-8, 1978.) Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 961-964. 15 refs.

The effect of the ingestion of alcohol on cooling in seminude human subjects was examined at 25 and 30 C in air; in heavily clothed individuals at -23 C in air; and nude subjects in a water calorimeter at 25 C. It was observed that consumption of the equivalent of five bar whiskey drinks did not affect the cooling rate of subjects as measured by infrared techniques or by thermistors. Total heat loss, measured in the calorimeter, was also not affected by drinking alcohol. It is concluded that the ingestion of alcohol does not cause an increase in cooling rate in humans. (Author)

A80-50103 **Acceleration forces on the human subject.** V. M. Voge (U.S. Naval Material Command, Naval Air Development Center, Warminster, Pa.). *(Joint Committee on Aviation Pathology, Scientific Session, 11th, Annapolis, Md., Sept. 5-8, 1978.) Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 970-980. 171 refs.

An overall view of the methodology of acceleration research, i.e. G-tolerance measuring devices and the peculiarities of each, general information on G tolerance and types of G stress, the methods of determining G tolerance, and the methods of modifying one's G tolerance, is presented. Some human factors aspects of G tolerance, as well as some physiologic changes under G, i.e., ECG changes, cardiac problems, and various other biochemical and hematological alterations, are discussed. Special emphasis is placed on the proven G-associated cardiac pathology found in various animal models, and its possible application to the human subject. (Author)

A80-50104 **Investigation of life change as a contributing factor in aircraft accidents - A prospectus.** N. H. Haakonson (Department of National Defence, Directorate of Preventive Medicine, Ottawa, Canada). *(Joint Committee on Aviation Pathology, Scientific Session, 11th, Annapolis, Md., Sept. 5-8, 1978.) Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 981-988. 28 refs.

A personal perspective on attempts to reduce aircraft accidents resulting from human failure in the cockpit is presented. The premise is that accidents result from an imbalance between performance ability and performance demand. Advances in decreasing pilot-induced accidents must come from methods that will prevent the stresses that diminish performance ability. It is suggested that the investigation of life change as a contributing factor in aircraft accidents will be fruitful because of the tremendous amount of research that has already been done in this field. A review of previous work leads to three recommendations: the Recent Life Change Questionnaire (RLCQ) should be developed as a tool for management and individual aircrew; a character assurance program should be adopted; and a technique to remove accident-prone individuals should be developed. (Author)

A80-50105 **Tissue analysis for thiazide diuretics.** R. A. Merriken (U.S. Armed Forces Institute of Pathology, Washington, D.C.). *(Joint Committee on Aviation Pathology, Scientific Session, 11th, Annapolis, Md., Sept. 5-8, 1978.) Aviation, Space, and*

Environmental Medicine, vol. 51, Sept. 1980, p. 996-998. 15 refs.

A practical method is presented for the extraction and analysis of benzothiadiazide diuretics (thiazides) which are used by pilots to control hypertension, in tissue samples. The method involves the extraction of the acid drug from a tissue homogenate, followed by an initial screening with the sensitive but nonspecific diazo colorimetric test, and then identification and confirmation by thin-layer chromatography and gas-liquid chromatography. Quantitation is performed by derivatizing the thiazide and injecting it on the gas-liquid chromatograph. A.L.W.

A80-50106 **An organizational concept for pathologic identification in mass disasters.** R. R. McMeekin (U.S. Armed Forces Institute of Pathology, Washington, D.C.). *(Joint Committe on Aviation Pathology, Scientific Session, 11th, Annapolis, Md., Sept. 5-8, 1978.) Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 999-1003. 5 refs.

The concept used by the Armed Forces Institute of Pathology for the organization of the procedures involved in the identification of the casualities of a mass disaster is presented. The identification process is divided into four distinct phases: (1) the preliminary evaluation of the location and nature of the disaster, the number of casualties and the availability of resources for identification; (2) the collection of data, including antemortem records, body locations at the time of the disaster, and photographic, radiological, fingerprint, dental and pathological data; (3) data analysis by the methods of spotting obvious identities, correlating classes of victims and records, and identification by exclusion; and (4) conclusion and confirmation. It is noted that the organization of the process leads to greater efficiency and accuracy. A.L.W.

A80-50107 **Role of radiology in aviation accident investigation.** J. E. Lichtenstein, J. E. Madewell, R. R. McMeekin, D. S. Feigin, and J. H. Wolcott (U.S. Armed Forces Institute of Pathology, Washington, D.C.). *(Joint Committee on Aviation Pathology, Scientific Session, 11th, Annapolis, Md., Sept. 5-8, 1978.) Aviation, Space, and Environmental Medicine*, vol. 51. Sept. 1980, p. 1004-1014. 25 refs.

Radiographic screening of fatality victims for skeletal detail, dental and surgical artifacts, personal effects, and foreign bodies is of established value. Radiography as the primary means of positive victim identification, through comparison with antemortem films and records, is an important new role. Data on sources of injury and relationships between victims and the crash environment may be derived from radiographic injury patterns and may be correlated with mechanisms of injury production. The result of such analysis is improved safety design. Such radiography poses unique technical and logistical problems, often involving temporary or remote facilities, which must be solved with consideration for privacy and safety. Advance planning is essential for maximum benefit from radiographic investigation. (Author)

A80-50108 **Dental identification in fatal aircraft accidents.** I. R. Hill (RAF, Institute of Pathology, Aylesbury, Bucks., England). *(Joint Committee on Aviation Pathology, Scientific Session, 11th, Annapolis, Md., Sept. 5-8, 1978.) Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 1021-1025. 5 refs.

A80-50109 **Blood group determination from teeth.** A. G. Higginson and I. R. Hill (RAF, Institute of Pathology and Tropical Medicine, Aylesbury, Bucks., England). *(Joint Committee on Aviation Pathology, Scientific Session, 11th, Annapolis, Md., Sept. 5-8, 1978.) Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 1026-1029.

The blood groups of 18 individuals were determined from the dental pulp of extracted teeth, using a microelution technique. This method of identification has obvious implications for forensic science and aerospace pathology because of the individuality of blood groups. (Author)

A80-50111 **Summary of the means used to positively identify the American victims in the Canary Islands crash.** J. H. Wolcott and C. A. Hanson (U.S. Armed Forces Institute of Pathology, Washington, D.C.). *(Joint Committee on Aviation Pathology, Scientific Session, 11th, Annapolis, Md., Sept. 5-8, 1978.) Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 1034, 1035.

A80-50114 **Physical standards for high-performance fighter aircraft pilots.** J. R. Hickman, J. H. Triebwasser, and M. C. Lancaster (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *(Joint Committee on Aviation Pathology, Scientific Session, 11th, Annapolis, Md., Sept. 5-8. 1978.) Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 1052-1056.

The new generation of high-performance aircraft has clearly emphasized man's physiological limitations to withstand sustained high G loading. The selection and retention standards required to function in this environment have not been completely defined. This paper presents a format of standards and screening tests, placing special emphasis on the detection of subclinical disease, particularly coronary artery disease. Cases which illustrate the spectrum of asymptomatic coronary disease are presented. Other entities discussed include conduction defects, mild valvular lesions, arrhythmias, and degenerative joint disease of the spine. An overall approach based on age, screening milestones, and specialized tests is presented. Finally, a data repository on all pilots with chronic high G exposure is discussed. (Author)

A80-50115 **Coronary heart disease - An expensive Air Force problem.** R. M. DeHart (USAF, Medical Service Center, Brooks AFB, Tex.). *(Joint Committee on Aviation Pathology, Scientific Session, 11th, Annapolis, Md., Sept. 5-8, 1978.) Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 1057-1063. 26 refs.

Coronary heart disease is a major public health problem and a leading cause of death and disability in Air Force personnel. The paper discusses what is known about the cause of this serious disease and various means for its prevention in the 20% of the 30,000 Air Force pilots who may have a significant degree of coronary atherosclerosis. It is pointed out that although the basic mechanisms leading to the development of coronary heart disease are not fully understood, it appears to be a multifactorial condition, and risk factors associated with the development of the disease are indicated. Programs undertaken by HEW and the Air Force to identify, educate and treat those at high risk are discussed, and the costs, benefits, risks, sensitivity and predictive value of available tests to detect coronary heart disease in asymptomatic individuals are outlined. A.L.W.

A80-50116 **Asymptomatic atherosclerotic occlusive vascular disease - Its significance in the evaluation of aircrew members.** C. J. Buckley, L. G. Manning, and J. W. Hallett, Jr. (USAF, Medical Center, Lackland AFB, Tex.). *(Joint Committee on Aviation Pathology, Scientific Session, 11th, Annapolis, Md., Sept. 5-8, 1978.) Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 1064-1068. 17 refs.

During the past 5 years, seven active aircrew members have been referred to the Vascular Surgery Unit for evaluation of previously asymptomatic lower extremity claudication or cerebrovascular symptoms identified during treadmill exercise testing for abnormal electrocardiograms noted on periodic flying physical evaluations. Noninvasive vascular evaluation included pre- and postexercise lower extremity segmental blood pressures, Doppler Ultrasonic Velocity Detector supraorbital cerebrovascular screen, carotid phonoangiography, and oculoplethysmography. Four of those evaluated showed evidence of moderately severe aorto-iliac occlusive disease. More importantly, three also showed evidence of significant extracranial occlusive cerebrovascular disease and two pilots were found to have asymptomatic total occlusions of one internal carotid artery. It is recommended that noninvasive diagnostic techniques for evaluation of the peripheral arterial system be added to complement the evaluation of those aircrew members suspected of having atherosclerotic coronary arterial disease. (Author)

A80-50119 # **Hemodynamic effects of extreme positive pressure breathing using a two-pressure flying suit.** U. I. Balldin (Forsvarets Forskningsanstalt, Linkoping, Sweden) and B. Wranne (University Hospital, Linkoping, Sweden). *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 851-855. 20 refs. Research supported by the County Council of Ostergotland and Swedish National Association against Heart and Chest Diseases.

The central hemodynamics during extreme positive pressure breathing (PPB) with 4.0-9.3 kPa breathing pressures using a two-pressure flying suit was studied with the thermodilution technique. Pressures measured simultaneously in right atrium, pulmonary artery, and systemic circulation increased in proportion to, but somewhat less than, the breathing pressures. A decreased transmural right atrial and pulmonary arterial pressure was found during PPB to be most pronounced during simultaneous counterpressure to the thorax. Stroke volume (SV) as well as cardiac output (CO) decreased successively during PPB, mostly during PPB with more than 4 kPa. Simultaneous counterpressure to the thorax added no further hemodynamic effects. During recovery after PPB, a marked compensatory increase in SV and CO was registered. An increased systemic blood pressure and heart frequency was found at all levels of PPB, suggesting that PPB may be of value to increase G tolerance. (Author)

A80-50120 * # **Multiple sensory and motor cues enhance the accuracy of pursuit eye movements.** J. A. Mather and J. R. Lackner (Brandeis University, Waltham, Mass.). *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 856-859. 14 refs. Contract No. NAS9-15147.

Oculomotor pursuit can be elicited by moving visual, tactile, proprioceptive, and occasionally auditory targets presented singly. Both the accuracy and amount of pursuit are enhanced if the position of the target is specified by cues from several sensory modalities. When the motion of the target is topologically related to movements of the subject's arm, the subject's eyes are more closely phase-locked with the target and reversals of the eyes generally precede target reversal by 10-20 ma. (Author)

A80-50121 # **A questionnaire study of psychological background factors in U.S. Navy aircraft accidents.** R. A. Alkov and M. S. Borowsky (U.S. Naval Safety Center, Norfolk, Va.). *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 860-863. 12 refs.

A questionnaire concerning life changes, personality factors, and judgmental and leadership qualities of U.S. Naval aircrewmembers involved in aircraft accidents was sent to investigating flight surgeons during 1977-78. The responses were divided into two groups: those who were causally involved in accidents and those who were not. In order to cross-validate the results, data were collected and analyzed during 1979. Results indicate that aircrewmembers in the process of deciding about staying in the service are more likely to fall into the causally involved group. So were those who had trouble with interpersonal relationships, had no sense of humor or humility concerning themselves, were immature, or had recently lost a friend or family member through death. (Author)

A80-50122 # **Tap water, an efficient method for cooling heatstroke victims - A model in dogs.** A. Magazanik, Y. Epstein, R. Udassin, Y. Shapiro, and E. Sohar (Chaim Sheba Medical Center, Ramat-Gan; Tel Aviv University, Tel Aviv, Israel). *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 864-866. 17 refs.

Forty experimentally heatstroked dogs were cooled by immersion in water at temperatures varying from 1-25 C. At all water temperatures, cooling occurred at a much slower rate in comatose dogs than in conscious ones. Dogs cooled in tap water (15-16 C) had the same cooling rate as those cooled in ice water (1-3 C). At water temperatures above 18 C, cooling rates were considerably decreased. Since tap water cooled as efficiently as ice water, its use may prove the method of choice for human heatstroke victims. Its advantages are ready availability, simplicity of use, and its failure to cause shivering. (Author)

A80-50123 # **Equiperception maneuvers.** H. Jaslow (Gould, Inc., Simulation Systems Div., Melville, N.Y.). *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 867-871. 5 refs.

Based on a study of the physical mechanism of the utricular otolith, equiperception maneuvers are quantitatively defined. Analytic expressions are presented along with examples of different aircraft dynamic states having the same perceived sensation. Equiperception maneuvers are particularly important for investigating aircraft accidents where pilot misjudgment may be caused by confusing one aircraft maneuver for another (e.g., errors in approach angle or climb angle). Equiperception maneuvers are also important for motion simulation in aircraft trainers. (Author)

A80-50124 # **The Environmental Symptoms Questionnaire - Revisions and new field data.** J. B. Sampson and J. L. Kobrick (U.S. Army, Research Institute of Environmental Medicine, Natick, Mass.). *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 872-877. 6 refs.

The Environmental Symptoms Questionnaire (ESQ) was developed to obtain information about the incidence and severity of symptoms produced by exposure to several different climatic conditions. A subsequent revision is reported here, along with a description of its use in two studies involving physical stresses frequently encountered by military personnel. The first study examined the effects of prolonged flight on the health and physical work performance of man assigned to an overseas station. The second study tested the effects of acute altitude exposure on the load-carrying capacity of men over a period of several days. Five independent symptom factors were identified in the data of the first study, and then were applied to the analyses of treatments of both studies. The factor scores exhibited predictable and meaningful data in both cases. The factors are described, results are compared to previous studies, and general recommendations for use of the questionnaire are made. (Author)

A80-50125 # **Pulmonary and symptom threshold effects of ozone in airline passenger and cockpit crew surrogates.** M. T. Lategola, C. E. Melton, and E. A. Higgins (FAA, Civil Aeromedical Institute, Oklahoma City, Okla.). *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 878-884. 14 refs.

Previous studies showed that the ozone concentration for pulmonary and symptom threshold effects in flight attendant surrogates lies between 0.20 and 0.30 ppmv for a 3-h exposure with intermittent treadmill exercise at 1829 m (MSL) simulated cabin altitude. In the present study of sedentary occupants of the in-flight airline cabin, the same protocol was used except for omitting all treadmill exercise. Symptoms were assessed with a standardized questionnaire. Pulmonary function was assessed using standardized quantitative spirometry. Male smoker and nonsmoker airline passenger and cockpit crew surrogates 40-59 years of age were used. Small but statistically significant displacements occurred in symptoms and in some spirometry parameters. In general, the younger subjects appeared more sensitive to ozone than the older subjects. No significant differences appeared between smokers' and nonsmokers' responses to ozone exposure. It is concluded that the ozone threshold of these sedentary surrogates under these experimental conditions is right at 0.30 ppmv. (Author)

A80-50126 # **The importance of ammonia in the metabolic effects of hydrazine.** W. N. Floyd, Jr. (Texas Medical Center, Houston, Tex.). *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 899-901. 7 refs.

Acute exposure to hydrazine (N2H4), mol wt 32.05, an important liquid rocket propellant and parent compound of useful pharmaceutical agents such as isoniazid and hydralazine and other chemical compounds, produces severe central nervous system effects, such as coma and convulsions sometimes resulting in death. Heretofore, treatment has been symptomatic, e.g., quick-acting barbiturates for convulsions. The results of this study emphasize the importance of acute ammonia intoxication as a major component of the metabolic effects of hydrazine. Further, the results support the theory of competitive inhibition of ammonia by hydrazine. (Author)

A80-50127 * # **Femur-bending properties as influenced by gravity. IV - Limits after high and low weight-bearing.** C. C. Wunder, C. M. Tipton (Iowa, University, Iowa City, Iowa), and K. M. Cook (Coe College, Cedar Rapids, Iowa). *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 902-907. 10 refs. Grants No. NIH-HL-2124503; No. NGR-16-001-031.

Gravity enhances femur growth as measured in terms of strength, but shows little or even a growth-retarding effect in terms of relative brittleness, defined as the inverse of ultimate or tolerable strain. Chronic weightlessness was simulated by harness suspension or by extrapolation of results from 3-g centrifugation. Experimental results from 45 male, white rats (34-520 d old) were compared to 72 control or baseline rats (28-520 d old) with correction for age and size differences. After suspension, the youngest rats showed subnormal tolerable strains. Combined results, however, although predicting 19 + or - 1% below normal strength, after a week of weightlessness, predicted less effect (1 + or - 4%) for the tolerable strain. (Author)

A80-50128 # **Effects of different body positions on the Eustachian tube function in the selection of airmen.** P. Groth and O. Tjernstrom (Lund, Universitet, Malmo General Hospital, Malmo, Sweden). *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 913-917. 18 refs. Research supported by the Forsvarets Forskningsanstalt. FOA Project H-352.

The Eustachian tube function of 52 applicants accepted for flight training had earlier been comprehensively tested during simulated flights in a pressure chamber in the sitting position. Despite the fact that all were otologically healthy, the wide range of pressure-equilibrating capacity in the sitting position was even more pronounced when they were retested in recumbency, and in every type of test the pressure-equilibrating capacity was reduced. For instance, 17% of the recumbent subjects could not equilibrate at all during simulated descent as compared to 8% in the sitting position; 81% of the ears were Toynbee positive in the sitting position and only 69% in recumbency. The advantages of the recumbent compared to the seated test position are discussed. (Author)

A80-50129 * # **Emergency medicine and the airline passenger.** S. R. Mohler (Wright State University, Dayton, Ohio), A. Nicogossian (NASA, Life Sciences Div., Washington, D.C.), and R. A. Margulies (U.S. Navy, Naval Submarine Medical Research Laboratory, Groton, Conn.). *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 918-922. 7 refs.

Problems related to immediate medical care in case of in-flight emergencies are discussed with reference to such critical types of medical emergencies as obstructed airway, cardiac dysfunction, trauma, hemorrhage, hypoxia, and pain. It is shown that training flight attendants to deal with in-flight medical emergencies and to use first-aid support equipment and essential and useful drugs may later help with stabilization of a victim and allow continuing the flight to the scheduled destination without the need for a diverted landing. Among the steps suggested in order to upgrade inflight welfare and safety of passengers are the development of an advisory circular by the FAA covering standardized training for flight attendants, regulatory action requiring upgrading of the present rudimentary first-aid kit, and the enactment of Good Samaritan legislation by the U.S. Government. V.L.

A80-50130 # **Pilot study on the value of a beta-blocking drug in initial helicopter training.** E. Donaldson, J. Grant-Thomson, P. Morwood, N. O'Connor, and R. Tippett (Royal Australian Army, Army Aviation Centre, Oakey, Queensland, Australia). *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 926-929. 25 refs.

The effect on performance of a standard dose of a beta-blocking drug was examined in a controlled test situation closely approximating actual flying training conditions and involving helicopter flying skills. Pindolol or a placebo was administered 90 min before a test flight and the flying and hovering performance of five students was assessed by qualified flying instructors. No significant difference was found between assigned performance ratings of test drug flights and placebo flights. It could not be concluded that a beta-blocking drug would improve the hovering performance of ab initio helicopter trainee pilots. (Author)

A80-50131 # **Incidence of complications from coronary angiography in 463 USAF aviators.** M. M. Thomas, V. F. Froelicher, G. D. Tolan, and R. J. Fuchs (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *Aviation, Space, and Environmental Medicine*, vol. 51, Sept. 1980, p. 930-936. 39 refs.

Over 600 fliers have had coronary angiography at the USAF School of Aerospace Medicine since 1971. This paper concerns the incidence of complications, long- and short-term, on the first 463. Information on short-term complications was compiled from computerized data storage and included all 463 patients. Mean age of patients was 40.5 with a range of 22-57 years. Information about long-term complications was obtained from 357 respondents to a three-page questionnaire (77% return rate). Most frequent indication for angiography was on an abnormal treadmill stress test, and more than 90% of the patients were asymptomatic. There was no short-term mortality. Nine individuals reported some residual complaints involving the hand, but had no job or physical activity limitation from the procedure. The local arterial complications were more frequent with brachial cutdown than with the femoral percutaneous approach, but the difference in frequency was not statistically significant. (Author)

A80-50196 **Man-machine interaction in aerospace control systems.** D. R. Towill (University of Wales Institute of Science and Technology, Cardiff, Wales). *(Institution of Electronic and Radio Engineers, Colloquium on Design of Control Systems for Advanced Aircraft Having Relaxed or Negative Stability, London, England, Oct. 16, 1979.) Radio and Electronic Engineer*, vol. 50, Sept. 1980, p. 447-458. 39 refs.

Man-machine system concepts are discussed, along with dynamic properties of the machine and typical human operator transfer functions. It is shown how microelectronics can be used to reduce human operator workload, via such techniques as plant augmentation, display quickening, providing a model reference describing the current plant dynamics, and fast models for prediction in terminal-phase docking operations. V.T.

A80-50221 **Design concepts of survival suits for cold water immersion and their thermal protection performance.** J. S. Hayward (Victoria, University, Victoria, British Columbia, Canada). *SAFE Journal*, vol. 10, Fall 1980, p. 8-10.

Twenty-three different survival suits for cold water immersion, comprising the major types available for military and industrial users, were assembled for assessment of their relative thermal protection performance. Changes in rectal and skin temperatures were measured on subjects wearing the suits while immersed for 2-3 hours in ocean water of 11.8 C. The diversity of suits were able to be broadly categorized into three major design concepts: dry, with foam (DF); dry, without foam (D); and wet, with foam (WF). Control immersions with no survival suit worn (C) were also conducted for the 20 experimental subjects. Excepting 4 special cases, each design-concept was distinctive in the level of thermal protection afforded by its representative suits, with a rank order from most to least protection being DF, WF, D, and C in the approximate quantitative proportions of 7, 4, 2, and 1, respectively. These results provide a comprehensive overview of the relative thermal protection qualities of the diversity of survival suits available. (Author)

A80-50222 **F/A-18 foot strikes - An update.** E. R. Winkler and G. L. Johnson (McDonnell Douglas Corp., St. Louis, Mo.). *SAFE Journal*, vol. 10, Fall 1980, p. 11-14. 5 refs.

Early analysis and testing of the F-18 Escape System indicated that there was a probability of foot contact with the instrument panel during ejection. Two studies were accomplished to examine this problem. The first was initiated to determine if this contact would be injurious. Although the results indicated that the forces and motions involved would probably not be injurious, this could not be proven conclusively. The second study used a biodynamic computer model to evaluate three possible methods to eliminate the impact. The design of 'Toe Guides' was developed during this study. The Toe Guide is a passive device attached to the rudder pedal which controls the foot trajectory to eliminate impact during escape. The design has been successfully tested with human subjects on the ejection tower at NADC and is being incorporated in the F/A-18 aircraft. (Author)

A80-50249 **The sensing of retinal motion.** W. C. Gogel (California, University, Santa Barbara, Calif.). *Perception and Psychophysics*, vol. 28, no. 2, Aug. 1980, p. 155-163. 10 refs. NSF Grant No. BNS-77-16620.

The apparent relative motion of physically stationary objects that frequently occurs as the head is moved in a frontoparallel plane is almost always in the direction expected from the projection into the distal world of the relative motion of the images on the eye. It is hypothesized that this is the result of the perceptual underestimation of the depth between the objects. If a perceptual overestimation of the depth were produced, it was predicted that the apparent relative motion would be in a direction opposite to that expected from the projection of the retinal motions. This prediction was tested using the binocular disparity cue to produce perceptual overestimation of the slant (depth) of a luminous line. In this case, perceived slant was the indicator of perceived depth, and perceived rotation concomitant with the motion of the head was the indicator of perceived relative motion. The results support the prediction and also provide some support for a theoretically derived equation specifying the relation between these two perceptual variables. (Author)

A80-50267 **An analysis of human reliability measures in visual inspection.** S. L. Johnson (GM Institute, Flint, Mich.) and D. J. Funke (Calspan Corp., Buffalo, N.Y.). *Journal of Quality Technology*, vol. 12, Apr. 1980, p. 71-74. 10 refs.

One of the weakest links in establishing a quality control system is the lack of information about the efficiency of the visual inspector. This paper examines the advantages and disadvantages of several human performance measures that can be used in evaluating visual inspection effectiveness. B.J.

A80-50279 # **Preparation for long-duration flights (Podgotovka k dlitel'nym poletam)** [illegible]. *Aviatsiia i Kosmonavtika*, Aug. 1980, p. 36, 37. In [illegible]

The preparation of ast[illegible] longed space flight is discussed. Particular attention is given to the development of training and flight-activity criteria for the astronauts. B.J.

A80-50322 * **A microprocessor-based instrument for neural pulse wave analysis.** G. K. Kojima (NASA, Ames Research Center, Moffett Field, Calif.) and F. Bracchi (Milano, Università, Milan, Italy). *IEEE Transactions on Biomedical Engineering*, vol. BME-27, Sept. 1980, p. 515-519. 12 refs.

A80-50331 # **Significance of the heart factor in manifestations of the initial insufficiency of cerebral blood circulation in pilots (Znachenie kardial'nogo faktora v proiavlenii nachal'noi nedostatochnosti tserebral'nogo krovoobrashcheniia u letchikov).** B. I. Parmenov-Trifilov, L. I. Starikov, V. P. Kudin, and E. P. Skrylev. *Voenno-Meditsinskii Zhurnal*, July 1980, p. 53-56. In Russian.

A80-50353 **Sensations of heaviness in man.** S. C. Gandevia. New South Wales, University, Doctor of Philosophy Thesis, 1978. 222 p. 327 refs.

The neural mechanisms involved in the perception of exerted muscular force and the heaviness of lifted objects are investigated. Results of experiments in which the relative heaviness of objects was determined subjectively in the presence of different forms of muscle weakness are presented which suggest that humans normally rely on the magnitude of voluntary, centrally generated motor commands in the judgement of the heaviness of a lifted object. Perceived heaviness is then used in investigations of the magnitudes of motor commands in the presence of peripheral inputs. Anesthetization by the paralysis of joint and skin afferents is used to determine the contribution of reflex assistance to muscle force and the perception of heaviness. A.L.W.

A80-50354 **Living without oxygen: Closed and open systems in hypoxia tolerance.** P. W. Hochachka (British Columbia, University, Vancouver, Canada). Research supported by the Natural Sciences and Engineering Research Council of Canada. Cambridge, Mass., Harvard University Press, 1980. 190 p. 104 refs. $17.50.

Mechanisms of temporary adaptation to anaerobic conditions employed by the most successful animal anaerobes are surveyed in order to serve as a basis for assessing factors which may be adjusted in extending the tolerance of organisms to anoxia or hypoxia. Following a review of adaptation strategies employed by most organisms and the metabolic resources available to them, consideration is given to the cellular (closed-system) mechanisms of CO2 fixation by the parasitic helminths, the coupling of glucose and amino acid catabolism in bivalve mollusks, and coupled glucose and arginine metabolism in cephalopods. The key elements of anaerobic glycolysis used by verterbrates are examined, and the integration of aerobic and anaerobic glycolysis is discussed. Attention is then given to open-system (tissue and organ) adaptation mechanisms in hypoxia-adapted fish, air-breathing fish, and diving marine mammals. A.L.W.

A80-50563 # **Methods of continuum mechanics in investigations of respiration and blood circulation (Metody mekhaniki sploshnykh sred v issledovanii dykhaniia i krovoobrashcheniia).** S. S. Grigorian. In: Current problems of theoretical and applied mechanics; All-Union Conference, 4th, Kiev, Ukrainian SSR, May 21-28, 1976, Transactions. Kiev, Izdatel'stvo Naukova Dumka, 1978, p. 258-288. 27 refs. In Russian.

Current trends of biological hydrodynamics are briefly reviewed. Factual data on the conditions of blood and air motion in the cardiovascular and respiratory systems are examined and are applied to the classification of biomechanical problems associated with the analysis of the cardiovascular and respiratory systems and their elements. Some diagnostic problems which generate new hydrodynamic problems are examined. V.P.

A80-50577 # **The relationship between pulse count and energy expenditure at sub maximal work under different ambient temperatures.** A. K. Sengupta, D. N. Sarkar, S. Mukhopadhyay, and D. C. Goswami (Field Laboratory, Tezpur, India). *Defence Science Journal*, vol. 29, Oct. 1979, p. 173-1[illegible]6. 10 refs.

A80-50629 **Orthostatic tolerance testing - Comparison of LBNP and HUT methods.** J. R. Hordinsky, U. Gebhardt, H.-J. Borger, and J. Birk (Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt, Institut fur Flugmedizin, Bonn, West Germany). *Zeitschrift fur Flugwissenschaften und Weltraumforschung*, vol. 4, July-Aug. 1980, p. 194-201. 24 refs.

A comparison of lower body negative pressure (LBNP) and head-up tilting (HUT) methods is presented for orthostatic tolerance testing. Three tests, the stand test, LBNP test, and HUT test are conducted on human beings in order to determine the expected blood pressure and heart rate changes, and cardiovascular changes with different LBNP levels and HUT angles. The variability of LBNP and HUT results led to a comparison of different length LBNP protocols against a standard tilt protocol. The experiment used six males and six females utilizing (1) a table-mounted plexiglas cylinder with a rubber ring used to limit negative pressure and level of the interior iliac crests (for LBNP test) and (2) a parachute harness for support (for HUB test). Results on comparisons of male-female orthostatic response and presyncopal events are presented. C.F.W.

A80-50703 Biological limits of temperature and pressure. R. Y. Morita (Oregon State University, Corvallis, Ore.). *(College Park Colloquium on Chemical Evolution: Limits of Life, 4th, College Park, Md., Oct. 18-20, 1978.) Origins of Life*, vol. 10, Sept. 1980, p. 215-222. 57 refs.

Evidence for upper and lower limits on the temperatures and pressures at which terrestrial organisms can survive and/or grow is presented. Organisms are pointed out which have been discovered growing at temperatures greater than 90 C, at 0 C or lower, at temperatures of 40 C and high salinities, at temperatures of 104 C and pressures of 1000 atm, at altitudes greater than 3000 m at 0 C, and in the deep sea environment at temperatures of 4 C and pressures of 700 atm. It is noted that the low metabolic rates of some of these organisms, which make their growth difficult to detect, may represent adaptations to their extreme environments and may have been characteristic of early forms of life. A.L.W.

A80-50704 * Endolithic microbial life in hot and cold deserts. E. I. Friedmann (Florida State University, Tallahassee, Fla.). *(College Park Colloquium on Chemical Evolution: Limits of Life, 4th, College Park, Md., Oct. 18-20, 1978.) Origins of Life*, vol. 10, Sept. 1980, p. 223-235. 11 refs. NSF Grants No. DPP-76-1551; No. DPP-77-21858; Grant No. NsG-7337.

Endolithic microorganisms (those living inside rocks) occur in hot and cold deserts and exist under extreme environmental conditions. These conditions are discussed on a comparative basis. Quantitative estimates of biomass are comparable in hot and cold deserts. Despite the obvious differences between the hot and cold desert environment, survival strategies show some common features. These endolithic organisms are able to 'switch' rapidly their metabolic activities on and off in response to changes in the environment. Conditions in hot deserts impose a more severe environmental stress on the organisms than in the cold Antarctic desert. This is reflected in the composition of the microbial flora which in hot desert rocks consist entirely of prokaryotic microorganisms, while under cold desert conditions eukaryotes predominate. (Author)

A80-50706 Optical activity and evolution. M. M. Khasanov and G. P. Gladyshev (Akademiia Nauk SSSR, Institut Khimicheskoi Fiziki, Moscow, USSR). *Origins of Life*, vol. 10, Sept. 1980, p. 247-254. 13 refs.

It is noted that the chemical reactions occurring in rarefied cosmic clouds (molecular concentration less than approximately 100/cu cm) differ from similar laboratory reactions by the much greater effect on the outcome of external force fields. In this light it is hypothesized that the synthesis of optically active substances may occur in outer space under the conjoint stereospecific effect of a magnetic and other molecule-orienting field. It is further conjectured that the optically active substances of the solar system had been produced in the course of its formation out of the primal rarefied cloud. (Author)

A80-50707 * Experiments on the amplification of optical activity. N. E. Blair and W. A. Bonner (Stanford University, Stanford, Calif.). *Origins of Life*, vol. 10, Sept. 1980, p. 255-263. 38 refs. Grant No. NGL-05-020-582.

Chemical mechanisms for the amplification of small, abiotically produced enantiomeric excesses leading to the complete stereo specificity of all biochemical reactions observed in the present-day biosphere are investigated quantitatively. Partial copolymerization of a mixture of R- and S-leucine or R- and S-valine N-carboxy anhydrides containing a known excess of one enantiomer was induced and the enantiomeric composition of the resulting oligomer was analyzed by gas chromatography. It is found that the 50% polymerization of leucine mixtures having excesses of 8 to 70% of either enantiomer leads to a significant enhancement of the enantiomeric excess of the polymer, accompanied by a corresponding decrease in the enantiomeric excess of the unpolymerized residue. On the other hand, 25-50% polymerization of valine mixtures is observed to result in polymers showing a decreased enantiomeric excess relative to the starting mixture and corresponding increases in those of the residue. Results of the leucine polymerization are interpreted as supporting the theory of steric interactions between the monomer and the helical structure of the polymer leading to the enrichment of one enantiomer, and possible mechanisms for the reverse stereospecificity observed in valine are discussed. A.L.W.

A80-50708 On the antisymmetry of the amino acid code table. M. Hasegawa (Ministry of Education, Institute of Statistical Mathematics, Tokyo, Japan) and T. Miyata (Kyushu University, Fukuoka, Japan). *Origins of Life*, vol. 10, Sept. 1980, p. 265-270. 28 refs.

Antisymmetry of the amino acid code table in terms of codon degeneracy is pointed out, and it is related to a physico-chemical problem of codon-anticodon interaction energy. A strong negative correlation between molecular weight of an amino acid and its codon degeneracy is pointed out, and its implication to the origin of the amino acid code table is discussed. Finally, an earlier form of the amino acid code table is proposed. (Author)

A80-50709 Possible role of RNA-dependent DNA-polymerase in early stages of evolution. R. Balasubramanian and P. Seetharamulu (Madras, University, Madras, India). *Origins of Life*, vol. 10, Sept. 1980, p. 271-275. 37 refs.

The tDNA cistrons have permuted sequences of triplets corresponding to anticodons in tRNA at specific regions in their sequences. Reverse transcription is invoked for the generation of such sequences in the genome during early stages of evolution. Making the assumption that a single tDNA cistron in a genome might have come into existance by an accident after transcription, tRNA is expected to fold into a three-dimensional shape analogous to the contemporary tRNA, where the anticodon triplet bases are sticking out well-exposed to chemical mutagens. The mutated tRNAs would have been reverse-transcribed into the genome by crude analogs of now-known reverse-transcriptases. The back and forth process of transcription and reverse transcription would give rise to all the tDNA cistrons with the required anticodons. This process may act as an important feedback mechanism for the efficient progress of evolution. (Author)

A80-50710 Facilitated diffusion as a method for selective accumulation of materials from the primordial oceans by a lipid-vesicle protocell. W. Stillwell (Indiana University; Purdue University, Indianapolis, Ind.). *Origins of Life*, vol. 10, Sept. 1980, p. 277-292. 69 refs.

A model is proposed for the selective accumulation of amino acids, sugars, nucleotides, cations and protons from the primordial oceans into a lipid vesicle type of protocell. The model is built on facilitated diffusion using simple, primordial, lipid-soluble carriers. The advantages a lipid vesicle protocell would have had over the other potential types of protocells are discussed. (Author)

A80-50711 Effect of polynucleotides and a basic protein on the condensation of phenylalanyl adenylate. M. Ishigami, N. Tonotsuka-Ohta, K. Nagano (Jichi Medical School, Minamikawachi, Tochigi, Japan), and M. Kinjo (Utsunomiya University, Utsunomiya, Japan). *Origins of Life*, vol. 10, Sept. 1980, p. 293-299. 16 refs.

The effect of polyuridylate and of histone on the oligomerization of phenylalanyl adenylate was tested. Polyuridylate which pairs with adenine under suitable conditions showed no effect. Histone increased the rate of the polymerization whereas a neutral protein, albumin, had no effect. Simultaneous presence of nucleotides diminished the effect of histone. The implication of these results on the prebiotic polypeptide formation is discussed. (Author)

A80-50712 **Is aluminum an essential element for life.** V. Valkovic (Institut Rudjer Boskovic, Zagreb, Yugoslavia). *Origins of Life,* vol. 10, Sept. 1980, p. 301-305. 7 refs. Research supported by the Robert A. Welch Foundation; NSF Grant No. PL-480.

On the basis of abundance considerations, it is argued that aluminum is an element essential for life. Elemental abundances in the solar system and in cosmic rays are examined, and small values in the proportions Li, Be and B, which are not essential for life, are pointed out. It is shown that the elements essential to life in large quantities are the most abundant elements in the solar system and that, with the exception of aluminum, those that make up a secondary solar system abundance peak are essential to life in trace amounts. It is thus suggested that if the chemical compositions of living organisms reflect to some extent the composition of the environment in which they evolved, and since aluminum has been found to be sufficiently abundant in the media in which life evolved, aluminum may be essential to life. A.L.W.

A80-50912 **Automatic contouring for two-dimensional echocardiography.** R. E. Jenkins and J. B. Garrison (Johns Hopkins University, Laurel, Md.). *Johns Hopkins APL Technical Digest,* vol. 1, Apr.-June 1980, p. 139-143. Research supported by the W. W. Smith Charitable Trust.

Real-time phased-array two-dimensional ultrasonic echocardiographic systems have been developed recently. They provide a noninvasive technique that defines the geometry and dynamics of cardiac structure (e.g., the walls of the heat chambers) and allows the rapid collection of image data on cardiac structure and function. These systems are immediately useful for visually diagnosing numerous cardiac disorders. In addition, their output contains subtle information on several regional cardiac performance parameters, such as variations in the rate of change of cardiac dimensions. B.J.

A80-51000 **Device for mass measurement under zero-gravity conditions.** V. A. Sarychev, V. V. Sazonov, A. Zlatorunskii, S. F. Khlopina, A. D. Egorov, and V. I. Somov (Intercosmos Council, Moscow, USSR). *(International Astronautical Federation, International Astronautical Congress, 30th, Munich, West Germany, Sept. 17-22, 1979.) Acta Astronautica,* vol. 7, June 1980, p. 719-730.

The problem considered in this paper is the investigation of the properties of a mass-meter, i.e. the device for determining the mass of cosmonaut's body under zero-gravity conditions. The estimates of accuracy of mass measurement by this device are given, and the results of measuring the masses of cosmonauts' bodies on the Salyut 5 and 6 orbital stations are presented. (Author)

STAR ENTRIES

N80-31029 Iowa State Univ. of Science and Technology, Ames.
A PARABOLOIDAL FLOW CYTOMETER FOR IMPROVED FLUORESCENCE ANALYSIS OF SINGLE CELLS Ph.D. Thesis
Mary Jane Skogen Hagenson 1980 161 p
Avail: Univ. Microfilms Order No. 8019634

A flow cytometer featuring a paraboloidal flow chamber for optical collection was designed to improve fluorescence analysis of single cells. The improvement is achieved by increasing the fluorescence collection efficiency permitting measurement of weakly fluorescent particles and by improving fluorescent intensity resolution, thereby making it possible to differentiate cells with smaller differences in fluorescence intensity. The paraboloidal flow system was evaluated with standard spheres, mouse testicular cells and nuclei, and weakly fluorescent cells. It was demonstrated that the paraboloid: (1) improves fluorescence intensity resolution relative to orthogonal systems by nearly 20% for standard particles and round spermatid nuclei; (2) increases the fluorescence signal to noise ratio, allowing measurement of fluorescence which was not resolved from background noise in orthogonal systems; and (3) is relatively insensitive to particle orientation with respect to illumination and collection optics. Dissert. Abstr.

N80-31030*# California Univ., Davis. Dept. of Animal Physiology.
THERMOREGULATION IN RATS: EFFECTS OF VARYING DURATION OF HYPERGRAVIC FIELDS Annual Report, 1 Jul. 1979 - 31 Aug. 1980
J. M. Horowitz and B. A. Horwitz Aug. 1980 28 p refs
(Grant NsG-2234)
(NASA-CR-163481) Avail: NTIS HC A03/MF A01 CSCL 06C

The effects of hypergravitational fields on the thermoregulatory system of the rat are examined. The question underlying the investigation was whether the response of the rat to the one hour cold exposure depends only upon the amplitude of the hypergravic field during the period of cold exposure or whether the response is also dependent on the amplitude and duration of the hypergravic field prior to cold exposure. One hour of cold exposure applied over the last hour of either a 1, 4, 7, 13, 19, 25, or 37 hr period of 3G evoked a decrease in core temperature (T sub c) of about 3 C. However, when rats were subjected concurrently to cold and acceleration following 8 days at 3G, they exhibited a smaller fall in T sub c, suggesting partial recovery of the acceleration induced impairment of temperature regulation. In another series of experiments, the gravitational field profile was changed in amplitude in 3 different ways. Despite the different gravitational field profiles used prior to cold, the magnitude of the fall in T sub c over the 1 hr period of cold exposure was the same in all cases. These results suggest that the thermoregulatory impairment has a rapid onset, is a manifestation of an ongoing effect of hypergravity, and is not dependent upon the prior G profile. M.G.

N80-31031 California Univ., Davis.
THE EFFECT OF PHYSICAL CONDITIONING ON +Gz TOLERANCE Ph.D. Thesis
William Lewis Epperson 1980 86 p
Avail: Univ. Microfilms Order No. 8018968

The influence of physical conditioning on tolerance to a centrifugation profile of alternating 15 second plateaus at 4.5 and 7.0 +Gz--called Simulated Aerial Combat Maneuvering (SACM)--was determined using 24 young men as subjects. These subjects were assigned to groups as controls (C) (no physical training), runners (R), and weight trainers (W), and followed a 12 week protocol of specified physical training. Tolerance to centrifugation, maximum oxygen consumption, muscle strength, and body composition were periodically determined. The +Gz tolerance of the runners and controls increased at an average rate of 4 seconds per week during the course of the experiment. The weight trainers increased their G tolerance at an average rate of 15 seconds per week. Fatigue scores indicate that group W subjects take longer to reach a given level of fatigue than did the subjects of the other groups. It appears therefore that a physical conditioning program of weight training will improve human tolerance to repeated and prolonged exposure to high +Gz loads. Dissert. Abstr.

N80-31032 Drexel Univ., Philadelphia, Pa.
AN INVESTIGATION OF CARDIAC THRESHOLD VARIABILITY RELATIVE TO STIMULUS SHAPE AND RESPIRATORY CYCLE Ph.D. Thesis
Leonid Hrebien 1980 168 p
Avail: Univ. Microfilms Order No. 8019351

To study threshold relative to stimulus shape, energy strength duration relationships were determined for three different stimulating waveforms: the standard rectangular, the sawtooth (ramp), and the exponential. Stimulus threshold energies were determined at pulse durations ranging from 0.4 to 3.0 milliseconds for each waveform and the results were plotted as energy strength duration curves. It was found that threshold energy requirements for sawtooth stimuli were 3-27% lower than for standard rectangular stimuli at the same pulse widths. Also, exponential stimuli showed energy reductions of 2-30% from the rectangular stimuli. Threshold determinations were made once a minute for 20 to 30 minutes using rectangular pulses, 1 millisecond in duration. It was found that threshold energies varied as much as 37% above the mean to 19% below the mean value for the 20-30 minute run of the experiment. It was found that during certain portions of the respiration cycle pacemaker pulses of a given amplitude would elicit cardiac response whereas these same pulses failed to pace during other phases of the breathing cycle. Dissert. Abstr.

N80-31033 California Univ., San Diego, La Jolla.
TOPOGRAPHICAL SIMULATION OF THE BLOOD VESSELS OF THE HUMAN BULBAR CONJUNCTIVA AND APPLICATION TO PRESSURE-FLOW RELATIONSHIPS Ph.D. Thesis
Bruce Miles Fenton 1980 175 p
Avail: Univ. Microfilms Order No. 8018778

A preliminary study was performed in which length of conjunctival vessels per unit area tissue (vascular density) was measured for two categories of patients: diabetics and nondiabetics. It was assumed that the conjunctiva represents a nonspecialized tissue whose microcirculatory network, in the presence of chronic disease, in some way reflects a generalized trend manifest to a varying degree in other vascular beds. Specifically, it was demonstrated that there were significant differences in length per unit area values between diabetic and nondiabetic cohorts. In addition, age was seen to exert a dramatic influence on overall vascularity. In order to more fully explore the influence of these quantitative variations on blood-tissue exchange properties of the system, a much more detailed type of analysis was required, namely a complete topographical mapping of the conjunctival vasculature. By applying an approach developed by the geomorphological sciences, it was shown that changes in vessel lengths, numbers, and diameters could be related to order number by applying three basic mathematical relationships. Dissert. Abstr.

N80-31034 Carnegie-Mellon Univ., Pittsburgh, Pa.
ANALYSIS OF HUMAN AUDITORY BRAINSTEM RESPONSES FOR COMPLEX STIMULI Ph.D. Thesis
Paul Joseph Ainslie 1980 207 p
Avail: Univ. Microfilms Order No. 8020148

The results of the application of an analysis technique to separate responses of the auditory brainstem responses (ABRS) are reported for three types of complex click stimuli: monaural clicks with contralateral masking noise, monaural click trains of 1 to 4 clicks with interclick times of 2 to 61.5 msec, and binaural clicks with interaural time delays of 0 to 7 msec of interaural intensity differences of 0 to 30 dB. Responses recorded for monaural clicks without and with contralateral broadband masking noise were combined to estimate a masking effect waveform. The derived waveform resembled an ABR for direct monaural stimulation at 35 dB lower stimulus magnitude. Control experiments showed this derived masking effect waveform to be due to acoustic crosstalk evoking an ABR in the ear contralateral to the monaurally stimulated ear. Responses for monaural click train stimuli were analyzed by deriving a waveform estimating the response to each click of the click train. These derived responses showed little change after the response to the third click. Responses to binaural stimuli were obtained and compared to the sum of the responses for the constituent monaural stimuli. Dissert. Abstr.

N80-31035# National Technical Information Service, Springfield, Va.

COLD WEATHER STRESS ON HUMANS. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1964 - May 1980

Elizabeth A. Harrison Jun. 1980 152 p Supersedes NTIS/PS-79/0589; NTIS/PS-78/0540
(PB80-810989; NTIS/PS-79/0589; NTIS/PS-78/0540) Avail: NTIS HC $30.00/MF $30.00 CSCL 06S

The selected abstracts cover cold stress, cold tolerance cold injuries, acclimatization, protective clothing, and cold water exposure as related to cold weather stress on humans. This updated bibliography contains 145 abstracts, 5 of which are new entries to the previous edition. GRA

N80-31036# National Institutes of Health, Bethesda, Md. Lab. of Neurobiology.

INTRODUCTION TO ELECTROCHEMISTRY OF NERVE MEMBRANES

Ichiji Tasaki Mar. 1980 695 p refs
(PB80-178908; NIMH-80/03) Avail: NTIS HC A99/MF A01 CSCL 06P

The evolution of physiology of nerve fibers is linked closely with that of electrochemistry. Experimental facts known at the present time are described and interpreted on the basis of present level of understanding of morphology, biochemistry and physical chemistry. Old theories are also discussed in detail for the experimental basis of those theories are still meaningful. The volume is written primarily for students of biology and medicine who are interested in the properties of nerve fibers. GRA

N80-31037# National Technical Information Service, Springfield, Va.

ULTRASONICS IN MEDICINE. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1964 - May 1980

Elizabeth A. Harrison Jun. 1980 157 p Supersedes NTIS/PS-79/0563; NTIS/PS-78/0494
(PB80-810922; NTIS/PS-79/0563; NTIS/PS-78/0494) Copyright. Avail: NTIS HC $30.00/MF $30.00 CSCL 06E

The bibliography presents citations from Federally funded research on the use of ultrasound in diagnosis and therapy. Information is presented on ultrasonic imaging techniques, echoencephalography, echocardiography, use of ultrasound in bone surgery, and ultrasonic instrumentation. This updated bibliography contains 150 abstracts, 25 of which are new entries to the previous edition. GRA

N80-31038# National Technical Information Service, Springfield, Va.

ULTRASONICS IN MEDICINE. CITATIONS FROM THE ENGINEERING INDEX DATA BASE Progress Report, Apr. 1978 - May 1980

Elizabeth A. Harrison Jun. 1980 257 p Supersedes NTIS/PS-79/0565; NTIS/PS-78/0495
(PB80-810930; NTIS/PS-79/0565; NTIS/PS-78/0495) Avail: NTIS HC $30.00/MF $30.00 CSCL 06E

Research reports on the applications of ultrasound to diagnosis and therapy are cited from worldwide literature. Information is presented on ultrasonic imaging techniques, ultrasonic echoencephalography, echocardiography, use of ultrasound in surgery, and ultrasonic instrumentation in biomedical measurement. This updated bibliography contains 250 abstracts, 137 of which are new entries to the previous edition. GRA

N80-31039*# Behavioral Research Applications Group, Inc., Rochester, N. Y.

INSTRUMENT SCANNING AND CONTROLLING: USING EYE MOVEMENT DATA TO UNDERSTAND PILOT BEHAVIOR AND STRATEGIES Final Report

A. O. Dick Washington, D.C. NASA Sep. 1980 89 p refs
(Contract NAS1-14793)
(NASA-CR-3306; BRAG-TR-79-2) Avail: NTIS HC A05/MF A01 CSCL 05I

Eye movement data and other parameters including instrument readings, aircraft state and position variables, and control maneuvers were recorded while pilots flew ILS simulations in a B 737. The experiment itself employed seven airline pilots, each of whom flew approximately 40 approach/landing sequences. The simulator was equipped with a night visual scene but the scene was fogged out down to approximately 60 meters (200 ft). The instrument scanning appeared to follow aircraft parameters not physical position of instruments. One important implication of the results is: pilots look for categories or packets of information. Control inputs were tabulated according to throttle, wheel position, column, and pitch trim changes. Three seconds of eye movements before and after the control input were then obtained. Analysis of the eye movement data for the controlling periods showed clear patterns. The results suggest a set of miniscan patterns which are used according to the specific details of the situation. A model is developed which integrates scanning and controlling. Differentiations are made between monitoring and controlling scans. R.K.G.

N80-31040# Army Natick Research and Development Command, Mass. Clothing Equipment and Materials Engineering Lab.

THE PSYCHOMOTOR PERFORMANCE OF MEN AND WOMEN WEARING TWO TYPES OF BODY ARMOR

Carolyn K. Bensel, Darrell S. Fink, and Sirvart A. Mellian Mar. 1980 115 p refs
(DA Proj. 1L1-62723-AH-98; DA Proj. 1G4-64713-DL-42)
(AD-A086742; NATICK/CEMEL-195; NATICK/TR-80/014) Avail: NTIS HC A06/MF A01 CSCL 19/4

This study was conducted to determine the effects of load carrying equipment (LCE) and two types of fragmentation protective armor vests, Standard B Fragmentation Protective Body Armor (STD B) and the Personnel Armor System for Ground Troops (PASGT), on body flexibility, rate of movement, psychomotor coordination, manual dexterity, and effort exerted for task performance. Twelve men and twelve women, outfitted in utilities, performed the battery of 16 tasks under each of the following clothing conditions: utilities alone, STD B armor, PASGT armor, LCE, STD B armor - LCE, and PASGT armor - LCE. In general, performance levels were highest when the utilities were worn without any additional items and lowest when the STD B vest was worn in conjunction with the LCE. The STD B armor impaired certain aspects of psychomotor performance, particularly body flexibility, to a greater extent than the PASGT vest did. The collar and shoulder designs seemed to be the critical features responsible for the superior performance achieved with the PASGT vest. After the data had been transformed to remove effects accounted for by difference in the basic capabilities of men and women, two tasks which required arm movements were found to be significantly affected by the sex variable. The woman's performance of these movements was impaired relative to the men's because of the excessive length of the armor across the women's shoulders. GRA

N80-31041# Honeywell Systems and Research Center, Minneapolis, Minn.

HUMAN OPERATOR INTERFACE WITH FLIR DISPLAYS Final Report, Jun. 1977 - Sep. 1979

Larry G. Goble, L. G. Williams, P. D. Pratt, J. Wald, G. Rubin, and T. Hanson Wright-Patterson AFB, Ohio AMRL Mar. 1980 251 p refs
(AD-A086284; Doc-79SRC54; AMRL-TR-79-114) Avail: NTIS HC A12/MF A01 CSCL 17/5

This report presents an extensive review of factors which limit performance of forward-looking infrared (FLIR) systems. Two critical variables of system performance, modulation transfer function (MTF) and noise equivalent delta temperature (NE delta T), were chosen for further experimental analysis. The experiment used a digital simulation of minimum resolvable temperature (MRT) paradigm to test two modeled FLIR systems. Detection and recognition data were collected for two targets (four-bar and square) in trials with varying levels of size, contrast, noise, and MTF. The test results were compared with the NVL predictive model(Ratches, et al., 1975) used to evaluate FLIR system performance. GRA

N80-31042# Illinois Univ. at Urbana-Champaign, Champaign. Engineering-Psychology Research Lab.
AN INVESTIGATION OF THE DUAL TASK PERFORMANCE RELATIONSHIP TO HEMISPHERIC SPECIALIZATION Interim Report
Christopher D. Wickens and Diane Lynn Sandry Jun. 1980 41 p refs
(Contract N00014-79-C-0658; NR Proj. 196-158)
(AD-A086808; EPL-80-1/ONR-80-1) Avail: NTIS HC A03/MF A01 CSCL 05/10

The efficiency of dual task performance may be influenced by a number of variables such as the level of practice of the individual, the difficulty of the task, and the particular processing resources or capacities for which the two tasks compete. The current research investigates the relation between the capacities employed in two tasks--a verbal processing resource inferred to reside in the left cerebral hemisphere, and a spatial resource in the right--and the controlling hand. Specifically a condition of task-hemispheric integrity is defined when the processing and responding of each task is carried out in a single cerebral hemisphere. In the experiment, this condition occurs when a tracking task, inferred to be spatial right-hemispheric in its processing is controlled with the left hand, while a Sternberg memory search Reaction Time task with the letter stimuli, inferred to be verbal left-hemispheric, is responded to with the right hand. A 'mixture' condition is created with the opposite hand assignment, so that each hemisphere processes the information associated with one task, while responding to the other (i.e., Sternberg Task-left hand, Tracking-right). GRA

N80-31043# Illinois Univ. at Urbana-Champaign, Champaign. Dept. of Psychology.
DIFFERENTIALLY WEIGHTING LINEAR MODELS OF BEHAVIOR: AN EMPIRICAL COMPARISON OF SIX METHODS
Charles K. Parsons (Georgia Inst. of Technology, Atlanta) and Charles L. Hulin Jun. 1980 35 p refs Sponsored in part by Illinois National Guard
(Contract N00014-75-C-0904; NR Proj. 170-802)
(AD-A086876; TR-80-4) Avail: NTIS HC A03/MF A01 CSCL 12/1

Six methods of estimating regression weights for a linear model of behavior were compared in 51 samples of National Guardsmen. Ordinary least squares, Bayesian m-group regression, ridge regression, equal weighting, and two related methods were used. Weights were estimated in one-half of each sample and then applied to data in the other half. Ratios of observations to predictors ranged from 4:1 to 19:1. Cross validation R sq was used as the index of model or equation stability. Results support earlier findings that least squares weights are relatively unstable in small samples, but do not indicate the superiority of any one other method. Future research and implications for using these regression techniques in testing behavioral models are discussed. GRA

N80-31044*# TRW Defense and Space Systems Group, Redondo Beach, Calif. Systems Engineering and Analysis Dept.
ADVANCED FLIGHT DESIGN SYSTEMS SUBSYSTEM PERFORMANCE MODELS. EXECUTIVE SUMMARY
K. C. Parker and J. G. Torian Jun. 1980 17 p
(Contract NAS9-15793)
(NASA-CR-160768; TRW-34902-H001-R0-00) Avail: NTIS HC A02/MF A01 CSCL 06K

Subsystem performance analysis required in flight design to assess the capability of the environmental control and life support system (ECLSS) to support the flight requirements and define operational procedures under contingency flight conditions is described. Current ECLSS modeling techniques are limited in the variety of configurations and they employ batch mode computer programs execution methods. Improvements in the variety of configurations that are modeled and a reduction in effort required for modeling and analysis is accomplished by developing a modular computer program which operates interactively. T.M.

N80-31045*# TRW Defense and Space Systems Group, Redondo Beach, Calif. Systems Engineering and Analysis Dept.
ADVANCED FLIGHT DESIGN SYSTEMS SUBSYSTEM PERFORMANCE MODELS. USER GUIDE: ENVIRONMENTAL ANALYSIS ROUTINE LIBRARY
K. C. Parker and J. G. Torian Jun. 1980 138 p refs
(Contract NAS9-15793)
(NASA-CR-160769; TRW-34902-H002-R0-00) Avail: NTIS HC A07/MF A01 CSCL 06K

A user guide for a library of interactive computer routines used to develop performance analysis models of specific environmental control and life support subsystems is presented. T.M.

N80-31046*# TRW Defense and Space Systems Group, Redondo Beach, Calif. Systems Engineering and Analysis Dept.
ADVANCED FLIGHT DESIGN SYSTEMS SUBSYSTEM PERFORMANCE MODELS. SAMPLE MODEL: ENVIRONMENTAL ANALYSIS ROUTINE LIBRARY
K. C. Parker and J. G. Torian Jun. 1980 40 p
(Contract NAS9-15793)
(NASA-CR-160770; TRW-34902-H003-R0-00) Avail: NTIS HC A03/MF A01 CSCL 06K

A sample environmental control and life support model performance analysis using the environmental analysis routines library is presented. An example of a complete model set up and execution is provided. The particular model was synthesized to utilize all of the component performance routines and most of the program options. T.M.

N80-31047# Naval Air Development Center, Warminster, Pa. Aircraft and Crew Systems Technology Directorate.
FLAME TESTING OF TWO SAMPLES OF EXPOSURE SUIT MATERIAL Final Report
Frank H. Jacobson 9 May 1980 16 p refs
(W0606SL00)
(AD-A086739; NADC-80097-60) Avail: NTIS HC A02/MF A01 CSCL 11/5

Reported deficiencies in authorized quick-donning ship-abandon type exposure suits has prompted use of other suits made of materials with unknown flame and heat retardant properties. Therefore, tests were requested to be addressed first to the question of flammability of the material, and second to the question of heat retardation by the material. The materials tested may provide better protection against standard 3 second exposures to fuel fires than any fabrics previously tested in this laboratory. However, the protection falls off sharply as the exposure is continued. GRA

N80-31048# Navy Clothing and Textile Research Facility, Natick, Mass.
THERMAL INSULATION MATERIALS FOR DIVER'S UNDERWEAR GARMENT Final Technical Report, 1977 - 1978
Norman F. Audet, George M. Orner, and Zelig Kupferman Feb 1980 31 p refs Presented at Ann. Winter Meeting of ASME, Ocean Eng. Div., San Francisco, 12-15 Dec. 1978
(TF51523003)

(AD-A086743: NCTRF-139: Rept-2-78) Avail: NTIS
HC A03/MF A01 CSCL 06/17

The Navy Clothing and Textile Research Facility (NCTRF) conducted studies on commercially available foam and fibrous thermal insulating materials to determine those which would be effective in a diver's dry-suit underwear garment. An effective insulation had to allow the pressurized gaseous environment existing within the diver's dry suit to permeate the insulation, have good compressional resistance at hydrostatic pressures up to 2 psi (13.8 kPa), and provide an intrinsic thermal insulation value of 1.0 to 1.5 clo. Evaluations of candidate materials and comparisons with existing materials used in diver's dry-suit underwear indicated that a fine pore open cell foam and the polypropylene microfiber batt material having densities of approximately 0.12 gr/c cm and 0.05 gr/c cm and thermal insulation resistance of 1.8 and 2.11 clo/cm at 2 psi (13.8 kPa), respectively, would meet the thermal requirements for the uhderwear garment and would be superior to those presently being used. The foam compressed less than 30% at 2 psi (13.8 kPa). The fibrous material compressed 60% at 2 psi (13.8 kPa) but had such a high specific clo value incompressed (2.27 clo/cm) that thermal resistance at 2 psi (13.8 kPa) was still estimated to be 2.11 clo/cm. GRA

N80-31049# Los Alamos Scientific Lab., N. Mex.
LASER PROTECTIVE EYEWEAR PROGRAM AT THE LOS ALAMOS SCIENTIFIC LABORATORY
D. C. Winburn 1980 24 p refs Presented at Ind. Hyg. Conf., Houston, Tex., 18-23 May 1980
(Contract W-7405-eng-36)
(LA-UR-80-1038; CONF-800531-1) Avail: NTIS HC A02/MF A01

The proliferation of lasers focused considerable attention on providing adequate eye protection for experimenters involved in the use of a wide variety of nonionizing radiation. Experiments with fast/pulsed lasers (Nd:YAG, HF, and CO2) were performed to gain biological threshold data on ocular damage. In parallel, eye protection devices were evaluated, which resulted in the development of lightweight, comfortable spectacles of colored glass filters that can be ground to prescription specifications. Goggle styles are employed in specific applications. DOE

N80-32055*# National Aeronautics and Space Administration, Washington, D. C.
CHANGES IN GAS EXCHANGE, TISSUE RESPIRATION AND GLYCOLYSIS IN RATS DURING HYPOKINESIA
L. V. Zorya May 1980 11 p refs Transl. into ENGLISH from Fiziol. Zh. (USSR), v. 22, no. 3, 1976 p 414-417 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76149) Avail: NTIS HC A02/MF A01 CSCL 06C

The results of an experiment which studied changes in oxygen balance under conditions of hypokinesia in rats is presented. The effect of the stress during hypokinesia is expressed most clearly in the changes of general gas exchange, and in the intensity of liver and myocardial tissue respiration. L.F.M.

N80-32056*# National Aeronautics and Space Administration, Washington, D. C.
THE INFLUENCE OF MODULATED SINUSOIDAL CURRENT ON THE STATE OF CHROMATIN FROM NEURONS OF THE CEREBRAL CORTEX OF RATS IN HYPOKINESIA
Z. A. Sokolova May 1980 10 p refs Transl. into ENGLISH from Von. Kurortol., Fizioter. Lech. Fiz. Kul't (USSR), no. 1, Jan. - Feb. 1978 p 56-59 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76160) Avail: NTIS HC A02/MF A01 CSCL 06C

The biochemical changes under the influence of modulated sinusoidal current in the central nervous system were investigated. The methodology used is discussed, the results are reported in a table, and conclusions are presented. R.K.G.

N80-32057*# National Aeronautics and Space Administration, Washington, D. C.
EFFECT OF SINUSOIDAL MODULATED CURRENTS AND ACUTE HYPOXIA ON CORTICOSTERONE CONTENT AND ACTIVITY OF CERTAIN DEHYDROGENASES IN TISSUES OF DIFFERENT RAT ORGANS DURING HYPOKINESIA
L. L. Melik-Aslanova and I. D. Frenkel May 1980 12 p refs Transl. into ENGLISH from Vod. Kurortol., Fizioter. Lech. Fiz. Kulit. (USSR), no. 1, Jan. - Feb. 1978 p 59-65 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prepared by Central Inst. of Health Resort Treatment and Physical Therapy, Moscow
(Contract NASw-3198)
(NASA-TM-76161) Avail: NTIS HC AC2/MF A01 CSCL 06C

The state of hypokinesia in rats was reproduced by keeping them for 30 days in special box cages that restricted their mobility in all directions. Results show the resistance to acute hypoxic hypoxia is increased. This is linked to the considerable rise in the reduced level of corticosterone in different organs and the succinate dehydrogenase activity in the liver and brain. The letter indicated the primary oxidation of succinate, which has great importance in the adaptation of the oxidative metabolism to acute oxygen insufficiency. The use of sinusoidal modulated currents in the period of hypokinesia promotes normalization of the indices for resistance of the rats to acute hypoxia. L.F.M.

N80-32058*# National Aeronautics and Space Administration, Washington, D. C.
THE DYNAMICS OF CERTAIN INDICATORS OF NUCLEIN METABOLISM DURING HYPOKINESIA IN RATS OF DIFFERENT AGES UNDER THE INFLUENCE OF SINUSOIDAL MODULATED CURRENTS AND MEASURED PHYSICAL LOAD
Z. A. Sokolova May 1980 9 p refs Transl. into ENGLISH from Vop. Kurortol., Fizioter. Lech. Fiz. Kulit. (USSR), no. 5, Sep.-Oct. 1977 p 67-70 Transl. by Scientific Translation Service, prepared by Central Inst. of Health Resort Treatment and Physiology, Moscow
(Contract NASw-3198)
(NASA-TM-76162) Avail: NTIS HC A02/MF A01 CSCL 06C

The influence of sinusoidal modulated currents was studied and physical loads on the nucleic acid content and the nucleotide composition of the total RNA in muscles of rats of various ages under conditions of hypodynamia were measured. Methodology utilized is described and conclusions are presented. R.K.G.

N80-32059*# National Aeronautics and Space Administration, Washington, D. C.
ABSORPTION OF THIAMINE AND NICOTINIC ACID IN THE RAT INTESTINE DURING FASTING AND IMMOBILIZATION STRESS
O. G. Kirilyuk and Yu. V. Khmelevskiy Jun. 1980 11 p refs Transl. into ENGLISH from Fiziol. Zh. (USSR), v. 23, no. 1, 1977 p 98-102 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Medical Inst., Kiev
(Contract NASw-3199)
(NASA-TM-76193) Avail: NTIS HC A02/MF A01 CSCL 06C

By perfusion of isolated sections of intestine with a solution containing thiamine at a concentration of 3.1 micromole, it was established that thiamine absorption in animals fasted for 72 hours decreased by 28 percent, whereas absorption increased by 12 percent in rats after 24 hour immobilization. After immobilization, absorption of label in the intestinal mucosa increased. Na K ATPase activity in the intestinal mucosa decreased by 10 percent during fasting, and it increased with immobilization of the animals. Activity of Na K ATPase in the intestinal mucosa cells determined the absorption rate of thiamine and nicotinic acid at the level of vitamin transport through the plasma membranes of the enterocytes. R.K.G.

N80-32060*# National Aeronautics and Space Administration, Washington, D. C.
EFFECTS OF FACTORS OF PROLONGED SPACE FLIGHT ON CONDITIONS OF TORTOISE SKELETON

G. P. Stupakon, A. I. Volozhin, V. A. Korzhenyants, V. S. Yagodovskiy, A. N. Polyakov, V. V. Korolev, and V. A. Elivanov Aug. 1980 13 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), no. 6, Nov. - Dec. 1979 p 9-14 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76352) Avail: NTIS HC A02/MF A01 CSCL 06C

After a 60-90 day space flight mild osteoporosis developed in the epiphyses and metaphyses of long tubular bones of tortoises, which was not attributed to reduced mineral saturation of the preserved bone tissue microstructures. The diminished strength of the cancellous bone of the epiphyses in tortoises after space flight was due to the reduced properties of its structure. The strength of the compact substance did not change under the effect of weightlessness. R.C.T.

N80-32061# California Univ., Los Angeles. Lab. of Nuclear Medicine and Radiation Biology.
[HEALTH AND ENVIRONMENTAL RESEARCH RELATED TO ENERGY DEVELOPMENT AND USE] Annual Progress Report, 1 Jul. 1978 - 30 Jun. 1979
Jun. 1979 160 p
(Contract EY-76-C-03-0012)
(UCLA-12-1217) Avail: NTIS HC A08/MF A01

Highlights of research for FY-1979 is reported in the areas of biomolecular and cellular science, environmental biology of desert ecosystems and nuclear medicine. Abstracts of 156 published reports are included. DOE

N80-32063# Illinois Univ. at Urbana-Champaign. Dept. of Psychology.
GROUND-REFERENCED VISUAL ORIENTATION WITH IMAGING DISPLAYS Final Scientific Report, Oct. 1977 - Sep. 1979
Stanley N. Roscoe Nov. 1979 47 p
(Contract F49620-77-C-0117)
(AD-A081882; ENG-PSY-79-4/AFOSR-79-4) Avail: NTIS HC A03/MF A01

Problems related to the accurate judgment of size and distance as required of pilots in flight were investigated over a two year period. The experiments covered a broad spectrum of psychophysiological issues involving the measurement of visual accommodation and its correlation with various other dependent variables. The latter included a short term memory task, physiological measures of autonomic balance, scores on a personality test of introversion extraversion, and responses to a personal inventory questionnaire. Psychophysiological issues investigated included the size distance invariance hypothesis, the moon illusion, night and empty field myopia, the dark focus and its so called Mandelbaum effect, the nature of the locus of the accommodative stimulus, and possible relationships among accommodative responses, autonomic balance, and personality. A.R.H.

N80-32064*# National Aeronautics and Space Administration, Washington, D. C.
CHANGES IN BONE TISSUE UNDER CONDITIONS OF HYPOKINESIA AND IN CONNECTION WITH AGE
E. P. Podrushnyak and E. I. Suslov Jun. 1980 7 p refs Transl. into ENGLISH from Fiziol. Zh. (USSR), v. 19, no. 6, Nov. - Dec. 1973 p 841-943 Transl. was announced as N80-21971 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76154) Avail: NTIS HC A02/MF A01 CSCL 06P

X-ray micrography was used to study the optical density of the blackening of X-ray photographs made of five bones in 9 young people (ages 24 to 29) before and after strict bed rest for 16 to 37 days. Photometric studies of the X-ray film determined the relative concentration of bone structure before and after hypokinesia. In addition, the bone tissues of 25 cadavers of practically healthy individuals (aged 18 to 70) who died from injuries were investigated using X-ray structural analysis. Results show that the reaction to the state of hypokinesia is not uniform in different individuals and is quite often directly reversed. It was established that pronounced osteoporosis can be found in a relatively short time after conditions of hypokinesia in healthy young individuals. Results show that the stabilization of the crystalline structure of hydroxyapatite, especially its crystal formation, is finished by the age of 20 to 25. From 25 to 60, the crystal lattice remains in stable condition but X-ray analysis shows a reduction in the hydroxyapatite density. A.R.H.

N80-32065*# National Aeronautics and Space Administration, Washington, D. C.
EFFECTS OF HIRUDIN-INDUCED ACTIVATION OF NONENZYMATIC FIBRINOLYSIS DURING IMMOBILIZATION STRESS
F. B. Shapiro, I. P. Baskova, L. U. Cherkesova, L. A. Lyapina, and M. D. Goldovskaya Jul. 1980 14 p refs Transl. into ENGLISH from Fiziol. Zh. SSSR (USSR), v. 64, no. 11, Nov. 1978 p 1567-1574 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Moscow State Univ.
(Contract NASw-3199)
(NASA-TM-76189) Avail: NTIS HC A02/MF A01 CSCL 06S

The specific inhibitor of thrombin, hirudin, was used for studying the mechanism of the activating effect of ACTH and adrenalin on nonenzymatic fibrinolytic activity (NEFA), the latter characterizing the function of the anticoagulation system (ACS). Simultaneous administration of ACTH and hirudin to animals subjected to immobilization stress did not reduce the effect of ACTH on NEFA, while simultaneous administration of adrenalin and hirudin revealed a diminished effect of the former. This suggests different mechanisms of ACTH and adrenalin effects upon NEFA: the stimulating effect of norepinephrine is realized through throminogenesis followed by activation of the ACS function and by increased NEFA and therefore inhibitable by hirudin which forms an inactive complex with thrombin. In fact the stimulating effect of ACTH upon NEFA is brought about specifically by another route than thrombinogenesis and thus occurs in the presence of hirudin. Hirudin itself has no effect upon NEFA. Author

N80-32066*# National Aeronautics and Space Administration, Washington, D. C.
RESTORATION OF PHYSICAL PERFORMANCE CAPACITY OF ATHLETES AFTER PROLONGED RESTRICTION OF THEIR MOTOR ACTIVITY
A. D. Soldatov and V. I. Finogeyev Aug. 1980 12 p Transl. into ENGLISH from Teor. Prakt. Fiziol. Kult. (USSR), no. 5, May 1979 p 19-22 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by All-Union Scientific Research Inst. of Physical Culture
(Contract NASw-3198)
(NASA-TM-76305) Avail: NTIS HC A02/MF A01 CSCL 06P

The effects of different regimens of treatment following prolonged hypokinesia were studied in order to determine the most effective program. The types of programs considered were passive means, consisting of physical therapy; active means, consisting of athletic training; and a combined program. In the first stage of the experiment, the effects of a 10 day period of hypokinesia were studied. It was determined that the restoration programs must address the problems of: (1) increasing defense function and general tone of the body; (2) restore orthostatic stability; and (3) increase general endurance. In later stages, groups of athletes and nonathletes underwent 30 day periods of hypokinesia. Restoration was carefully monitored for groups treated with the various regimens. It was determined that the most effective treatment was a comprehensive program of passive and active therapy. Author

N80-32067*# National Aeronautics and Space Administration, Washington, D. C.
PHYSICAL EXERCISES ON A BICYCLE-ERGOMETER AND RUNNING TRACK TO PREVENT HYPODYNAMIA IN WORKERS OF INTELLECTUAL LABOR
V. V. Vasilyeva, Ye. N. Korableva, and V. V. Trunin Aug. 1980 7 p refs Transl. into ENGLISH from Teor. Prakt. Fiziol. Kult. (USSR), no. 10, Oct. 1979 p 34-36 Transl. by Scientific

Translation Service, Santa Barbara, Calif. Original doc. prep. by P. F. Lesgaft State Order of Lenin and Order of the Red Banner Inst. of Physical Culture
(Contract NASw-3198)
(NASA-TM-76306) Avail: NTIS HC A02/MF A01 CSCL 06P

A program of exercises was developed and tested, consisting of a 12 minute session on a variable load bicycle ergometer and a 10-11 min. run with brief stretching and resting sessions between. Physical performance capacity was measured before, during, and after the period of the experiment and physical exams conducted. After a 4 month test period involving 30 men, aged 25-35, the program was found to be successful in increasing physical performance capacity. The PWC170 increased an average of 22 percent and maximum oxygen consumption 14 percent. Arterial pressure dropped (120/75 to 114/68), vital capacity of lungs increased by 6 percent, strength of respiratory muscles by 8.8 percent, duration of respiratory delay by 18 percent. Duration of cardiac cycles increased, stress index decreased. Cardiac contraction rate 2 minutes after work on the ergometer decreased from 118 to 102 bt/min. R.C.T.

N80-32068*# National Aeronautics and Space Administration, Washington, D. C.

EFFECT OF HYPOKINESIA ON BLOOD MICROCIRCULATION

A. M. Chernukh, O. G. Gazenko, B. M. Fedorov, T. N. Krupina, P. N. Aleksandrov, D. I. Shagal, N. Ye. Ranferova, and T. N. Proskurina Aug. 1980 9 p refs Transl. into ENGLISH from Patol. Fiziol. Eksp. Ter. (USSR), no. 3, May - Jun. 1979 p 10-13 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76308) Avail: NTIS HC A02/MF A01 CSCL 06S

Blood microcirculation in the region of the scleral bulbar conjunctiva and the nail folds on the fingers and toes was studied in 18 practically healthy men during 182 day antiorthostatic hypokinesia and 30 day rehabilitation period. Marked changes in microcirculation in the sclera and feet and less evident changes on the hands was revealed. A complex of special prophylactic physical exercises had a distinctly favorable effect on circulation in the hands. Author

N80-32069*# National Aeronautics and Space Administration, Washington, D. C.

THERAPEUTIC GYMNASTICS IN COMPREHENSIVE TREATMENT OF PATIENTS WITH GENERALIZED MYASTHENIA

R. L. Kapelovich Aug. 1980 9 p refs Transl. into ENGLISH from Vop. Kurortol., Fizioter. Lech Fiz. Kul' T. (USSR), no. 5, Sep. - Oct. 1979 p 41-45 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by I. M. Sechenov First Moscow Medical Inst.
(Contract NASW-3198)
(NASA-TM-76312) Avail: NTIS HC A02/MF A01 CSCL 06E

The technique of therapeutic gymnastics was used for patients with mayasthenia gravis to control the consequences of hypodynamia induced by the myasthenic process. It is concluded that during myasthenia, the severity of the disease is due to the affection of the cross striated musculature. The most life threatening are the disorders in respiration and swallowing, that can be intensified by forced stay in bed and immobility. It is also concluded that the use of therapeutic gymnastics in patients which myasthenia promotes efficient presurgical preparation, and in the post surgical period; prevention of pulmonary complications and normalization of respiration. Therapeutic gymnastics with regard to the severity and localization of the myasthenic disorders must be a component part of the presurgical preparation and postsurgical management of patients with generalized myasthenia. R.C.T.

N80-32070*# National Aeronautics and Space Administration, Washington, D. C.

ORTHOCLINOSTATIC TEST AS ONE OF THE METHODS FOR EVALUATING THE HUMAN FUNCTIONAL STATE

V. A. Doskin, L. D. Gissen, O. Z. Bomshteyn, E. N. Merkin, and S. B. Sarychev Aug. 1980 8 p refs Transl. into ENGLISH from Gig. Sanit. (USSR), no. 4, Apr. 1979 p 41-44 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by All-Union Scientific Research Inst. of Physical Culture, Moscow
(Contract NASw-3198)
(NASA-TM-76321) Avail: NTIS HC A02/MF A01 CSCL 06P

The possible use of different methods to evaluate the autonomic regulation in hygienic studies were examined. The simplest and most objective tests were selected. It is shown that the use of the optimized standards not only makes it possible to detect earlier unfavorables shifts, but also permits a quantitative characterization of the degree of impairment in the state of the organism. Precise interpretation of the observed shifts is possible. Results indicate that the standards can serve as one of the criteria for evaluating the state and can be widely used in hygienic practice. R.C.T.

N80-32071*# National Aeronautics and Space Administration, Washington, D. C.

BLOOD FILLING AND FLOW IN LUNGS DURING CHANGE IN BODY POSITION IN SPACE

A. S. Pogodin and B. I. Mazhbich Aug. 1980 12 p refs Transl. into ENGLISH from Fiziol. Zh. SSSR (USSR), v. 66, no. 4, Apr. 1980 p 555-561 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by USSR Academy of Medical Sciences, Siberia
(Contract NASw-3198)
(NASA-TM-76333) Avail: NTIS HC A02/MF A01 CSCL 06P

In the horizontal position (supine and lateral), in the upright position (head up and head down) and during change of the cat body position in space, quantitative responses of regional blood volume and blood flow in the lungs (ml/100 cu cm) revealed presence of the gradient in the gravitation direction. Blood volume and blood flow of different lung portions changed qualitatively and quantitatively in different ways. These changes occurred only in the direction producing the equality of regional hydrostatical and hemodynamic loads in the lungs at either horizontal level. Author

N80-32072*# National Aeronautics and Space Administration, Washington, D. C.

OCCUPATIONAL CHANGES IN THE ORGAN OF HEARING AND EQUILIBRIUM IN SAILORS AND FISHERMAN

R. P. Menyakin and V. I. Poperetskaya Aug. 1980 9 p refs Transl. into ENGLISH from Vestn. Otorino-laringol. (USSR), no. 1, Jan - Feb. 1980 p 39-42 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by Vladivostok Medical Inst.
(Contract NASW-3198)
(NASA-TM-76335) Avail: NTIS HC A02/MF A01 CSCL 06P

Prophylactic examination in persons engaged in fishing industry and in sailors of ocean-going ships demonstrated occupational cochlear neuritis, resulting from the action of noise and vibration. Five hundred and fifty three sailors and fishermen working under conditions of noise were studied. A total of 233 persons 43.7% were found to be suffering from changes of the auditory analyzer typically resulting from the action of noise and vibration. The most pronounced changes of hearing were revealed in fishermen, in 44.8% of the persons examined, the percentage also being the highest among the engine room workers (63%). The incidence of cochlear neuritis in sailors of the ocean-going steamship line and in personnel of research ocean-going ships was almost equal (39.9-40%). These indices differed in the engine room workers (42-46%). Vestibular function was investigated by caloric and rotation tests with the use of electronystagmography. The data obtained point to diminution of the vestibular analyzer excitability with increase of the length of navigation service. R.C.T.

N80-32073*# National Aeronautics and Space Administration, Washington, D. C.
CERTAIN FEATURES OF THE COCHLEOVESTIBULAR SYNDROME IN THE RESIDUAL STAGE OF TRAUMATIC BRAIN DISEASE
M. I. Garshin and V. Ye. Volyanskiy Aug. 1980 12 p refs Transl. into ENGLISH from Vestn. Otorino-Laringol. (USSR), no. 2, Mar.-Apr. 1980 p 37-41 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prepared by Psychoneurological Clinic, Odessa
(Contract NASw-3198)
(NASA-TM-76337) Avail: NTIS HC A02/MF A01 CSCL 06E

Caloric and rotation tests were applied to the study of the vestibular analyser in 84 patients in the residual state of traumatic disease of the brain. Vestibular disturbances of different degree revealed in 79 patients were as a rule accomplished by cochlear derangement. In the majority of patients the vestibular syndrome was supratentorial with the involvement of the diencephal-hypothalmic, subcortical, and cortical levels of the brain. Vestibular dysfunction correlated with such factors as severity of the sustained craniocerebral traum, duration of the posttraumatic period, and, particularly, with the character of the residual neurological syndrome. In accordance with the latter, it is recommended that vestibular disturbances be treated in the residual period of closed craniocerebral injuries with due regard for the principal pathophysiological mechanisms of the underlying neurological syndrome. Author

N80-32074*# National Aeronautics and Space Administration, Washington, D. C.
DIAGNOSIS OF LATENT FORMS OF LABYRINTHINE AFFECTIONS
V. P. Vaslilyeva Aug. 1980 10 p refs Transl. into ENGLISH from Vestn. Otorino-Laringol. (USSR), no. 3, May-Jun. 1980 p 22-27 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prepared by I.M. Sechenov First Moscow Medical Inst.
(Contract NASw-3198)
(NASA-TM-76338) Avail: NTIS HC A02/MF A01 CSCL 06E

Features and significance of individual vestibular symptoms for the diagnosis of latent labyrinthitis and limited forms of labyrinthine affections offering considerable difficulties are discussed. Vestibular symptoms are indistinct. In case of the negative fistular symptom the greatest significance is acquired by the study of posture nystagmus according to the results of electronystagmograms, changes of tonic reactions and statics, as well as data of experimental vestibular tests. The necessity of evaluation of all the vestibular symptoms from the point of view of their vector characteristics and in a complex of evidence obtained by otoneurological examination of the patient is emphasized. Delicate topic and differential diagnosis of vestibular disturbances is of great importance and significance in the choice of the conservative or surgical method of treatment. Author

N80-32075*# National Aeronautics and Space Administration, Washington, D. C.
TECHNIQUE OF ELECTRICAL STIMULATION OF THE VESTIBULAR ANALYZER UNDER CLINICAL CONDITIONS
S. N. Khechinashvili, B. M. Zargaryan, and K. G. Karakozov Aug. 1980 8 p refs Transl. into ENGLISH from Vestn. Otorino-laringol. (USSR), no. 5, Sep. - Oct. 1978 p 74-77 Transl. by Scientific Translation Service Santa Barbara, Calif. Original doc. prep. by Tbilisi Inst. of Physician Advancement
(Contract NASw-3198)
(NASA-TM-76347) Avail: NTIS HC A02/MF A01 CSCL 06P

Vestibular reactions appear under the action of direct current (dc) on the labyrinth of man and animals. A decrease of the stimulation effect of dc on the extralabyrinthine nervous formations in the suggested method is achieved by the use of electric pulses with steep front and back parts, as well as by previous anesthetization of the skin in the electrode application area by means of novocain solution electrophoresis. For this purpose a pulse producer giving trapezoid pulses with smoothly changing fronts and duration was constructed. With the help of an interrupter it is possible to stop the current increase instantly, and stimulation is performed at the level of the pulse 'plateau'. To induce vestibular reactions under monopolar stimulation, it is necessary to apply the current twice as high as that with bipolar electrode position. The use of short pulses with steep front and back parts for electrode stimulation of the vestibular analyzer is considered to be inexpedient. Author

N80-32076*# National Aeronautics and Space Administration, Washington, D. C.
REVIEW OF BOOK-ULTRASOUND IN OTORHINOLARYNGOLOGY
I. V. Soldatov Aug. 1980 8 p Transl. into ENGLISH from Zh. Ushnykh Nosovykh Gorlovykh Bolez. (USSR), no. 3, May - Jun. 1979 p 86-87 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by USSR Academy of Medical Sciences
(Contract NASw-3198)
(NASA-TM-76349) Avail: NTIS HC A02/MF A01 CSCL 06E

Ultrasonic therapy for certain diseases is discussed. Success is reported in the treatment of chronic tonsilitis, sinusitis, and Meniere's disease. L.F.M.

N80-32077*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
PHYSIOLOGICAL REACTIONS OF A PASSENGER TO TRANSPORTATION CONDITIONS
A. M. Lakshin and V. P. Novoselov Aug. 1980 8 p refs Transl. into ENGLISH from Gig. Sanit. (USSR), no. 9, Sep. 1979 p 84-85 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by USSR Ministry of Communication, Moscow
(Contract NASw-3198)
(NASA-TM-76350) Avail: NTIS HC A02/MF A01 CSCL 06S

The effect of transportation conditions on the performance capacity of a passenger were studied, in order to establish the time for his most rapid inclusion in production activity after the trip. It was concluded that the transportation conditions impair the functional condition of the passenger's organism. The restoration of the functional state to the initial level occurs mainly in the space of one day. It is shown that it is necessary to take into consideration the adaptation of the organism during transfer to another climate zone. R.C.T.

N80-32078*# National Aeronautics and Space Administration, Washington, D. C.
REVIEW OF BOOK VESTIBULAR CRISES
N. S. Blagoveshchenskaya Aug. 1980 5 p Transl. into ENGLISH from Vestn. Otorino-Laringol. (USSR), no. 1, Jan. - Feb. 1980 p 36-77 Transl. by Scientific Translation Service, Santa Barbara, Calif.
(Contract NASw-3198)
(NASA-TM-76354) Avail: NTIS HC A02/MF A01 CSCL 06E

The etiology, pathogenesis, clinical practice, treatment and rehabilitation of patients with vestibular crises is discussed. Classifications for vestibular disorders are given. Information on the frequency of vestibular crises is given. T.M.

N80-32079*# National Aeronautics and Space Administration, Washington, D. C.
USE OF PHYSICAL CULTURE TO INCREASE RESISTANCE OF SAILORS TO MOTION SICKNESS
I. V. Salanin Aug. 1980 8 p refs Transl. into ENGLISH from Teor. Prakt. Fiz. Kult. (USSR), no. 11, Nov. 1979 p 35-37 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prepared by Moscow State Inst. of Physical Culture
(Contract NASw-3198)
(NASA-TM-76355) Avail: NTIS HC A02/MF A01 CSCL 06S

From 50% to 70% of sailors are exposed to motion sickness in storms. A program of physical exercises is described and tested for effectiveness in preventing this problem. In comparing the results of tests of susceptibility to motion sickness given to groups before and after a program of exercises and to a control group, it is found that physical education can strengthen the vestibulary apparatus and help prevent motion sickness. A.R.H.

N80-32080*# National Aeronautics and Space Administration, Washington, D. C.
VESTIBULAR REACTIONS IN PATIENTS DURING OCCLUSION FORM OF CHORIOEPENDYMITIS
E. A. Ladyzhenskaya and B. K. Arifdzhanov Aug. 1980 10 p Transl. into ENGLISH from Med. Zh. Uzb. (USSR), no. 11, Nov. 1979 p 16-19 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prepared by Order of the Red Banner of Labor Medical Inst., Tashkent
(Contract NASw-3198)
(NASA-TM-76356) Avail: NTIS HC A02/MF A01 CSCL 06P

A change in intracranial pressure during chorioependymitis is discussed. The inflammatory process in the choroid plexi and walls of the cerebral ventricles is described. The otoneurological method, not having any significant contraindications, can be employed repeatedly, quaranteeing control in dynamics over the course of the disease and effectiveness of treatment. T.M.

N80-32081# School of Aerospace Medicine, Brooks AFB, Tex.
USAFSAM MICROPROCESSOR AUDIOMETER: SYSTEM REFERENCE MANUAL Final Report, Aug. 1977 - Aug. 1979
Michael L. Tworek, Jay H. Schlag, Donald C. Gasaway, and Harrell C. Sutherland Apr. 1980 29 p refs
(AD-A087342; SAM-TR-80-8) Avail: NTIS HC A03/MF A01 CSCL 06/5

A microprocessor audiometer was designed and built by USAFSAM personnel to investigate new techniques in audiometry and hearing conservation. The system's primary function is to provide a flexible test bed for developing new audiogram algorithms and implementing hearing conservation decision criteria. Pertinent information regarding hardware and software implementation is provided. GRA

N80-32082# Dayton Univ., Ohio. School of Engineering.
ANALYSIS AND MEASUREMENT OF HELMETED AIRCREWMAN RESPONSE RESULTING FROM BIRDSTRIKE Final Report, 1 Mar. 1977 - 31 Mar. 1979
Norman S. Phillips Wright-Patterson AFB, Ohio AMRL Jan. 1980 234 p refs
(Contract F33615-77-C-0534; AF Proj. 7231)
(AD-A087737; UDR-TR-79-56; AMRL-TR-79-75) Avail: NTIS HC A11/MF A01 CSCL 06/5

The purpose of the research was to investigate and evaluate the birdstrike phenomena in terms of injury potential. Data collected during canopy testing indicated that significant deflection could occur and cause deformation into the space occupied by the helmeted aircrewman. The traveling wave and its interaction with the helmeted head created an unusual impact environment for which evaluation criteria did not exist. In order to generate new criteria it was necessary to utilize the Articulated Total Body Model (ATBM) and incorporate within the model characteristics of the canopy, the helmet and human head and neck system. With a configuration representative of the impact phenomena, the kinetic response of the system to selected impacts could be compared with biomechanical data to infer injury. The deformation characteristics of the canopy were established by analysis of F-16 film data collected during birdstrike tests. The data indicate that the canopy deformation depth is proportional to bird kinetic energy but that canopy deformation wave speed does not increase with bird speed. The helmet stiffness characteristics were established from available drop test data. Force displacement curves were idealized for incorporation into the ATBM. These, along with canopy compliance data, were used to construct the stiffness at the canopy helmet interference. GRA

N80-32083# Wright State Univ., Dayton, Ohio. Dept. of Psychology.
DETECTION OF MOVING TARGETS IN PERIPHERAL VISION Final Scientific Report, Jun. 1978 - Jul. 1979
Frank E. Ward Dec. 1979 26 p refs
(Grant AF-AFOSR-3647-78; AF Proj. 2313)
(AD-A082541; AFOSR-80-0211TR) Avail: NTIS HC A03/MF A01 CSCL 06/16

Human detection of a moving target is a function of target size and contrast and target velocity. Recent work in human psychophysics and animal electrophysiology has shown that visual information is processed in many channels, each specialized to detect a particular aspect of the visual stimulus. For example, the human visual system appears to contain channels sensitive to spatial frequency, or target size. It was also shown that different spatial frequencies are processed at different temporal rates, suggesting that detection may depend upon an interaction of target size and velocity. E.D.K.

N80-32084# Missouri Univ., Columbia. John M. Dalton Research Center.
MECHANISMS OF OXYGEN TOXICITY AT THE CELLULAR LEVEL Annual Report, 1 Apr. 1979 - 31 Mar. 1980
Olen R. Brown 30 Jul. 1980 35 p refs
(Contract N00014-76-C-0328)
(AD-A087831; TR-4) Avail: NTIS HC A03/MF A01 CSCL 06/1

Significant progress occurred in four areas: (1) Effect of hyperoxia on reverse glycolysis. We concluded that glucose protects Escherichia coli against hyperoxia better than other intermediates later in glycolysis and in the Krebs cycle but not because of a specific inhibition of reverse glycolysis. There was no significant impairment of the three enzymes of reverse glycolysis: fructose-1,6-diphosphatase, phosphoenolpyruvate synthase, or phosphoenolpyruvate carboxykinase. (2) Effect of hyperoxia on synthesis of RNA, DNA and pyridine nucleotide coenzymes: Evidence was obtained for direct inhibition of RNA synthesis in cells poisoned by hyperoxia, while protein synthesis was not directly affected. DNA synthesis is impaired but it is not proven whether this is direct or indirect. NAD and NADH were severly decreased in cells during poisoning by hyperoxia. This decrease was prevented by niacin, but not quinolinate which is consistent with poisoning of quinolinate phosphoribosyltransferase (QPT), as previously reported. PRPP does not protect against oxygen poisoning. PRPP synthetase is not affected by hyperoxia, but PRPP accumulates in oxygen poisoned cells which is in agreement with inhibiton of QPT. (3) Relationship of thiamine to oxygen toxicity. GRA

N80-32085# Cornell Univ., Ithaca, N. Y.
MOLECULAR MECHANISMS OF THE EPITHELIAL TRANSPORT OF TOXIC METAL IONS, PARTICULARLY MERCURY, CADMIUM, LEAD, ARSENIC, ZINC, AND COPPER Progress Report, 1 Jan. - 31 Dec. 1979
R. H. Wasserman 1979 54 p refs
(Contract EY-76-S-02-2792)
(COO-2792-3) Avail: NTIS HC A04/MF A01

The mechanism of lead transport, and especially the particular similarities or dissimilarities between lead and calcium in this process were studied. The absorption of these metals was determined in 3 week old White Leghorn cockerels, raised on a commercial diet or on a specified diet, using in vivo ligated loop procedure. The dose administered into the loop contained 0.5 micron Ci Pb203 (and/or 0.1 micron Ci Ca47), and 0.01 mM lead acetate (and/or 1 mM CaCl2) in 0.5 ml 0.15 M NaCl, pH 6.5. It was shown that lead is rapidly taken up by the mucosal tissue, and slowly transferred into the body, whereas less calcium is retained by the tissue and the transfer of calcium is many times as effective as that for lead. They appear to respond in a similar manner to a low calcium intake and vitamin D treatment. Certain differences were, however, observed in the absorption process. Increasing luminal stable lead concentration from 0.01 to 1.00 mM Pb, significantly reduced the percentage of radiolead absorbed, but did not affect the absorption of calcium. Also, vitamin D enhanced the transfer of plasma Ca47 into the lumen but did not affect the transfer of plasma Pb203. R.C.T.

N80-32086# Royal Aircraft Establishment, Farnborough (England).
TOWARDS A BETTER UNDERSTANDING OF TEMPORARY THRESHOLD SHIFT OF HEARING
K. R. Maslen London HMSO Mar. 1980 50 p refs
(RAE-TM-FS-319; BR73973) Avail: NTIS HC A03/MF A01

It was thought that temporary threshold shift (TTS) of hearing due to exposure to noise might be more easily understood if the shifts were considered in terms of the rms pressure rather than in dB. The form is to be expected if the rate of shift of the pressure threshold were proportional to the difference between itself and the ultimate threshold were calculated and compared with a limited selection of published data. Good agreement with data for the growth of TTS in individuals was found, and moderately good agreement with recovery. Agreement with data on intermittent exposures was poor, but this may be due in part to the fact that only averaged data were found and averaging the widely disparate figures obtained for individuals may mask the true effects. It is also shown that the maximum ultimate TTS due to exposure to noise may be simply related to the mean square pressure of that noise. It is suggested that at least some facets of TTS can be simply described in terms of exponential pressure shifts. Author (ESA)

N80-32087# Bureau of Radiological Health, Rockville, Md.
PROCEEDINGS OF A WORKSHOP ON THERMAL PHYSIOLOGY
T. Whit Athey, ed. Mar. 1980 84 p refs Workshop held at Rockville, Md., 29 Mar. 1979 Sponsored by Interagency Regulatory Liaison Group
(PB80-187867; FDA/BRH-80/60; DHEW/PUB/FDA-80-8109) Avail: NTIS HC A05/MF A01 CSCL 06R

A consistent radiation protection philosophy for radio frequency and microwaves is developed. Radio frequency and microwave emitters and the populations exposed to significant sources are identified and classified. A biological and physical research program is developed. GRA

N80-32088# Professional Staff Association of the Rancho Los Amigos Hospital, Inc., Downey, Calif.
EFFECTS OF AEROSOLS, OXIDES OF NITROGEN, AND OXIDANTS ON HUMAN HEALTH Final Report
Michael T. Kleinman, William S. Linn, and Jack D. Hackney Dec. 1979 112 p refs Sponsored by Coordinating Research Council, Inc.
(PB80-184583; CRC-APRAC-CAPM-31-79) Avail: NTIS HC A06/MF A01 CSCL 06T

Volunteers in normal health and volunteers with asthma were exposed to polydisperse ammonium nitrate aerosol under conditions simulating 'worst-case' ambient exposures. Normal volunteers exposed to 0.37 ppm ozone plus 0.37 ppm sulfur oxide plus 100 micrograms/cu m polydisperse sulfuric acid aerosol under simulated ambient conditions showed small statistically significant decrements in forced expiratory function. Hemoglobin saturation was sampled repeatedly with a Hewlett-Packard ear oximeter during exposures of volunteers to ozone under simulated ambient conditions. GRA

N80-32089# RAND Corp., Santa Monica, Calif.
THE INFLUENCE OF VISUAL-SPATIAL ABILITY AND STUDY PROCEDURES ON MAP LEARNING SKILL Progress Report, Jun. 1978 - Jan. 1979
Cathleen Stasz and Perry W. Thorndyke Jun. 1980 40 p refs
(Contract N00014-78-C-0042; NR Proj. 157-410)
(AD-A087247; RAND/N-1501-ONR) Avail: NTIS HC A03/MF A01 CSCL 05/10

This study investigated the influence of two sources of individual differences in knowledge acquisition from maps: abilities and learning procedures. Twenty-five subjects provided verbal protocols while attempting to learn two maps. Visual spatial ability was highly correlated with recall of spatial attributes of the map and with overall learning performance, while associative memory ability was most correlated with verbal attribute recall. Subject selected procedures for encoding spatial information and assessing learning progress also distinguished the behavior of successful and less successful learners. However, subjects of high and low ability differed little in the study procedures they chose. Although both ability differences and procedure use were important contributors to performance, a direct comparison of these sources of variation suggested that abilities are most predictive of map learning. These observations led us to the following conclusions: (1) the use of effective study procedures can influence map learning performance, and (2) high ability subjects benefit more from the use of these procedures than low ability subjects. GRA

N80-32090# Air Force Human Resources Lab., Brooks AFB, Tex. Operations Training Div.
AIRBORNE PERFORMANCE MEASUREMENT ASSESSMENT: LOW ALTITUDE TACTICAL FORMATION IN TWO OPERATING ENVIRONMENTS Interim Report, Jun. - Oct. 1978
Joseph C. Demaio and Edward E. Eddowes Jul. 1980 17 p refs
(AF Proj. 1123)
(AD-A087068; AFHRL-TR-79-44) Avail: NTIS HC A02/MF A01 CSCL 05/9

A method was developed to assess pilot performance in low altitude tactical formation (LATF) and to relate overall performance to performance on subtasks necessary to mission success. The method was used to evaluate the performance of 28 pilots assigned to an operational A-7 squadron. The method was found to provide a consistent measure of pilot performance and to reveal the importance of certain pilot skills to the LATF task. Performance ratings were obtained under routine operating conditions and under conditions of simulated combat. Differences were obtained in performance ratings under the two conditions. Implications for currency training were discussed. GRA

N80-32091# School of Aerospace Medicine, Brooks AFB, Tex.
A REVIEW OF USAFSAM STUDIES EMPLOYING MULTIPLE-TASKS PERFORMANCE DEVICES Final Report, Oct. - Dec. 1979
Bryce O. Hartman, Russell A. Benel, and William F. Storm Jun. 1980 21 p refs
(AD-A087272; SAM-TR-80-16) Avail: NTIS HC A02/MF A01 CSCL 05/10

Apparatus development at the USAF School of Aerospace Medicine to measure the performance and proficiency of systems operators is reviewed. The devices reviewed are all classified as multiple-task performance batteries that were designed to measure efficiency in the general sense. Simulators of specific systems were not included. The bulk of this paper consists of summaries of studies. GRA

N80-32092# Litton Mellonics Systems Development Div., Springfield, Va.
TEAM TRAINING APPLICATIONS OF VOICE PROCESSING TECHNOLOGY Final Technical Report, 1 Aug. 1979 - 31 Mar. 1980
Beverly A. Popelka and C. Mazie Knerr 31 Mar. 1980 36 p refs
(Contract MDA903-79-C-0209; ARPA Order 3690)
(AD-A085999) Avail: NTIS HC A03/MF A01 CSCL 05/9

Automated speech technology and intelligent computer assisted instruction offer unique solutions to problems of training teams in communication and coordination skills. At this point in the emergence of automated speech technology, scientists have only begun to explore its training uses. The application of automated speech technology entails adaptive training, or intelligent computer assisted instruction techniques in which the computer acts like a human tutor. This report reviews the goals and accomplishments of automated speech processing and its application to training, especially military team training. GRA

N80-32093# North Carolina Univ. at Chapel Hill. Psychometric Lab.
INDIVIDUAL DIFFERENCE RELATIONS IN PSYCHOMETRIC AND EXPERIMENTAL COGNITIVE TASKS Final Report
John B. Carroll Apr. 1980 335 p refs

(Contract N00014-77-C-0722; RR0420401; NR Proj. 150-406)
(AD-A086057; Rept-163) Avail: NTIS HC A15/MF A01 CSCL 05/10

A critical survey is made of recent literature pertaining to the possibility of measuring important dimensions of human cognitive ability through various types of simple cognitive tasks. The survey focuses on individual differences (IDs) found in cognitive tasks that have received extensive study in experimental cognitive psychology-for example, simple and choice reaction time, lexical decision, stimulus matching, probed search of short term memory, memory span, free and serial recall, simple sentence comprehension, and analogical reasoning. Questions of paramount interest were: What kinds of individual differences are observed in these tasks? Do they exhibit sufficient variance and reliability to measure stable individual characteristics that may be of relevance in personnel selection and other operational context? What are the dimensions of these IDs from a factor analytic standpoint? How are they related to those observed through more conventional psychometric tests? To what extent are they subject to the effects of practice and specific training, or related to demographic variables in such a way as to reduce their utility for operational use? Can the study of individual difference in simple cognitive tasks be valuable in the development of psychological theory: A considerable portion of the monograph is devoted to the definition and specification of 'elementary cognitive tasks' (ECTs) and to how ETCs can be administered, in experimental settings, so as optimally to reveal IDs in cognitive processes. A scheme for classifying ECTs according to basic paradigms is presented, and suggestions are made concerning procedures, including computer simulation, for conceptualizing and analyzing underlying processes. GRA

N80-32094# McDonnell-Douglas Astronautics Co., St. Louis, Mo.
METHODS FOR COLLECTING AND ANALYZING TASK ANALYSIS DATA Final Report
A. John Eschenbrenner, Jr., Philip B. DeVries, Jr., James T. Miller, and Hendrick W. Ruck Jul. 1980 176 p refs
(Contract F33615-77-C-0076)
(AD-A087710; AFHRL-TR-79-45-1) Avail: NTIS HC A09/MF A01 CSCL 05/9

Task analysis, a critical front end activity in the Instructional System Development methodology, is the process of partitioning job tasks into their component subtasks and identifying the skills and knowledges required to support task performance. This study was initiated in response to a Request for Personnel Research generated by the Air Training Command, which noted that 'a wide range of nonstandardized task analysis procedures are in use throughout the training community.' Implementation of a standardized procedure for identifying essential subtasks and supporting skills and knowledges was expected to hold considerable potential for increasing training efficiency and reducing training costs. A simplified task analysis procedure and documentation system was specified, and a task analysis handbook was prepared. Handbook procedures were field tested at six Air Force installations. Results indicated that the handbook procedures met the design criteria of simplicity, validity, reliability, and time efficiency/cost effectiveness. The feasibility and utility of implementing a computer based task analysis data bank was assessed, and a preliminary data bank design was then developed. Additionally, two technology transfer seminars were conducted to assist Air Force personnel in applying handbook task analysis procedures. GRA

N80-32095# Virginia Polytechnic Inst. and State Univ., Blacksburg
AIR-TO-AIR TARGET ACQUISITION FACTORS AND MEANS OF IMPROVEMENT Final Report, Nov. 1978 - Jul. 1979
Edward B. Costanza, Scott R. Stacey, and Harry L. Snyder Mar. 1980 241 p refs
(Contract F33615-78-D-0629; AF Proj. 2787)
(AD-A087848; VPI-HFL-79-10; SAM-TR-80-9) Avail: NTIS HC A11/MF A01 CSCL 06/16

This report summarizes the literature on target acquisition with emphasis on target detection and collision avoidance in the air-to-air environment. A comprehensive, annotated bibliography is included. Major factors in air-to-air acquisition are discussed, pertinent data are presented, and potential improvements through training are listed. The report is concluded with a description of a research program designed to improve air-to-air detection performance. GRA

N80-32096# Massachusetts Inst. of Tech., Cambridge. Man-Machine Systems Lab.
THE USE OF INFORMATION TRANSMISSION AS NONPARAMETRIC CORRELATION IN THE ANALYSIS OF COMPLEX BEHAVIOR: A PRELIMINARY REPORT Technical Report, 1 Jul. 1979 - 30 Jun. 1980
Neville Moray May 1980 120 p refs
(Contract N00014-77-C-0256)
(AD-A087832) Avail: NTIS HC A06/MF A01 CSCL 05/8

Recent developments of classical information theory by Conant and Ashby have given rise to a number of techniques by which the behavior of a complex system can be analyzed. Even in the absence of any information about the intensity of the variables measured it is possible to detect which parts of the system are closely coupled and which independent. The metrics of the variables can be mixed, nominal, ordinal, etc. and the method is particularly suited to dynamic systems. This paper discusses how the structure of the 'molecules' of behavior can be deduced from the entropies of the 'atoms', and outlines the solutions to certain methodological problems involved. Examples of the method are given from the fields of attention and skills, including the representation of the effects of practice on a 7-degree-of-freedom perceptual motor skill involving a complex man-machine interface. Further analysis and development of the technique is being carried out and will be reported subsequently. GRA

N80-32097# National Aerospace Lab., Amsterdam (Netherlands). Flight Div.
VISUAL SCENE PERCEPTION. FREQUENCY DOMAIN DATA AND MODEL PARAMETER ESTIMATION PROCEDURE
P. H. Wewerinke 15 Mar. 1979 24 p refs Presented at 15th Ann. Conf. on Manual Control, Dayton, Ohio, 20-22 Mar. 1979 Sponsored by Netherlands Agency for Aerospace Programs (NIVR)
(NLR-MP-79009-U) Avail: NTIS HC A02/MF A01

Results of a theoretical study and an accompanying experiment are presented concerning the visual scene perception process and its impact on aircraft approach performance. Visual scene characteristics were represented by the configurations involved. Their effect on approach performance and human information processing (primarily in terms of observation noise spectra and perceptual thresholds) was investigated utilizing a model of the visual scene perception process. The model is based on linear perspective geometrical cues and on relative (visual) motion cues and is combined with the optimal control model. Results are presented of an automated model matching procedure. Via a first order gradient method, a matching criterion (involving variances and frequency domain data) was minimized yielding a set of observation noise model parameter values. These values led to the perceptual thresholds associated with the visual cues involved. Author (ESA)

N80-32098*# Grumman Aerospace Corp., Bethpage, N.Y. Advanced Development Dept.
PROJECT FIRES. VOLUME 1: PROGRAM OVERVIEW AND SUMMARY, PHASE 1B Final Report
Fred J. Abeles May 1980 49 p refs
(Contract NAS8-32329)
(NASA-CR-161529) Avail: NTIS HC A03/MF A01 CSCL 06Q

Overall performance requirements and evaluation methods for firefighters protective equipment were established and published as the Protective Ensemble Performance Standards (PEPS). Current firefighters protective equipment was tested and evaluated against the PEPS requirements, and the preliminary design of a prototype protective ensemble was performed. In phase 1B, the design of the prototype ensemble was finalized. Prototype ensembles were fabricated and then subjected to a series of qualification tests which were based upon the PEPS requirements. Engineering drawings and purchase specifications were prepared for the new protective ensemble. Author

N80-32099*# Grumman Aerospace Corp., Bethpage, N.Y. Advanced Development Dept.

PROJECT FIRES. VOLUME 4: PROTOTYPE PROTECTIVE ENSEMBLE QUALIFICATION TEST REPORT, PHASE 1B Final Report

Fred J. Abeles May 1980 127 p refs
(Contract NAS8-32329)
(NASA-CR-161532) Avail: NTIS HC A07/MF A01 CSCL 06Q

The qualification testing of a prototype firefighter's protective ensemble is documented. Included are descriptions of the design requirements, the testing methods, and the test apparatus. The tests include measurements of individual subsystem characteristics in areas relating to both physical testing, such as heat, flame, impact penetration and human factors testing, such as dexterity, grip, and mobility. Also, measurements related to both physical and human factors testing of the complete ensemble, such as water protection, metabolic expenditures, and compatibility are considered. M.G.

N80-32100*# Grumman Aerospace Corp., Bethpage, N.Y. Advanced Development Dept.

PROJECT FIRES. VOLUME 3: PROTECTIVE ENSEMBLE DESIGN AND PROCUREMENT SPECIFICATION, PHASE 1B Final Report

Fred J. Abeles May 1980 133 p
(Contract NAS8-32329)
(NASA-CR-161531) Avail: NTIS HC A07/MF A01 CSCL 06Q

Each of the subsystems comprising the protective ensemble for firefighters is described. These include: (1) the garment system which includes turnout gear, helmets, faceshields, coats, pants, gloves, and boots; (2) the self-contained breathing system; (3) the lighting system; and (4) the communication system. The design selection rationale is discussed and the drawings used to fabricate the prototype ensemble are provided. The specifications presented were developed using the requirements and test method of the protective ensemble standard. Approximate retail prices are listed. A.R.H.

N80-32101*# Lockheed Missiles and Space Co., Sunnyvale, Calif. Biotechnology, Research and Development Div.

DEVELOPMENT OF A PREPROTOTYPE VAPOR COMPRESSION DISTILLATION WATER RECOVERY SUBSYSTEM Final Report

K. L. Johnson Nov. 1978 289 p ref
(Contract NAS9-15136)
(NASA-CR-160779; LMSC-D626041) Avail: NTIS HC A13/MF A01 CSCL 06K

The activities involved in the design, development, and test of a preprototype vapor compression distillation water recovery subsystem are described. This subsystem, part of a larger regenerative life support evaluation system, is designed to recover usable water from urine, urinal rinse water, and concentrated shower and laundry brine collected from three space vehicle crewmen for a period of 180 days without resupply. Details of preliminary design and testing as well as component developments are included. Trade studies, considerations leading to concept selections, problems encountered, and test data are also presented. The rework of existing hardware, subsystem development including computer programs, assembly verification, and comprehensive baseline test results are discussed. Author

N80-32102# Mitre Corp., Bedford, Mass.

REQUIREMENTS DEFINITION AND DESIGN GUIDELINES FOR MAN-MACHINE INTERFACE IN C3 SYSTEM ACQUISITION

Sidney L. Smith Jun. 1980 120 p refs
(Contract F19628-80-C-0001; AF Proj. 572R)
(AD-A087258; M80-10; ESD-TR-80-122) Avail: NTIS HC A06/MF A01 CSCL 17/2

The man-machine interface (MMI) represents a significant proportion of the hardware and software investment in Air Force C3 system acquisition. Early definition of MMI requirements and provision of design guidance in functional specification may be critical to successful system development. Tentative design guidelines are proposed in this report for further elaboration, trial application and subsequent evaluation in collaboration with selected ESD/MITRE program engineering efforts. GRA

N80-32103# School of Aerospace Medicine, Brooks AFB, Tex.

MAN-RATING OF THE NAVY/AIR FORCE OXYGEN GENERATING SYSTEM (NAOGS) Interim Report, 1 Jan. 1978 - 30 Sep. 1979

Ronald D. Holden, Arnott A. Moore, Kenneth G. Ikels, and Richard L. Miller May 1980 15 p refs
(AF Proj. 1930)
(AD-A087270; SAM-TR-80-12) Avail: NTIS HC A02/MF A01 CSCL 01/3

The Navy/Air Force Oxygen Generating System (NAOGS) program is a joint effort between the Air Force and the Naval Air Development Center to develop a two man onboard oxygen generator for tactical aircraft. One of the proposed systems is based upon reversible sorption of oxygen from aircraft engine bleed air using fluomine, a cobalt chelate. The NAOGS fluomine system was manufactured by Garrett/AiResearch Division, Torrance, California. The USAF School of Aerospace Medicine performed man-rating of the NAOGS-fluomine unit prior to flight test by the U.S. Navy. The experimental protocol at USAFSAM consisted of both unmanned and manned testing, during which the product oxygen was monitored for quantity, purity, and trace contaminant content. Man-rating consisted of actual flight simulations with 2 test subjects at four different altitudes for periods up to 2 hours while breathing the product oxygen. The NAOGS, for the most part, performed adequately during both manned and unmanned testing. The exceptions were a lower than specification oxygen production rate and a short-term drop in oxygen purity during each bed switching cycle. These shortcomings are discussed in the context of the forthcoming flight test program. GRA

N80-32104# School of Aerospace Medicine, Brooks AFB, Tex.

THERMAL CONDITIONS IN THE COCKPIT OF USAF AIRCRAFT: INFLIGHT MEASUREMENTS FROM THE A-7, A-10, F-4, F-15, AND YC-14 Interim Report, Jun. 1977 - Dec. 1978

Richard F. Stribley Apr. 1980 71 p refs
(AD-A087273; SAM-TR-80-6) Avail: NTIS HC A04/MF A01 CSCL 01/3

Cockpit environmental data are presented for A-7, A-10, F-4, F-15, and YC-14 aircraft. Representative values for dry-bulb, dew-point, and black-globe temperatures; air velocity; and four additional air temperatures are presented for each flight. The data are summarized and the physiological implications of the recorded temperatures are discussed. A detailed description of the USAF School of Aerospace Medicine Miniature Environmental Monitor 2 (MEM 2) is provided. GRA

N80-32105# Defence and Civil Inst. of Environmental Medicine, Downsview (Ontario)

ADHESIVE COATINGS FOR DH-411 HELMETS

J. C. Lazowski Jan. 1980 18 p refs
(AD-A087319; DCIEM-TC-80-C-02) Avail: NTIS HC A02/MF A01 CSCL 06/17

Helicopter helmets in the Canadian Forces are required in two interchangeable roles, white and camouflaged. At present, helmets used by members of tactical helicopter squadrons are painted green to achieve the camouflage effect. Painting and stripping of helmets are time-consuming tasks which may deteriorate the impact protection of the helmet. Two adhesive coatings, olive drab gun tape and an adhesive vinyl coating in a disruptive pattern, were evaluated to determine the effect of extremes of temperature upon the coatings and the coated helmet shell. It was found that a marked discoloration of the helmet

best copy available

shell occurred during seven hour exposures to 200 F when coated with olive drab gun tape. It is concluded that the adhesive vinyl coating is superior to the gun tape on the basis of appearance and discoloration of the helmet shells. GRA

N80-32106# National Technical Information Service, Springfield, Va.

HELMETS: CONSTRUCTION, EFFECTIVENESS, AND HUMAN FACTORS. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1964 - May 1980

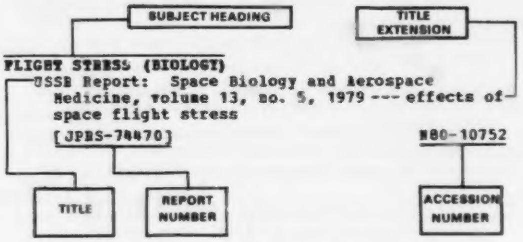
Edith Kenton Jun. 1980 195 p

(PB80-810963) Avail: NTIS HC $30.00/MF $30.00 CSCL 06Q

A bibliography containing 188 abstracts is presented covering a variety of helmets including motorcyclist and bicyclist's helmets, industrial firefighters, mining, infantry and flightcrew's helmets, police and riot helmets, and swimmer's and diver's protective helmets. Topics cover areas such as the materials used in helmet construction, the development of design criteria, configuration, and components of helmets such as suspension systems, cooling, and goggles. A number of citations deal with performance tests and requirements, test methods, structural and dynamic testing, human factors evaluation, operational efficiency, speech intelligibility, and sound localization. GRA

SUBJECT INDEX

Typical Subject Index Listing


SUBJECT HEADING
TITLE EXTENSION
FLIGHT STRESS (BIOLOGY)
USSR Report: Space Biology and Aerospace Medicine, volume 13, no. 5, 1979 --- effects of space flight stress
[JPRS-74470]
N80-10752
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABIOGENESIS
- Clays in prebiological chemistry A80-49871
- Facilitated diffusion as a method for selective accumulation of materials from the primordial oceans by a lipid-vesicle protocell A80-50710
- Effect of polynucleotides and a basic protein on the condensation of phenylalanyl adenylate --- implications for abiogenesis A80-50711

ACCELERATION STRESSES (PHYSIOLOGY)
- Coincident loss of consciousness and ventricular tachycardia during +Gz stress A80-48096
- Acceleration forces on the human subject A80-50103
- Orthostatic tolerance testing - Comparison of LBNP and HUT methods --- Lower Body Negative Pressure Head-up Tilting A80-50629
- Thermoregulation in rats: Effects of varying duration of hypergravic fields [NASA-CR-163481] N80-31030

ACCELERATION TOLERANCE
- Acceleration forces on the human subject A80-50103
- The effect of physical conditioning on +GZ tolerance N80-31031

ACCIDENT PREVENTION
- Investigation of life change as a contributing factor in aircraft accidents - A prospectus A80-50104

ACOUSTIC MEASUREMENTS
- USAFSAM microprocessor audiometer: System reference manual [AD-A087342] N80-32081

ADAPTATION
- Physiological reactions during acute adaptation to reduced gravity A80-50070

AEROSOLS
- Effects of aerosols, oxides of nitrogen, and oxidants on human health [PB80-184583] N80-32088

AEROSPACE MEDICINE
- Deformations of human skull produced by impact /experimental studies and modeling problems/. II - The dynamics of the skull base during impact loading of the vault A80-47692
- Change of biomechanical properties of rat's bones produced by a 19-day spaceflight in the artificial satellite Cosmos-936 A80-47693
- Myocardial ischemia and its risk factors A80-47783
- Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling A80-48086
- Psychophysical comparison of vertical and angular vibrations [AMRL-TR-80-46] A80-48088
- Effects of whole-body vibrations on standing posture in man A80-48091
- Noise-induced hearing loss and vestibular dysfunction A80-48095
- Coincident loss of consciousness and ventricular tachycardia during +Gz stress A80-48096
- The effects of water-salt stresses on orthostatic test endurance under conditions of hypoxia A80-48611
- Changes in alpha activity during decreases in human operator work capacity A80-48612
- The effects of various regimes of work and rest following a 64-72 hour period of wakefulness on sleep dynamics A80-48613
- The structure of oxygen debt in humans following prolonged hypokinesis A80-48614
- Changes in the system of external respiration /respiration mechanics/ during cold adaptation A80-48615
- The effect of mountain conditions on work capacity and acclimatization times A80-49020
- Psychological features of the pilot's personality in the case of diseases of the gastrointestinal tract A80-49021
- On human response to prolonged repeated whole-body vibration A80-49401
- Late degeneration in rabbit tissues after irradiation by heavy ions A80-50065
- A sclerocorneal electrode for the study of the characteristics of primate vision under condition of space flight A80-50067
- Joint Committee on Aviation Pathology, Scientific Session, 11th, U.S. Naval Academy, Annapolis, Md., September 5-8, 1978, Proceedings A80-50101
- The effect of alcohol on body heat loss A80-50102
- Acceleration forces on the human subject A80-50103
- Tissue analysis for thiazide diuretics A80-50105
- Role of radiology in aviation accident investigation A80-50107
- Blood group determination from teeth A80-50109
- Physical standards for high-performance fighter aircraft pilots A80-50114
- Coronary heart disease - An expensive Air Force problem A80-50115

Hemodynamic effects of extreme positive pressure breathing using a two-pressure flying suit A80-50119
The Environmental Symptoms Questionnaire - Revisions and new field data --- for monitoring health effects of flight stress A80-50124
Pulmonary and symptom threshold effects of ozone in airline passenger and cockpit crew surrogates A80-50125
Effects of different body positions on the Eustachian tube function in the selection of airmen A80-50128
Emergency medicine and the airline passenger A80-50129
Pilot study on the value of a beta-blocking drug in initial helicopter training A80-50130
Incidence of complications from coronary angiography in 463 USAF aviators A80-50131
Significance of the heart factor in manifestations of the initial insufficiency of cerebral blood circulation in pilots A80-50331
The relationship between pulse count and energy expenditure at sub maximal work under different ambient temperatures A80-50577
Ground-referenced visual orientation with imaging displays --- psychophysiology [AD-A081882] N80-32063
A review of USAFSAM studies employing multiple-tasks performance devices [AD-A087272] N80-32091

AEROSPACE SYSTEMS
Man-machine interaction in aerospace control systems A80-50196

AGING (BIOLOGY)
The dynamics of certain indicators of nuclein metabolism during hypokinesia in rats of different ages under the influence of sinusoidal modulated currents and measured physical load [NASA-TM-76162] N80-32058
Changes in bone tissue under conditions of hypokinesia and in connection with age [NASA-TM-76154] N80-32064

AIR NAVIGATION
Man, aircraft and navigation systems - An evaluation for the 80s A80-48137

AIR POLLUTION
Effects of aerosols, oxides of nitrogen, and oxidants on human health [PB80-184583] N80-32088

AIR SAMPLING
Description of an apparatus for studying micro-organisms in the upper atmosphere A80-50057

AIRCRAFT ACCIDENT INVESTIGATION
Joint Committee on Aviation Pathology, Scientific Session, 11th, U.S. Naval Academy, Annapolis, Md., September 5-8, 1978, Proceedings A80-50101
Role of radiology in aviation accident investigation A80-50107
Dental identification in fatal aircraft accidents A80-50108
Summary of the means used to positively identify the American victims in the Canary Islands crash A80-50111
A questionnaire study of psychological background factors in U.S. Navy aircraft accidents A80-50121

AIRCRAFT ACCIDENTS
Investigation of life change as a contributing factor in aircraft accidents - A prospectus A80-50104

AIRCRAFT DETECTION
Air-to-air target acquisition factors and means of improvement [AD-A087848] N80-32095

AIRCRAFT EQUIPMENT
Man, aircraft and navigation systems - An evaluation for the 80s A80-48137
F/A-18 foot strikes - An update --- During ejection process A80-50222

AIRCRAFT LANDING
Instrument scanning and controlling: Using eye movement data to understand pilot behavior and strategies [NASA-CR-3306] N80-31039

AIRCRAFT MANEUVERS
Equiperception maneuvers --- aircraft motion perception A80-50123

AIRCRAFT PERFORMANCE
Physical standards for high-performance fighter aircraft pilots A80-50114
Airborne performance measurement assessment: Low altitude tactical formation in two operating environments [AD-A087068] N80-32090

AIRCRAFT PILOTS
Symposium on human factors in civil aviation. II A80-47791
Coronary heart disease - An expensive Air Force problem A80-50115
Significance of the heart factor in manifestations of the initial insufficiency of cerebral blood circulation in pilots A80-50331
Instrument scanning and controlling: Using eye movement data to understand pilot behavior and strategies [NASA-CR-3306] N80-31039

AIRLINE OPERATIONS
Symposium on human factors in civil aviation. II A80-47791
Pulmonary and symptom threshold effects of ozone in airline passenger and cockpit crew surrogates A80-50125
Emergency medicine and the airline passenger A80-50129

ALTITUDE ACCLIMATIZATION
The effect of mountain conditions on work capacity and acclimatization times A80-49020

ALTITUDE SICKNESS
The Environmental Symptoms Questionnaire - Revisions and new field data --- for monitoring health effects of flight stress A80-50124

ALTITUDE TESTS
Airborne performance measurement assessment: Low altitude tactical formation in two operating environments [AD-A087068] N80-32090

ALTITUDE TOLERANCE
Altitude convulsion threshold and time to altitude convulsion in gold thioglucose obese mice A80-48089

ALUMINUM
Is aluminum an essential element for life A80-50712

AMBIENT TEMPERATURE
The relationship between pulse count and energy expenditure at sub maximal work under different ambient temperatures A80-50577

AMINO ACIDS
On the antisymmetry of the amino acid code table A80-50708

AMMONIA
The importance of ammonia in the metabolic effects of hydrazine A80-50126

ANAEROBES
Living without oxygen: Closed and open systems in hypoxia tolerance --- Book A80-50354

ANALYSIS (MATHEMATICS)
Analysis of human auditory brainstem responses for complex stimuli N80-31034

ANGIOGRAPHY
Incidence of complications from coronary angiography in 463 USAF aviators A80-50131

Ultrasonics in medicine. Citations from the NTIS data base [PB80-810922] N80-31037

ANTISYMMETRY
On the antisymmetry of the amino acid code table A80-50708

ARMED FORCES (UNITED STATES)
An organizational concept for pathologic identification in mass disasters A80-50106
Coronary heart disease - An expensive Air Force problem A80-50115

ARMOR
The psychomotor performance of men and women wearing two types of body armor [AD-A086742] N80-31040

ARTERIOSCLEROSIS
Asymptomatic atherosclerotic occlusive vascular disease - Its significance in the evaluation of aircrew members A80-50116

ASTRONAUT PERFORMANCE
Mass measurement under conditions of weightlessness --- for astronaut body weight determination A80-47932

ASTRONAUT TRAINING
Astronauts keep queuing up for Space Shuttle A80-48796
Preparation for long-duration flights A80-50279

ATHLETES
Restoration of physical performance capacity of athletes after prolonged restriction of their motor activity [NASA-TM-76305] N80-32066

ATMOSPHERIC COMPOSITION
The influence of life on the evolution of the atmosphere A80-50061

ATMOSPHERIC PRESSURE
Biological limits of temperature and pressure A80-50703

ATMOSPHERIC TEMPERATURE
Biological limits of temperature and pressure A80-50703

ATTACK AIRCRAFT
Thermal conditions in the cockpit of USAF aircraft: Inflight measurements from the A-7, A-10, F-4, F-15, and YC-14 [AD-A087273] N80-32104

AUDIO FREQUENCIES
Response time effects of alerting tone and semantic context for synthesized voice cockpit warnings A80-48950

AUDIOMETRY
Analysis of human auditory brainstem responses for complex stimuli N80-31034
USAFSAM microprocessor audiometer: System reference manual [AD-A087342] N80-32081

AUDITORY DEFECTS
Noise-induced hearing loss and vestibular dysfunction A80-48095

AUDITORY PERCEPTION
Towards a better understanding of temporary threshold shift of hearing [RAE-TM-FS-319] N80-32086

AUDITORY STIMULI
Analysis of human auditory brainstem responses for complex stimuli N80-31034

AUTONOMIC NERVOUS SYSTEM
Orthoclinostatic test as one of the methods for evaluating the human functional state [NASA-TM-76321] N80-32070

AZIDES (INORGANIC)
Tissue analysis for thiazide diuretics A80-50105

B

BACTERIA
Lipids as a principle for the identification of Archaebacteria A80-50063
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus A80-50076

BACTERIOPHAGES
Genetic effects of space hadrons on bacteriophage under Alpine conditions A80-50068

BALLOON FLIGHT
Variations in the recombination rate of Drosophila melanogaster induced by balloon flight A80-50072

BIBLIOGRAPHIES
Cold weather stress on humans. Citations from the NTIS data base [PB80-810989] N80-31035
Ultrasonics in medicine. Citations from the NTIS data base [PB80-810922] N80-31037
Ultrasonic in medicine. Citations from the Engineering Index data base [PB80-810930] N80-31038
Helmets: Construction, effectiveness, and human factors. Citations from the NTIS data base [PB80-810963] N80-32106

BINOCULAR VISION
Wavelength difference limit for binocular color fusion A80-48519

BIOASTRONAUTICS
Space motion sickness - Skylab revisited A80-48094
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions A80-50074
Development of higher fungi under weightlessness A80-50075
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus A80-50076
Femur-bending properties as influenced by gravity. IV - Limits after high and low weight-bearing A80-50127
Thermoregulation in rats: Effects of varying duration of hypergravic fields [NASA-CR-163481] N80-31030

BIOCHEMISTRY
Clays in prebiological chemistry A80-49871
Experiments on the amplification of optical activity --- molecular chirality in earth biosphere A80-50707
On the antisymmetry of the amino acid code table A80-50708
Possible role of RNA-dependent DNA-polymerase in early stages of evolution A80-50709

BIOCONTROL SYSTEMS
Physiological aspects of automatic physical training control by biofeedback in weightlessness A80-50069

BIODYNAMICS
Deformations of human skull produced by impact /experimental studies and modeling problems/. II - The dynamics of the skull base during impact loading of the vault A80-47692
Change of biomechanical properties of rat's bones produced by a 19-day spaceflight in the artificial satellite Cosmos-936 A80-47693
Methods of continuum mechanics in investigations of respiration and blood circulation A80-50563

BIOGEOCHEMISTRY
The influence of life on the evolution of the atmosphere A80-50061

BIOINSTRUMENTATION
A microprocessor-based instrument for neural pulse wave analysis A80-50322
Device for mass measurement under zero-gravity conditions A80-51000

BIOLOGICAL EFFECTS
Health and environmental research related to energy development and use --- biomolecular and cellular science, environmental biology, and nuclear medicine
[UCLA-12-1217] N80-32061
Effects of hirudin-induced activation of nonenzymatic fibrinolysis during immobilization stress
[NASA-TM-76189] N80-32065
Proceedings Of a Workshop on Thermal Physiology
[PB80-187867] N80-32087
Effects of aerosols, oxides of nitrogen, and oxidants on human health
[PB80-184583] N80-32088

BIOLOGICAL EVOLUTION
Paths of the origin of life
A80-49425
Template-directed synthesis and selective adsorption of oligoadenylates in hydroxyapatite
A80-49873
Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979
A80-50051
The influence of life on the evolution of the atmosphere
A80-50061
Early photosynthetic microorganisms and environmental evolution
A80-50062
Lipids as a principle for the identification of Archaebacteria
A80-50063
Gravity and land plant evolution - Experimental induction of lignification by simulated hypergravity and water stress
A80-50073
Biological limits of temperature and pressure
A80-50703
Optical activity and evolution --- of substances of biological origin in outer space
A80-50706
Experiments on the amplification of optical activity --- molecular chirality in earth biosphere
A80-50707
On the antisymmetry of the amino acid code table
A80-50708
Possible role of RNA-dependent DNA-polymerase in early stages of evolution
A80-50709
Is aluminum an essential element for life
A80-50712

BIOMETRICS
Ultrasonic in medicine. Citations from the Engineering Index data base
[PB80-810930] N80-31038

BIOSYNTHESIS
Studies of the chemical basis of the origin of protein synthesis Initiation and direction of peptide growth
A80-49872
Template-directed synthesis and selective adsorption of oligoadenylates in hydroxyapatite
A80-49873

BIRD-AIRCRAFT COLLISIONS
Analysis and measurement of helmeted aircrewman response resulting from birdstrike
[AD-A087737] N80-32082

BLOOD CIRCULATION
Methods of continuum mechanics in investigations of respiration and blood circulation
A80-50563
Effect of hypokinesia on blood microcirculation
[NASA-TM-76308] N80-32068

BLOOD FLOW
Topographical simulation of the blood vessels of the human bulbar conjunctiva and application to pressure-flow relationships
N80-31033
Blood filling and flow in lungs during change in body position in space
[NASA-TM-76333] N80-32071

BLOOD GROUPS
Blood group determination from teeth
A80-50109

BLOOD PLASMA
Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling
A80-48086

BLOOD PRESSURE
Orthostatic tolerance testing - Comparison of LBNP and HUT methods --- Lower Body Negative Pressure Head-up Tilting
A80-50629

BLOOD VESSELS
Topographical simulation of the blood vessels of the human bulbar conjunctiva and application to pressure-flow relationships
N80-31033

BLOOD VOLUME
Blood filling and flow in lungs during change in body position in space
[NASA-TM-76333] N80-32071

BODY FLUIDS
Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling
A80-48086

BODY KINEMATICS
Blood filling and flow in lungs during change in body position in space
[NASA-TM-76333] N80-32071

BODY TEMPERATURE
The effect of alcohol on body heat loss
A80-50102

BODY WEIGHT
Mass measurement under conditions of weightlessness --- for astronaut body weight determination
A80-47932

BONE DEMINERALIZATION
Changes in bone tissue under conditions of hypokinesia and in connection with age
[NASA-TM-76154] N80-32064

BONES
Change of biomechanical properties of rat's bones produced by a 19-day spaceflight in the artificial satellite Cosmos-936
A80-47693

BRAIN
Effect of sinusoidal modulated currents and acute hypoxia on corticosterone content and activity of certain dehydrogenases in tissues of different rat organs during hypokinesia
[NASA-TM-76161] N80-32057

BRAIN CIRCULATION
Significance of the heart factor in manifestations of the initial insufficiency of cerebral blood circulation in pilots
A80-50331

BRAIN DAMAGE
Certain features of the cochleovestibular syndrome in the residual stage of traumatic brain disease
[NASA-TM-76337] N80-32073

BRAIN STEM
Analysis of human auditory brainstem responses for complex stimuli
N80-31034

C

CANOPIES
Analysis and measurement of helmeted aircrewman response resulting from birdstrike
[AD-A087737] N80-32082

CARBOXYLIC ACIDS
Studies of the chemical basis of the origin of protein synthesis Initiation and direction of peptide growth
A80-49872

CARDIOLOGY
Incidence of complications from coronary angiography in 463 USAF aviators
A80-50131

CARDIOVASCULAR SYSTEM
Significance of the heart factor in manifestations of the initial insufficiency of cerebral blood circulation in pilots
A80-50331
An investigation of cardiac threshold variability relative to stimulus shape and respiratory cycle
N80-31032
Orthoclinostatic test as one of the methods for evaluating the human functional state
[NASA-TM-76321] N80-32070

CARGO AIRCRAFT
Thermal conditions in the cockpit of USAF aircraft: Inflight measurements from the A-7, A-10, F-4, F-15, and YC-14
[AD-A087273] N80-32104
CASUALTIES
An organizational concept for pathologic identification in mass disasters
A80-50106
CAUSES
Review of book vestibular crises
[NASA-TM-76354] N80-32078
CELLS (BIOLOGY)
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus
A80-50076
Facilitated diffusion as a method for selective accumulation of materials from the primordial oceans by a lipid-vesicle protocell
A80-50710
A paraboloidal flow cytometer for improved fluorescence analysis of single cells
N80-31029
CEREBRAL CORTEX
The influence of modulated sinusoidal current on the state of chromatin from neurons of the cerebral cortex of rats in hypokinesia
[NASA-TM-76160] N80-32056
CHEMICAL ANALYSIS
A paraboloidal flow cytometer for improved fluorescence analysis of single cells
N80-31029
CHEMICAL BONDS
On the antisymmetry of the amino acid code table
A80-50708
CHEMICAL COMPOSITION
Is aluminum an essential element for life
A80-50712
CHEMICAL EVOLUTION
Paths of the origin of life
A80-49425
Clays in prebiological chemistry
A80-49871
Studies of the chemical basis of the origin of protein synthesis Initiation and direction of peptide growth
A80-49872
The possible role of metal ions and clays in prebiotic chemistry
A80-50060
Experiments on the amplification of optical activity --- molecular chirality in earth biosphere
A80-50707
Is aluminum an essential element for life
A80-50712
CHEMISORPTION
Template-directed synthesis and selective adsorption of oligoadenylates in hydroxyapatite
A80-49873
CHLORELLA
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions
A80-50074
CHOROID MEMBRANES
Vestibular reactions in patients during occlusion form of chorioependymitis
[NASA-TM-76356] N80-32080
CIRCADIAN RHYTHMS
Temporal precision in circadian systems - A reliable neuronal clock from unreliable components
A80-49849
CIVIL AVIATION
Symposium on human factors in civil aviation. II
A80-47791
Man, aircraft and navigation systems - An evaluation for the 80s
A80-48137
CLAYS
Clays in prebiological chemistry
A80-49871
The possible role of metal ions and clays in prebiotic chemistry
A80-50060
CLINICAL MEDICINE
Implications of probability analysis on the strategy used for noninvasive detection of coronary artery disease
A80-49022
Automatic contouring for two-dimensional echocardiography
A80-50912
COAGULATION
Effects of hirudin-induced activation of nonenzymatic fibrinolysis during immobilization stress
[NASA-TM-76189] N80-32065
COCHLEA
Certain features of the cochleovestibular syndrome in the residual stage of traumatic brain disease
[NASA-TM-76337] N80-32073
COCKPIT SIMULATORS
Response time effects of alerting tone and semantic context for synthesized voice cockpit warnings
A80-48950
COCKPITS
Analysis and measurement of helmeted aircrewman response resulting from birdstrike
[AD-A087737] N80-32082
Thermal conditions in the cockpit of USAF aircraft: Inflight measurements from the A-7, A-10, F-4, F-15, and YC-14
[AD-A087273] N80-32104
COGNITION
Individual difference relations in psychometric and experimental cognitive tasks
[AD-A086057] N80-32093
COGNITIVE PSYCHOLOGY
Individual difference relations in psychometric and experimental cognitive tasks
[AD-A086057] N80-32093
COLD ACCLIMATIZATION
Changes in the system of external respiration /respiration mechanics/ during cold adaptation
A80-48615
COLD WATER
Design concepts of survival suits for cold water immersion and their thermal protection performance
A80-50221
COLD WEATHER
Cold weather stress on humans. Citations from the NTIS data base
[PB80-810989] N80-31035
COLLISION AVOIDANCE
Air-to-air target acquisition factors and means of improvement
[AD-A087848] N80-32095
COLOR VISION
Wavelength difference limit for binocular color fusion
A80-48519
COMFORT
A design tool for estimating passenger ride discomfort within complex ride environments
A80-48949
COMMAND AND CONTROL
Requirements definition and design guidelines for man-machine interface in C3 system acquisition
[AD-A087258] N80-32102
COMMERCIAL AIRCRAFT
Man, aircraft and navigation systems - An evaluation for the 80s
A80-48137
Emergency medicine and the airline passenger
A80-50129
COMPUTER ASSISTED INSTRUCTION
Methods for collecting and analyzing task analysis data
[AD-A087710] N80-32094
COMPUTER PROGRAMS
Advanced flight design systems subsystem performance models. Executive summary
[NASA-CR-160768] N80-31044
COMPUTER SYSTEMS DESIGN
Requirements definition and design guidelines for man-machine interface in C3 system acquisition
[AD-A087258] N80-32102
COMPUTERIZED SIMULATION
Advanced flight design systems subsystem performance models. Executive summary
[NASA-CR-160768] N80-31044

Advanced flight design systems subsystem performance models. Sample model: Environmental analysis routine library [NASA-CR-160770] N80-31046

CONFERENCES

Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979 A80-50051

Joint Committee on Aviation Pathology, Scientific Session, 11th, U.S. Naval Academy, Annapolis, Md., September 5-8, 1978, Proceedings A80-50101

Proceedings Of a Workshop on Thermal Physiology [PB80-187867] N80-32087

CONJUNCTIVA

Topographical simulation of the blood vessels of the human bulbar conjunctiva and application to pressure-flow relationships N80-31033

CONSCIOUSNESS

Coincident loss of consciousness and ventricular tachycardia during +Gz stress A80-48096

CONTACT LENSES

A sclerocorneal electrode for the study of the characteristics of primate vision under condition of space flight A80-50067

CONTINUUM MECHANICS

Methods of continuum mechanics in investigations of respiration and blood circulation A80-50563

CONTOURS

Automatic contouring for two-dimensional echocardiography A80-50912

CONTROL EQUIPMENT

Man-machine interaction in aerospace control systems A80-50196

COOLING

Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling A80-48086

The effect of alcohol on body heat loss A80-50102

CORONARY ARTERY DISEASE

Implications of probability analysis on the strategy used for noninvasive detection of coronary artery disease A80-49022

Coronary heart disease - An expensive Air Force problem A80-50115

CORTI ORGAN

Certain features of the cochleovestibular syndrome in the residual stage of traumatic brain disease [NASA-TM-76337] N80-32073

CORTICOSTEROIDS

Effect of sinusoidal modulated currents and acute hypoxia on corticosterone content and activity of certain dehydrogenases in tissues of different rat organs during hypokinesia [NASA-TM-76161] N80-32057

COSMIC RAYS

Predicted LET-spectra of HZE-particles for the Free Flyer Biostack Experiment on the Long Duration Exposure Facility mission A80-50066

COSMONAUTS

Physiological aspects of automatic physical training control by biofeedback in weightlessness A80-50069

COSMOS 936 SATELLITE

Change of biomechanical properties of rat's bones produced by a 19-day spaceflight in the artificial satellite Cosmos-936 A80-47693

COSTS

Coronary heart disease - An expensive Air Force problem A80-50115

CRASH INJURIES

Role of radiology in aviation accident investigation A80-50107

Dental identification in fatal aircraft accidents A80-50108

Summary of the means used to positively identify the American victims in the Canary Islands crash A80-50111

CYTOGENESIS

A paraboloidal flow cytometer for improved fluorescence analysis of single cells N80-31029

D

DAMAGE ASSESSMENT

Laser protective eyewear program at the Los Alamos Scientific Laboratory [LA-UR-80-1036] N80-31049

DATA PROCESSING

The influence of visual-spatial ability and study procedures on map learning skill [AD-A087247] N80-32089

DENTISTRY

Dental identification in fatal aircraft accidents A80-50108

DEOXYRIBONUCLEIC ACID

Possible role of RNA-dependent DNA-polymerase in early stages of evolution A80-50709

A paraboloidal flow cytometer for improved fluorescence analysis of single cells N80-31029

DESERTS

Endolithic microbial life in hot and cold deserts A80-50704

DIAGNOSIS

Automatic contouring for two-dimensional echocardiography A80-50912

Diagnosis of latent forms of labyrinthine affections [NASA-TM-76338] N80-32074

DIFFUSION

Molecular mechanisms of the epithelial transport of toxic metal ions, particularly mercury, cadmium, lead, arsenic, zinc, and copper [COO-2792-3] N80-32085

DIRECT CURRENT

Technique of electrical stimulation of the vestibular analyzer under clinical conditions [NASA-TM-76347] N80-32075

DISASTERS

An organizational concept for pathologic identification in mass disasters A80-50106

DISPLAY DEVICES

Ground-referenced visual orientation with imaging displays --- psychophysiology [AD-A081882] N80-32063

DIURETICS

Tissue analysis for thiazide diuretics A80-50105

DIURNAL VARIATIONS

The effects of various regimes of work and rest following a 64-72 hour period of wakefulness on sleep dynamics A80-48613

DIVING (UNDERWATER)

Thermal insulation materials for diver's underwear garment [AD-A086743] N80-31048

DROSOPHILA

Variations in the recombination rate of Drosophila melanogaster induced by balloon flight A80-50072

E

EAR

Occupational changes in the organ of hearing and equilibrium in sailors and fishermen [NASA-TM-76335] N80-32072

Diagnosis of latent forms of labyrinthine affections [NASA-TM-76338] N80-32074

Review of book-Ultrasound in Otorhinolaryngology [NASA-TM-76349] N80-32076

EARTH ENVIRONMENT

Early photosynthetic microorganisms and environmental evolution A80-50062

EARTH HYDROSPHERE

Biological limits of temperature and pressure A80-50703

Experiments on the amplification of optical activity --- molecular chirality in earth biosphere
A80-50707

ECHOCARDIOGRAPHY
Automatic contouring for two-dimensional echocardiography
A80-50912
Ultrasonics in medicine. Citations from the NTIS data base
[PB80-810922] N80-31037
Ultrasonic in medicine. Citations from the Engineering Index data base
[PB80-810930] N80-31038

EDUCATION
Team training applications of voice processing technology
[AD-A085999] N80-32092
Methods for collecting and analyzing task analysis data
[AD-A087710] N80-32094

ELECTRIC CURRENT
The influence of modulated sinusoidal current on the state of chrometin from neurons of the cerebral cortex of rats in hypokinesia
[NASA-TM-76160] N80-32056
The dynamics of certain indicators of nuclein metabolism during hypokinesia in rats of different ages under the influence of sinusoidal modulated currents and measured physical load
[NASA-TM-76162] N80-32058

ELECTRIC DIPOLES
Irradiation of prolate spheroidal models of humans in the near field of a short electric dipole
A80-49868

ELECTRIC STIMULI
Technique of electrical stimulation of the vestibular analyzer under clinical conditions
[NASA-TM-76347] N80-32075

ELECTROCHEMISTRY
Introduction to electrochemistry of nerve membranes
[PB80-178908] N80-31036

ELECTROENCEPHALOGRAPHY
Changes in alpha activity during decreases in human operator work capacity
A80-48612

ELECTROPHYSIOLOGY
Introduction to electrochemistry of nerve membranes
[PB80-178908] N80-31036

ELECTRORETINOGRAPHY
A sclerocorneal electrode for the study of the characteristics of primate vision under condition of space flight
A80-50067

EMERGENCIES
Emergency medicine and the airline passenger
A80-50129

EMOTIONAL FACTORS
Changes in gas exchange, tissue respiration and glycolysis in rats during hypokinesia
[NASA-TM-76149] N80-32055

ENCEPHALITIS
Ultrasonic in medicine. Citations from the Engineering Index data base
[PB80-810930] N80-31038

ENDOCRINE SYSTEMS
Therapeutic gymnastics in comprehensive treatment of patients with generalized myasthenia
[NASA-TM-76312] N80-32069

ENERGY ABSORPTION
Analysis and measurement of helmeted aircrewman response resulting from birdstrike
[AD-A087737] N80-32082

ENVIRONMENT EFFECTS
Health and environmental research related to energy development and use --- biomolecular and cellular science, environmental biology, and nuclear medicine
[UCLA-12-1217] N80-32061

ENVIRONMENT MODELS
Advanced flight design systems subsystem performance models. Sample model: Environmental analysis routine library
[NASA-CR-160770] N80-31046

ENVIRONMENT SIMULATION
Further studies on the environmental capabilities of fungi - Interactions of salinity, ultraviolet irradiation, and temperature in Penicillium
A80-50058

ENVIRONMENTAL CONTROL
Advanced flight design systems subsystem performance models. User guide: Environmental analysis routine library
[NASA-CR-160769] N80-31045
Thermal conditions in the cockpit of USAF aircraft: Inflight measurements from the A-7, A-10, F-4, F-15, and YC-14
[AD-A087273] N80-32104

ENZYMES
Effects of hirudin-induced activation of nonenzymatic fibrinolysis during immobilization stress
[NASA-TM-76189] N80-32065

EPITHELIUM
Molecular mechanisms of the epithelial transport of toxic metal ions, particularly mercury, cadmium, lead, arsenic, zinc, and copper
[COO-2792-3] N80-32085

EQUIPMENT SPECIFICATIONS
Project FIRES. Volume 1: Program overview and summary, phase 1B
[NASA-CR-161529] N80-32098
Project FIRES. Volume 3: Protective ensemble design and procurement specification, phase 1B
[NASA-CR-161531] N80-32100

ERGODIC PROCESS
Temporal precision in circadian systems - A reliable neuronal clock from unreliable components
A80-49849

ERGOMETERS
Physical exercises on a bicycle-ergometer and running track to prevent hypodynamia in workers of intellectual labor
[NASA-TM-76306] N80-32067

ESCAPE SYSTEMS
F/A-18 foot strikes - An update --- During ejection process
A80-50222

ETHYL ALCOHOL
Effect of alcohol on man's response to mild physical activity in a cold environment
A80-48092
The effect of alcohol on body heat loss
A80-50102

ETIOLOGY
Review of book vestibular crises
[NASA-TM-76354] N80-32078
Vestibular reactions in patients during occlusion form of chorioependymitis
[NASA-TM-76356] N80-32080

EUSTACHIAN TUBES
Effects of different body positions on the Eustachian tube function in the selection of airmen
A80-50128

EXERCISE PHYSIOLOGY
Hypothermia induced by 5-thio-D-glucose - Effects on treadmill performance in the heat
A80-48087
Effect of alcohol on man's response to mild physical activity in a cold environment
A80-48092
Femur-bending properties as influenced by gravity. IV - Limits after high and low weight-bearing
A80-50127

EXOBIOLOGY
Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979
A80-50051
On the possibility of life on Mars
A80-50056
Predicted LET-spectra of HZE-particles for the Free Flyer Biostack Experiment on the Long Duration Exposure Facility mission
A80-50066
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions
A80-50074
Optical activity and evolution --- of substances of biological origin in outer space
A80-50706

EXTRATERRESTRIAL LIFE
Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979
A80-50051
On the possibility of life on Mars
A80-50056
Optical activity and evolution --- of substances of biological origin in outer space
A80-50706

EYE MOVEMENTS
Multiple sensory and motor cues enhance the accuracy of pursuit eye movements
A80-50120
The sensing of retinal motion
A80-50249
Instrument scanning and controlling: Using eye movement data to understand pilot behavior and strategies
[NASA-CR-3306] N80-31039

EYE PROTECTION
Laser protective eyewear program at the Los Alamos Scientific Laboratory
[LA-UR-80-1038] N80-31049

F

F-18 AIRCRAFT
F/A-18 foot strikes - An update --- During ejection process
A80-50222

FATIGUE (BIOLOGY)
Changes in alpha activity during decreases in human operator work capacity
A80-48612

FEEDBACK CONTROL
Physiological aspects of automatic physical training control by biofeedback in weightlessness
A80-50069

FEMUR
Femur-bending properties as influenced by gravity. IV - Limits after high and low weight-bearing
A80-50127

FIGHTER AIRCRAFT
Physical standards for high-performance fighter aircraft pilots
A80-50114

FIRE FIGHTING
Project FIRES. Volume 1: Program overview and summary, phase 1B
[NASA-CR-161529] N80-32098
Project FIRES. Volume 4: Prototype protective ensemble qualification test report, phase 1B
[NASA-CR-161532] N80-32099
Project FIRES. Volume 3: Protective ensemble design and procurement specification, phase 1B
[NASA-CR-161531] N80-32100

FIRST AID
Tap water, an efficient method for cooling heatstroke victims - A model in dogs
A80-50122

FLAMMABILITY
Flame testing of two samples of exposure suit material
[AD-A086739] N80-31047

FLICKER
Velocity specificity of the flicker to pattern sensitivity ratio in human vision
A80-48518

FLIGHT CLOTHING
Adhesive coatings for DH-411 helmets
[AD-A087319] N80-32105

FLIGHT CONDITIONS
Preparation for long-duration flights
A80-50279

FLIGHT CREWS
Coincident loss of consciousness and ventricular tachycardia during +Gz stress
A80-48096
Asymptomatic atherosclerotic occlusive vascular disease - Its significance in the evaluation of aircrew members
A80-50116
Pulmonary and symptom threshold effects of ozone in airline passenger and cockpit crew surrogates
A80-50125
Effects of different body positions on the Eustachian tube function in the selection of airmen
A80-50128
Incidence of complications from coronary angiography in 463 USAF aviators
A80-50131

FLIGHT FITNESS
Myocardial ischemia and its risk factors
A80-47783

FLIGHT HAZARDS
Analysis and measurement of helmeted aircrewman response resulting from birdstrike
[AD-A087737] N80-32082

FLIGHT SAFETY
F/A-18 foot strikes - An update --- During ejection process
A80-50222

FLIGHT STRESS (BIOLOGY)
The Environmental Symptoms Questionnaire - Revisions and new field data --- for monitoring health effects of flight stress
A80-50124

FLIGHT TRAINING
Pilot study on the value of a beta-blocking drug in initial helicopter training
A80-50130
Airborne performance measurement assessment: Low altitude tactical formation in two operating environments
[AD-A087068] N80-32090

FLIR DETECTORS
Human operator interface with FLIR displays
[AD-A086284] N80-31041

FLUID MECHANICS
Methods of continuum mechanics in investigations of respiration and blood circulation
A80-50563

FLUORESCENCE
A paraboloidal flow cytometer for improved fluorescence analysis of single cells
N80-31029

FORECASTING
Differentially weighting linear models of behavior: An empirical comparison of six methods
[AD-A086876] N80-31043

FOVEA
Foveal and peripheral displacement thresholds as a function of stimulus luminance, line length and duration of movement
A80-48520

FUNGI
Further studies on the environmental capabilities of fungi - Interactions of salinity, ultraviolet irradiation, and temperature in Penicillium
A80-50058
Development of higher fungi under weightlessness
A80-50075

G

GAS CHROMATOGRAPHY
Tissue analysis for thiazide diuretics
A80-50105

GAS EXCHANGE
Changes in gas exchange, tissue respiration and glycolysis in rats during hypokinesia
[NASA-TM-76149] N80-32055

GAS GENERATORS
Man-rating of the Navy/Air Force Oxygen Generating System (NAOGS)
[AD-A087270] N80-32103

GASTROINTESTINAL SYSTEM
Psychological features of the pilot's personality in the case of diseases of the gastrointestinal tract
A80-49021

GENETICS
Genetic effects of space hadrons on bacteriophage under Alpine conditions
A80-50068

GEOCHEMISTRY
Clays in prebiological chemistry
A80-49871
The possible role of metal ions and clays in prebiotic chemistry
A80-50060

GLUCOSE
Hypothermia induced by 5-thio-D-glucose - Effects on treadmill performance in the heat
A80-48087
Altitude convulsion threshold and time to altitude convulsion in gold thioglucose obese mice
A80-48089

GLYCOLYSIS
Changes in gas exchange, tissue respiration and glycolysis in rats during hypokinesia
[NASA-TM-76149] N80-32055
Mechanisms of oxygen toxicity at the cellular level
[AD-A087831] N80-32084

GOGGLES
A human performance/workload evaluation of the AN/PVS-5 bifocal night vision goggles
A80-48093

GRAVITATIONAL EFFECTS
Gravity and land plant evolution - Experimental induction of lignification by simulated hypergravity and water stress
A80-50073
Femur-bending properties as influenced by gravity. IV - Limits after high and low weight-bearing
A80-50127
Thermoregulation in rats: Effects of varying duration of hypergravic fields
[NASA-CR-163481] N80-31030

GROWTH
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus
A80-50076

H

HADRONS
Genetic effects of space hadrons on bacteriophage under Alpine conditions
A80-50068

HANDBOOKS
Methods for collecting and analyzing task analysis data
[AD-A087710] N80-32094

HEAD (ANATOMY)
Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling
A80-48086
Analysis and measurement of helmeted aircrewman response resulting from birdstrike
[AD-A087737] N80-32082

HEAD MOVEMENT
Space motion sickness - Skylab revisited
A80-48094
The sensing of retinal motion
A80-50249

HEALTH PHYSICS
Health and environmental research related to energy development and use --- biomolecular and cellular science, environmental biology, and nuclear medicine
[UCLA-12-1217] N80-32061

HEARING
Towards a better understanding of temporary threshold shift of hearing
[RAE-TM-FS-319] N80-32086

HEART DISEASES
Significance of the heart factor in manifestations of the initial insufficiency of cerebral blood circulation in pilots
A80-50331
Ultrasonic in medicine. Citations from the Engineering Index data base
[PB80-810930] N80-31038

HEAT STROKE
Tap water, an efficient method for cooling heatstroke victims - A model in dogs
A80-50122

HEAVY IONS
Late degeneration in rabbit tissues after irradiation by heavy ions
A80-50065
Predicted LET-spectra of HZE-particles for the Free Flyer Biostack Experiment on the Long Duration Exposure Facility mission
A80-50066

HELICOPTERS
Pilot study on the value of a beta-blocking drug in initial helicopter training
A80-50130

HELMETS
Analysis and measurement of helmeted aircrewman response resulting from birdstrike
[AD-A087737] N80-32082
Adhesive coatings for DH-411 helmets
[AD-A087319] N80-32105
Helmets: Construction, effectiveness, and human factors. Citations from the NTIS data base
[PB80-810963] N80-32106

HEMODYNAMIC RESPONSES
Hemodynamic effects of extreme positive pressure breathing using a two-pressure flying suit
A80-50119

HIGH ALTITUDE BREATHING
Hemodynamic effects of extreme positive pressure breathing using a two-pressure flying suit
A80-50119
Pulmonary and symptom threshold effects of ozone in airline passenger and cockpit crew surrogates
A80-50125

HIGH ALTITUDE ENVIRONMENTS
The effect of mountain conditions on work capacity and acclimatization times
A80-49020
Genetic effects of space hadrons on bacteriophage under Alpine conditions
A80-50068

HIGH TEMPERATURE ENVIRONMENTS
Endolithic microbial life in hot and cold deserts
A80-50704

HUMAN BEHAVIOR
An analysis of human reliability measures in visual inspection
A80-50267
Instrument scanning and controlling: Using eye movement data to understand pilot behavior and strategies
[NASA-CR-3306] N80-31039
Differentially weighting linear models of behavior: An empirical comparison of six methods
[AD-A086876] N80-31043

HUMAN BEINGS
The effect of alcohol on body heat loss
A80-50102

HUMAN BODY
Deformations of human skull produced by impact /experimental studies and modeling problems/. II - The dynamics of the skull base during impact loading of the vault
A80-47692
Effects of whole-body vibrations on standing posture in man
A80-48091
On human response to prolonged repeated whole-body vibration
A80-49401
Occupational changes in the organ of hearing and equilibrium in sailors and fisherman
[NASA-TM-76335] N80-32072
Use of physical culture to increase resistance of sailors to motion sickness
[NASA-TM-76355] N80-32079

HUMAN CENTRIFUGES
Coincident loss of consciousness and ventricular tachycardia during +Gz stress
A80-48096

HUMAN FACTORS ENGINEERING
Symposium on human factors in civil aviation. II
A80-47791
A design tool for estimating passenger ride discomfort within complex ride environments
A80-48949
Investigation of life change as a contributing factor in aircraft accidents - A prospectus
A80-50104
Cold weather stress on humans. Citations from the NTIS data base
[PB80-810989] N80-31035
The psychomotor performance of men and women wearing two types of body armor
[AD-A086742] N80-31040
A review of USAFSAM studies employing multiple-tasks performance devices
[AD-A087272] N80-32091

Project FIRES. Volume 1: Program overview and summary, phase 1B
[NASA-CR-161529] N80-32098
Project FIRES. Volume 3: Protective ensemble design and procurement specification, phase 1B
[NASA-CR-161531] N80-32100
Helmets: Construction, effectiveness, and human factors. Citations from the NTIS data base
[PB80-810963] N80-32106

HUMAN PATHOLOGY
Joint Committee on Aviation Pathology, Scientific Session, 11th, U.S. Naval Academy, Annapolis, Md., September 5-8, 1978, Proceedings
A80-50101
An organizational concept for pathologic identification in mass disasters
A80-50106
Role of radiology in aviation accident investigation
A80-50107
Dental identification in fatal aircraft accidents
A80-50108
Blood group determination from teeth
A80-50109
Summary of the means used to positively identify the American victims in the Canary Islands crash
A80-50111
Asymptomatic atherosclerotic occlusive vascular disease - Its significance in the evaluation of aircrew members
A80-50116

HUMAN PERFORMANCE
An analysis of human reliability measures in visual inspection
A80-50267
Restoration of physical performance capacity of athletes after prolonged restriction of their motor activity
[NASA-TM-76305] N80-32066
Detection of moving targets in peripheral vision
[AD-A082541] N80-32083
Individual difference relations in psychometric and experimental cognitive tasks
[AD-A086057] N80-32093

HUMAN REACTIONS
A design tool for estimating passenger ride discomfort within complex ride environments
A80-48949
On human response to prolonged repeated whole-body vibration
A80-49401
Effects of aerosols, oxides of nitrogen, and oxidants on human health
[PB80-184583] N80-32088

HUMAN TOLERANCES
Acceleration forces on the human subject
A80-50103
Orthostatic tolerance testing - Comparison of LBNP and HUT methods --- Lower Body Negative Pressure Head-up Tilting
A80-50629
The effect of physical conditioning on +GZ tolerance
N80-31031

HUMAN WASTES
Development of a preprototype vapor compression distillation water recovery subsystem
[NASA-CR-160779] N80-32101

HYDRAZINES
The importance of ammonia in the metabolic effects of hydrazine
A80-50126

HYPEROXIA
The oxygen-adapted rat model - Tolerance to oxygen at 1.5 and 2 ATA
A80-48090
Mechanisms of oxygen toxicity at the cellular level
[AD-A087831] N80-32084

HYPERTHERMIA
Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling
A80-48086

HYPODYNAMIA
The dynamics of certain indicators of nuclein metabolism during hypokinesia in rats of different ages under the influence of sinusoidal modulated currents and measured physical load
[NASA-TM-76162] N80-32058
Physical exercises on a bicycle-ergometer and running track to prevent hypodynamia in workers of intellectual labor
[NASA-TM-76306] N80-32067

HYPOKINESIA
The structure of oxygen debt in humans following prolonged hypokinesis
A80-48614
Changes in gas exchange, tissue respiration and glycolysis in rats during hypokinesia
[NASA-TM-76149] N80-32055
The influence of modulated sinusoidal current on the state of chromatin from neurons of the cerebral cortex of rats in hypokinesia
[NASA-TM-76160] N80-32056
Effect of sinusoidal modulated currents and acute hypoxia on corticosterone content and activity of certain dehydrogenases in tissues of different rat organs during hypokinesia
[NASA-TM-76161] N80-32057
The dynamics of certain indicators of nuclein metabolism during hypokinesia in rats of different ages under the influence of sinusoidal modulated currents and measured physical load
[NASA-TM-76162] N80-32058
Changes in bone tissue under conditions of hypokinesia and in connection with age
[NASA-TM-76154] N80-32064
Restoration of physical performance capacity of athletes after prolonged restriction of their motor activity
[NASA-TM-76305] N80-32066
Effect of hypokinesia on blood microcirculation
[NASA-TM-76308] N80-32068

HYPOTHALAMUS
Altitude convulsion threshold and time to altitude convulsion in gold thioglucose obese mice
A80-48089

HYPOTHERMIA
Hypothermia induced by 5-thio-D-glucose - Effects on treadmill performance in the heat
A80-48087

HYPOXIA
Altitude convulsion threshold and time to altitude convulsion in gold thioglucose obese mice
A80-48089
The effects of water-salt stresses on orthostatic test endurance under conditions of hypoxia
A80-48611
Living without oxygen: Closed and open systems in hypoxia tolerance --- Book
A80-50354
Effect of sinusoidal modulated currents and acute hypoxia on corticosterone content and activity of certain dehydrogenases in tissues of different rat organs during hypokinesia
[NASA-TM-76161] N80-32057

I

IMAGING TECHNIQUES
Ultrasonics in medicine. Citations from the NTIS data base
[PB80-810922] N80-31037

IMPACT DAMAGE
Deformations of human skull produced by impact /experimental studies and modeling problems/. II - The dynamics of the skull base during impact loading of the vault
A80-47692

INFORMATION MANAGEMENT
An investigation of the dual task performance relationship to hemispheric specialization
[AD-A086808] N80-31042

INFORMATION THEORY
The use of information transmission as nonparametric correlation in the analysis of complex behavior: A preliminary report
[AD-A087832] N80-32096

INPUT/OUTPUT ROUTINES
Advanced flight design systems subsystem performance models. User guide: Environmental analysis routine library
[NASA-CR-160769] N80-31045

INSPECTION
An analysis of human reliability measures in visual inspection
A80-50267

INSTRUMENT APPROACH
Instrument scanning and controlling: Using eye movement data to understand pilot behavior and strategies
[NASA-CR-3306] N80-31039
INTEGRAL EQUATIONS
Irradiation of prolate spheroidal models of humans in the near field of a short electric dipole
A80-49868
INTEL 8080 MICROPROCESSOR
A microprocessor-based instrument for neural pulse wave analysis
A80-50322
INTELLECT
Physical exercises on a bicycle-ergometer and running track to prevent hypodynamia in workers of intellectual labor
[NASA-TM-76306] N80-32067
INTERSTELLAR GAS
Optical activity and evolution --- of substances of biological origin in outer space
A80-50706
INTESTINES
Absorption of thiamine and nicotinic acid in the rat intestine during fasting and immobilization stress
[NASA-TM-76193] N80-32059
INTOXICATION
Effect of alcohol on man's response to mild physical activity in a cold environment
A80-48092
INVESTIGATION
An organizational concept for pathologic identification in mass disasters
A80-50106
An investigation of cardiac threshold variability relative to stimulus shape and respiratory cycle
N80-31032
ION IRRADIATION
Late degeneration in rabbit tissues after irradiation by heavy ions
A80-50065
IRRADIATION
Irradiation of prolate spheroidal models of humans in the near field of a short electric dipole
A80-49868
ISCHEMIA
Myocardial ischemia and its risk factors
A80-47783

L

LABYRINTH
Diagnosis of latent forms of labyrinthine affections
[NASA-TM-76338] N80-32074
Technique of electrical stimulation of the vestibular analyzer under clinical conditions
[NASA-TM-76347] N80-32075
LABYRINTHECTOMY
Diagnosis of latent forms of labyrinthine affections
[NASA-TM-76338] N80-32074
LEARNING THEORY
The influence of visual-spatial ability and study procedures on map learning skill
[AD-A087247] N80-32089
LEAST SQUARES METHOD
Differentially weighting linear models of behavior: An empirical comparison of six methods
[AD-A086876] N80-31043
LIFE SCIENCES
Altitude convulsion threshold and time to altitude convulsion in gold thioglucose obese mice
A80-48089
The oxygen-adapted rat model - Tolerance to oxygen at 1.5 and 2 ATA
A80-48090
Paths of the origin of life
A80-49425
Development of higher fungi under weightlessness
A80-50075
Living without oxygen: Closed and open systems in hypoxia tolerance --- Book
A80-50354
LIFE SUPPORT SYSTEMS
Advanced flight design systems subsystem performance models. Executive summary
[NASA-CR-160768] N80-31044
Advanced flight design systems subsystem performance models. User guide: Environmental analysis routine library
[NASA-CR-160769] N80-31045
Advanced flight design systems subsystem performance models. Sample model: Environmental analysis routine library
[NASA-CR-160770] N80-31046
Project FIRES. Volume 1: Program overview and summary, phase 1B
[NASA-CR-161529] N80-32098
Project FIRES. Volume 3: Protective ensemble design and procurement specification, phase 1B
[NASA-CR-161531] N80-32100
Man-rating of the Navy/Air Force Oxygen Generating System (NAOGS)
[AD-A087270] N80-32103
LIGNIN
Gravity and land plant evolution - Experimental induction of lignification by simulated hypergravity and water stress
A80-50073
LINEAR ENERGY TRANSFER (LET)
Predicted LET-spectra of HZE-particles for the Free Flyer Biostack Experiment on the Long Duration Exposure Facility mission
A80-50066
LIPIDS
Lipids as a principle for the identification of Archaebacteria
A80-50063
Facilitated diffusion as a method for selective accumulation of materials from the primordial oceans by a lipid-vesicle protocell
A80-50710
LIQUID COOLING
Tap water, an efficient method for cooling heatstroke victims - A model in dogs
A80-50122
LIVER
Effect of sinusoidal modulated currents and acute hypoxia on corticosterone content and activity of certain dehydrogenases in tissues of different rat organs during hypokinesia
[NASA-TM-76161] N80-32057
LONG DURATION EXPOSURE FACILITY
Predicted LET-spectra of HZE-particles for the Free Flyer Biostack Experiment on the Long Duration Exposure Facility mission
A80-50066
LONG DURATION SPACE FLIGHT
Preparation for long-duration flights
A80-50279
LOW TEMPERATURE
Effect of alcohol on man's response to mild physical activity in a cold environment
A80-48092
LOW TEMPERATURE ENVIRONMENTS
Endolithic microbial life in hot and cold deserts
A80-50704
LOWER ATMOSPHERE
Biological limits of temperature and pressure
A80-50703
Experiments on the amplification of optical activity --- molecular chirality in earth biosphere
A80-50707
LUNGS
Blood filling and flow in lungs during change in body position in space
[NASA-TM-76333] N80-32071

M

MAN MACHINE SYSTEMS
Symposium on human factors in civil aviation. II
A80-47791
Man-machine interaction in aerospace control systems
A80-50196
F/A-18 foot strikes - An update --- During ejection process
A80-50222
Human operator interface with FLIR displays
[AD-A086284] N80-31041
A review of USAFSAM studies employing multiple-tasks performance devices
[AD-A087272] N80-32091

The use of information transmission as nonparametric correlation in the analysis of complex behavior: A preliminary report
[AD-A087832] N80-32096
Requirements definition and design guidelines for man-machine interface in C3 system acquisition
[AD-A087258] N80-32102

MAPPING
The influence of visual-spatial ability and study procedures on map learning skill
[AD-A087247] N80-32089

MARS SURFACE SAMPLES
On the possibility of life on Mars
A80-50056

MATERIAL ABSORPTION
Absorption of thiamine and nicotinic acid in the rat intestine during fasting and immobilization stress
[NASA-TM-76193] N80-32059

MATHEMATICAL MODELS
Deformations of human skull produced by impact /experimental studies and modeling problems/. II - The dynamics of the skull base during impact loading of the vault
A80-47692
Temporal precision in circadian systems - A reliable neuronal clock from unreliable components
A80-49849
Differentially weighting linear models of behavior: An empirical comparison of six methods
[AD-A086876] N80-31043
Advanced flight design systems subsystem performance models. Executive summary
[NASA-CR-160768] N80-31044
Advanced flight design systems subsystem performance models. User guide: Environmental analysis routine library
[NASA-CR-160769] N80-31045
Advanced flight design systems subsystem performance models. Sample model: Environmental analysis routine library
[NASA-CR-160770] N80-31046
Visual scene perception. Frequency domain data and model parameter estimation procedure
[NLR-MP-79009-U] N80-32097

MEASURING INSTRUMENTS
Mass measurement under conditions of weightlessness --- for astronaut body weight determination
A80-47932

MEDICAL SCIENCE
Ultrasonics in medicine. Citations from the NTIS data base
[PB80-810922] N80-31037
Review of book vestibular crises
[NASA-TM-76354] N80-32078
Vestibular reactions in patients during occlusion form of chorioependymitis
[NASA-TM-76356] N80-32080

MEMORY
Individual difference relations in psychometric and experimental cognitive tasks
[AD-A086057] N80-32093

MENTAL PERFORMANCE
The influence of visual-spatial ability and study procedures on map learning skill
[AD-A087247] N80-32089
Individual difference relations in psychometric and experimental cognitive tasks
[AD-A086057] N80-32093

MERGING ROUTINES
Advanced flight design systems subsystem performance models. User guide: Environmental analysis routine library
[NASA-CR-160769] N80-31045

METABOLISM
The importance of ammonia in the metabolic effects of hydrazine
A80-50126
The dynamics of certain indicators of nuclein metabolism during hypokinesia in rats of different ages under the influence of sinusoidal modulated currents and measured physical load
[NASA-TM-76162] N80-32058

METAL IONS
The possible role of metal ions and clays in prebiotic chemistry
A80-50060
Molecular mechanisms of the epithelial transport of toxic metal ions, particularly mercury, cadmium, lead, arsenic, zinc, and copper
[COO-2792-3] N80-32085

MICROORGANISMS
On the possibility of life on Mars
A80-50056
Description of an apparatus for studying micro-organisms in the upper atmosphere
A80-50057
Early photosynthetic microorganisms and environmental evolution
A80-50062
Endolithic microbial life in hot and cold deserts
A80-50704

MICROPROCESSORS
USAFSAM microprocessor audiometer: System reference manual
[AD-A087342] N80-32081

MICROWAVES
Proceedings Of a Workshop on Thermal Physiology
[PB80-187867] N80-32087

MILITARY AVIATION
Incidence of complications from coronary angiography in 463 USAF aviators
A80-50131

MILITARY PSYCHOLOGY
A questionnaire study of psychological background factors in U.S. Navy aircraft accidents
A80-50121
Pilot study on the value of a beta-blocking drug in initial helicopter training
A80-50130

MODULATION
The influence of modulated sinusoidal current on the state of chromatin from neurons of the cerebral cortex of rats in hypokinesia
[NASA-TM-76160] N80-32056
The dynamics of certain indicators of nuclein metabolism during hypokinesia in rats of different ages under the influence of sinusoidal modulated currents and measured physical load
[NASA-TM-76162] N80-32058

MOLECULAR BIOLOGY
Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979
A80-50051
Optical activity and evolution --- of substances of biological origin in outer space
A80-50706
Health and environmental research related to energy development and use --- biomolecular and cellular science, environmental biology, and nuclear medicine
[UCLA-12-1217] N80-32061

MOON ILLUSION
Ground-referenced visual orientation with imaging displays --- psychophysiology
[AD-A081882] N80-32063

MOTION PERCEPTION
Multiple sensory and motor cues enhance the accuracy of pursuit eye movements
A80-50120
Equiperception maneuvers --- aircraft motion perception
A80-50123
The sensing of retinal motion
A80-50249

MOTION SICKNESS
Space motion sickness - Skylab revisited
A80-48094
Use of physical culture to increase resistance of sailors to motion sickness
[NASA-TM-76355] N80-32079

MOUNTAINS
The effect of mountain conditions on work capacity and acclimatization times
A80-49020

MUSCULAR FUNCTION
Sensations of heaviness in man --- Thesis
A80-50353
Therapeutic gymnastics in comprehensive treatment of patients with generalized myasthenia
[NASA-TM-76312] N80-32069

MUSCULOSKELETAL SYSTEM
Effects of factors of prolonged space flight on conditions of tortoise skeleton
[NASA-TM-76352] N80-32060
MUTATIONS
Variations in the recombination rate of Drosophila melanogaster induced by balloon flight
A80-50072

N

NAVIGATION SATELLITES
Man, aircraft and navigation systems - An evaluation for the 80s
A80-48137
NAVY
A questionnaire study of psychological background factors in U.S. Navy aircraft accidents
A80-50121
NEAR FIELDS
Irradiation of prolate spheroidal models of humans in the near field of a short electric dipole
A80-49868
NERVES
Introduction to electrochemistry of nerve membranes
[PB80-178908] N80-31036
NERVOUS SYSTEM
Introduction to electrochemistry of nerve membranes
[PB80-178908] N80-31036
NEUROLOGY
A microprocessor-based instrument for neural pulse wave analysis
A80-50322
NEUROMUSCULAR TRANSMISSION
Therapeutic gymnastics in comprehensive treatment of patients with generalized myasthenia
[NASA-TM-76312] N80-32069
NICOTINIC ACID
Absorption of thiamine and nicotinic acid in the rat intestine during fasting and immobilization stress
[NASA-TM-76193] N80-32059
NIGHT VISION
A human performance/workload evaluation of the AN/PVS-5 bifocal night vision goggles
A80-48093
NITROGEN OXIDES
Effects of aerosols, oxides of nitrogen, and oxidants on human health
[PB80-184583] N80-32088
NOISE INJURIES
Noise-induced hearing loss and vestibular dysfunction
A80-48095
NOISE INTENSITY
A design tool for estimating passenger ride discomfort within complex ride environments
A80-48949
NONFLAMMABLE MATERIALS
Flame testing of two samples of exposure suit material
[AD-A086739] N80-31047
NUCLEOTIDES
Effect of polynucleotides and a basic protein on the condensation of phenylalanyl adenylate --- implications for abiogenesis
A80-50711

O

OBESITY
Altitude convulsion threshold and time to altitude convulsion in gold thioglucose obese mice
A80-48089
OCCLUSION
Vestibular reactions in patients during occlusion form of chorioependymitis
[NASA-TM-76356] N80-32080
OCEAN MODELS
The influence of life on the evolution of the atmosphere
A80-50061
Facilitated diffusion as a method for selective accumulation of materials from the primordial oceans by a lipid-vesicle protocell
A80-50710
OPERATIONAL HAZARDS
Airborne performance measurement assessment: Low altitude tactical formation in two operating environments
[AD-A087068] N80-32090
OPERATOR PERFORMANCE
Changes in alpha activity during decreases in human operator work capacity
A80-48612
The effects of various regimes of work and rest following a 64-72 hour period of wakefulness on sleep dynamics
A80-48613
Man-machine interaction in aerospace control systems
A80-50196
OPERATORS (PERSONNEL)
Human operator interface with FLIR displays
[AD-A086284] N80-31041
OPTICAL ACTIVITY
Experiments on the amplification of optical activity --- molecular chirality in earth biosphere
A80-50707
OPTIMAL CONTROL
Visual scene perception. Frequency domain data and model parameter estimation procedure
[NLR-MP-79009-U] N80-32097
ORBITAL WORKSHOPS
Astronauts keep queuing up for Space Shuttle
A80-48796
ORGANIC COMPOUNDS
Paths of the origin of life
A80-49425
Clays in prebiological chemistry
A80-49871
Template-directed synthesis and selective adsorption of oligoadenylates in hydroxyapatite
A80-49873
ORGANISMS
Is aluminum an essential element for life
A80-50712
The dynamics of certain indicators of nuclein metabolism during hypokinesia in rats of different ages under the influence of sinusoidal modulated currents and measured physical load
[NASA-TM-76162] N80-32058
ORTHOSTATIC TOLERANCE
Effects of whole-body vibrations on standing posture in man
A80-48091
The effects of water-salt stresses on orthostatic test endurance under conditions of hypoxia
A80-48611
Orthostatic tolerance testing - Comparison of LBNP and HUT methods --- Lower Body Negative Pressure Head-up Tilting
A80-50629
OSTEOPOROSIS
Changes in bone tissue under conditions of hypokinesia and in connection with age
[NASA-TM-76154] N80-32064
OTOLARYNGOLOGY
Review of book-Ultrasound in Otorhinolaryngology
[NASA-TM-76349] N80-32076
OTOLOGY
Review of book-Ultrasound in Otorhinolaryngology
[NASA-TM-76349] N80-32076
OXIDIZERS
Effects of aerosols, oxides of nitrogen, and oxidants on human health
[PB80-184583] N80-32088
OXIMETRY
Effects of aerosols, oxides of nitrogen, and oxidants on human health
[PB80-184583] N80-32088
OXYGEN
Mechanisms of oxygen toxicity at the cellular level
[AD-A087831] N80-32094
OXYGEN CONSUMPTION
The structure of oxygen debt in humans following prolonged hypokinesis
A80-48614
OXYGEN METABOLISM
Living without oxygen: Closed and open systems in hypoxia tolerance --- Book
A80-50354
OXYGEN PRODUCTION
Man-rating of the Navy/Air Force Oxygen Generating System (NAOGS)
[AD-A087270] N80-32103

OXYGEN SUPPLY EQUIPMENT
Man-rating of the Navy/Air Force Oxygen Generating System (NAOGS)
[AD-A087270] N80-32103
OXYGEN TENSION
The oxygen-adapted rat model - Tolerance to oxygen at 1.5 and 2 ATA
A80-48090
OZONE
Pulmonary and symptom threshold effects of ozone in airline passenger and cockpit crew surrogates
A80-50125

P

PASSENGERS
A design tool for estimating passenger ride discomfort within complex ride environments
A80-48949
Emergency medicine and the airline passenger
A80-50129
Physiological reactions of a passenger to transportation conditions
[NASA-TM-76350] N80-32077
PATHOGENESIS
Review of book vestibular crises
[NASA-TM-76354] N80-32078
Vestibular reactions in patients during occlusion form of chorioependymitis
[NASA-TM-76356] N80-32080
PATHOLOGICAL EFFECTS
Joint Committee on Aviation Pathology, Scientific Session, 11th, U.S. Naval Academy, Annapolis, Md., September 5-8, 1978, Proceedings
A80-50101
PATHOLOGY
An organizational concept for pathologic identification in mass disasters
A80-50106
PATTERN RECOGNITION
Velocity specificity of the flicker to pattern sensitivity ratio in human vision
A80-48518
Automatic contouring for two-dimensional echocardiography
A80-50912
PEPTIDES
Studies of the chemical basis of the origin of protein synthesis Initiation and direction of peptide growth
A80-49872
PERCEPTION
Sensations of heaviness in man --- Thesis
A80-50353
Individual difference relations in psychometric and experimental cognitive tasks
[AD-A086057] N80-32093
PERFORMANCE TESTS
Design concepts of survival suits for cold water immersion and their thermal protection performance
A80-50221
A review of USAFSAM studies employing multiple-tasks performance devices
[AD-A087272] N80-32091
Project FIRES. Volume 4: Prototype protective ensemble qualification test report, phase 1B
[NASA-CR-161532] N80-32099
PERIPHERAL VISION
Foveal and peripheral displacement thresholds as a function of stimulus luminance, line length and duration of movement
A80-48520
PERSONALITY TESTS
Psychological features of the pilot's personality in the case of diseases of the gastrointestinal tract
A80-49021
A questionnaire study of psychological background factors in U.S. Navy aircraft accidents
A80-50121
PERSONNEL SELECTION
Astronauts keep queuing up for Space Shuttle
A80-48796
Effects of different body positions on the Eustachian tube function in the selection of airmen
A80-50128
PETROLOGY
Endolithic microbial life in hot and cold deserts
A80-50704
PHARMACOLOGY
Tissue analysis for thiazide diuretics
A80-50105
PHENYLS
Effect of polynucleotides and a basic protein on the condensation of phenylalanyl adenylate --- implications for abiogenesis
A80-50711
PHOTOSYNTHESIS
Early photosynthetic microorganisms and environmental evolution
A80-50062
PHYSICAL EXAMINATIONS
Asymptomatic atherosclerotic occlusive vascular disease - Its significance in the evaluation of aircrew members
A80-50116
PHYSICAL EXERCISE
Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling
A80-48086
Hypothermia induced by 5-thio-D-glucose - Effects on treadmill performance in the heat
A80-48087
Effect of alcohol on man's response to mild physical activity in a cold environment
A80-48092
The structure of oxygen debt in humans following prolonged hypokinesis
A80-48614
Physiological aspects of automatic physical training control by biofeedback in weightlessness
A80-50069
The effect of physical conditioning on +GZ tolerance
N80-31031
Restoration of physical performance capacity of athletes after prolonged restriction of their motor activity
[NASA-TM-76305] N80-32066
Physical exercises on a bicycle-ergometer and running track to prevent hypodynamia in workers of intellectual labor
[NASA-TM-76306] N80-32067
Therapeutic gymnastics in comprehensive treatment of patients with generalized myasthenia
[NASA-TM-76312] N80-32069
Use of physical culture to increase resistance of sailors to motion sickness
[NASA-TM-76355] N80-32079
PHYSICAL FITNESS
Physical standards for high-performance fighter aircraft pilots
A80-50114
The effect of physical conditioning on +GZ tolerance
N80-31031
PHYSICAL WORK
Changes in the system of external respiration /respiration mechanics/ during cold adaptation
A80-48615
The effect of mountain conditions on work capacity and acclimatization times
A80-49020
The relationship between pulse count and energy expenditure at sub maximal work under different ambient temperatures
A80-50577
PHYSIOLOGICAL EFFECTS
Effects of whole-body vibrations on standing posture in man
A80-48091
Effects of factors of prolonged space flight on conditions of tortoise skeleton
[NASA-TM-76352] N80-32060
Effect of hypokinesia on blood microcirculation
[NASA-TM-76308] N80-32068
Occupational changes in the organ of hearing and equilibrium in sailors and fisherman
[NASA-TM-76335] N80-32072
Physiological reactions of a passenger to transportation conditions
[NASA-TM-76350] N80-32077
Use of physical culture to increase resistance of sailors to motion sickness
[NASA-TM-76355] N80-32079
Proceedings Of a Workshop on Thermal Physiology
[PB80-187867] N80-32087

PHYSIOLOGICAL RESPONSES
On human response to prolonged repeated whole-body vibration A80-49401
Physiological reactions during acute adaptation to reduced gravity A80-50070
Analysis of human auditory brainstem responses for complex stimuli N80-31034
PHYSIOLOGICAL TESTS
Implications of probability analysis on the strategy used for noninvasive detection of coronary artery disease A80-49022
An investigation of cardiac threshold variability relative to stimulus shape and respiratory cycle N80-31032
PILOT ERROR
A questionnaire study of psychological background factors in U.S. Navy aircraft accidents A80-50121
PILOT PERFORMANCE
Symposium on human factors in civil aviation. II A80-47791
A human performance/workload evaluation of the AN/PVS-5 bifocal night vision goggles A80-48093
Response time effects of alerting tone and semantic context for synthesized voice cockpit warnings A80-48950
Investigation of life change as a contributing factor in aircraft accidents - A prospectus A80-50104
Physical standards for high-performance fighter aircraft pilots A80-50114
Equiperception maneuvers --- aircraft motion perception A80-50123
Pilot study on the value of a beta-blocking drug in initial helicopter training A80-50130
An investigation of the dual task performance relationship to hemispheric specialization [AD-A086808] N80-31042
Airborne performance measurement assessment: Low altitude tactical formation in two operating environments [AD-A087068] N80-32090
PILOT SELECTION
Physical standards for high-performance fighter aircraft pilots A80-50114
Asymptomatic atherosclerotic occlusive vascular disease - Its significance in the evaluation of aircrew members A80-50116
PILOT TRAINING
Pilot study on the value of a beta-blocking drug in initial helicopter training A80-50130
Methods for collecting and analyzing task analysis data [AD-A087710] N80-32094
PILOTS (PERSONNEL)
Psychological features of the pilot's personality in the case of diseases of the gastrointestinal tract A80-49021
PLANETARY ENVIRONMENTS
Further studies on the environmental capabilities of fungi - Interactions of salinity, ultraviolet irradiation, and temperature in Penicillium A80-50058
PLANETARY EVOLUTION
Paths of the origin of life A80-49425
Gravity and land plant evolution - Experimental induction of lignification by simulated hypergravity and water stress A80-50073
Optical activity and evolution --- of substances of biological origin in outer space A80-50706
PLANTS (BOTANY)
Gravity and land plant evolution - Experimental induction of lignification by simulated hypergravity and water stress A80-50073
PLASTIC COATINGS
Adhesive coatings for DH-411 helmets [AD-A087319] N80-32105
POLAR REGIONS
Endolithic microbial life in hot and cold deserts A80-50704
POLYMERIZATION
Effect of polynucleotides and a basic protein on the condensation of phenylalanyl adenylate --- implications for abiogenesis A80-50711
POLYURETHANE FOAM
Thermal insulation materials for diver's underwear garment [AD-A086743] N80-31048
POSTURE
Effects of whole-body vibrations on standing posture in man A80-48091
Orthostatic tolerance testing - Comparison of LBNP and HUT methods --- Lower Body Negative Pressure Head-up Tilting A80-50629
Orthoclinostatic test as one of the methods for evaluating the human functional state [NASA-TM-76321] N80-32070
POTABLE WATER
Development of a preprototype vapor compression distillation water recovery subsystem [NASA-CR-160779] N80-32101
PREFLIGHT ANALYSIS
Advanced flight design systems subsystem performance models. Executive summary [NASA-CR-160768] N80-31044
Advanced flight design systems subsystem performance models. Sample model: Environmental analysis routine library [NASA-CR-160770] N80-31046
PRESSURE BREATHING
Hemodynamic effects of extreme positive pressure breathing using a two-pressure flying suit A80-50119
PRESSURE SUITS
Hemodynamic effects of extreme positive pressure breathing using a two-pressure flying suit A80-50119
PRIMITIVE EARTH ATMOSPHERE
The influence of life on the evolution of the atmosphere A80-50061
PROBABILITY THEORY
Implications of probability analysis on the strategy used for noninvasive detection of coronary artery disease A80-49022
PROLATE SPHEROIDS
Irradiation of prolate spheroidal models of humans in the near field of a short electric dipole A80-49868
PROTECTIVE CLOTHING
Flame testing of two samples of exposure suit material [AD-A086739] N80-31047
Thermal insulation materials for diver's underwear garment [AD-A086743] N80-31048
Project FIRES. Volume 1: Program overview and summary, phase 1B [NASA-CR-161529] N80-32098
Project FIRES. Volume 4: Prototype protective ensemble qualification test report, phase 1B [NASA-CR-161532] N80-32099
Project FIRES. Volume 3: Protective ensemble design and procurement specification, phase 1B [NASA-CR-161531] N80-32100
PROTEINS
Studies of the chemical basis of the origin of protein synthesis Initiation and direction of peptide growth A80-49872
Effect of polynucleotides and a basic protein on the condensation of phenylalanyl adenylate --- implications for abiogenesis A80-50711

PHOTOBIOLOGY
Facilitated diffusion as a method for selective accumulation of materials from the primordial oceans by a lipid-vesicle protocell A80-50710

PROTOPLANETS
Optical activity and evolution --- of substances of biological origin in outer space A80-50706

PSYCHOLOGICAL EFFECTS
Psychological features of the pilot's personality in the case of diseases of the gastrointestinal tract A80-49021

PSYCHOMOTOR PERFORMANCE
The psychomotor performance of men and women wearing two types of body armor [AD-A086742] N80-31040
A review of USAFSAM studies employing multiple-tasks performance devices [AD-A087272] N80-32091

PSYCHOPHYSICS
Psychophysical comparison of vertical and angular vibrations [AMRL-TR-80-46] A80-48088

PSYCHOPHYSIOLOGY
Sensations of heaviness in man --- Thesis A80-50353
Ground-referenced visual orientation with imaging displays --- psychophysiology [AD-A081882] N80-32063

PUBLIC HEALTH
Effects of aerosols, oxides of nitrogen, and oxidants on human health [PB80-184583] N80-32088

PULMONARY FUNCTIONS
Pulmonary and symptom threshold effects of ozone in airline passenger and cockpit crew surrogates A80-50125

PULSE RATE
The relationship between pulse count and energy expenditure at sub maximal work under different ambient temperatures A80-50577

PULSED LASERS
Laser protective eyewear program at the Los Alamos Scientific Laboratory [LA-UR-80-1038] N80-31049

PURSUIT TRACKING
Multiple sensory and motor cues enhance the accuracy of pursuit eye movements A80-50120

R

RADIATION DAMAGE
Late degeneration in rabbit tissues after irradiation by heavy ions A80-50065
Variations in the recombination rate of Drosophila melanogaster induced by balloon flight A80-50072

RADIATION EFFECTS
Laser protective eyewear program at the Los Alamos Scientific Laboratory [LA-UR-80-1038] N80-31049
Health and environmental research related to energy development and use --- biomolecular and cellular science, environmental biology, and nuclear medicine [UCLA-12-1217] N80-32061

RADIATION PROTECTION
Proceedings Of a Workshop on Thermal Physiology [PB80-187867] N80-32087

RADIO FREQUENCIES
Proceedings Of a Workshop on Thermal Physiology [PB80-187867] N80-32087

RADIOBIOLOGY
Irradiation of prolate spheroidal models of humans in the near field of a short electric dipole A80-49868
Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979 A80-50051
Genetic effects of space hadrons on bacteriophage under Alpine conditions A80-50068
Variations in the recombination rate of Drosophila melanogaster induced by balloon flight A80-50072
Health and environmental research related to energy development and use --- biomolecular and cellular science, environmental biology, and nuclear medicine [UCLA-12-1217] N80-32061

RADIOGRAPHY
Role of radiology in aviation accident investigation A80-50107
Dental identification in fatal aircraft accidents A80-50108

RADIOLOGY
Role of radiology in aviation accident investigation A80-50107

RADIOPATHOLOGY
Late degeneration in rabbit tissues after irradiation by heavy ions A80-50065

REACTION TIME
Response time effects of alerting tone and semantic context for synthesized voice cockpit warnings A80-48950
An investigation of the dual task performance relationship to hemispheric specialization [AD-A086808] N80-31042

RECOGNITION
Individual difference relations in psychometric and experimental cognitive tasks [AD-A086057] N80-32093

REDUCED GRAVITY
Physiological reactions during acute adaptation to reduced gravity A80-50070

REGRESSION ANALYSIS
Differentially weighting linear models of behavior: An empirical comparison of six methods [AD-A086876] N80-31043

REQUIREMENTS
Requirements definition and design guidelines for man-machine interface in C3 system acquisition [AD-A087258] N80-32102

RESPIRATION
An investigation of cardiac threshold variability relative to stimulus shape and respiratory cycle N80-31032
Changes in gas exchange, tissue respiration and glycolysis in rats during hypokinesia [NASA-TM-76149] N80-32055

RESPIRATORY PHYSIOLOGY
Changes in the system of external respiration /respiration mechanics/ during cold adaptation A80-48615
Effects of aerosols, oxides of nitrogen, and oxidants on human health [PB80-184583] N80-32088

RESPIRATORY SYSTEM
Methods of continuum mechanics in investigations of respiration and blood circulation A80-50563

RETINA
The sensing of retinal motion A80-50249

RIBONUCLEIC ACIDS
Possible role of RNA-dependent DNA-polymerase in early stages of evolution A80-50709

RIDING QUALITY
Physiological reactions of a passenger to transportation conditions [NASA-TM-76350] N80-32077

RISK
Myocardial ischemia and its risk factors A80-47783

ROCKET-BORNE INSTRUMENTS
Description of an apparatus for studying micro-organisms in the upper atmosphere A80-50057

ROTATING ENVIRONMENTS
A preliminary study of vestibular equilibrium in primates under space flight conditions A80-50071

RUNNING
Physical exercises on a bicycle-ergometer and running track to prevent hypodynamia in workers of intellectual labor [NASA-TM-76306] N80-32067

S

SALINITY
Further studies on the environmental capabilities of fungi - Interactions of salinity, ultraviolet irradiation, and temperature in Penicillium
A80-50058
SCANNING
Instrument scanning and controlling: Using eye movement data to understand pilot behavior and strategies
[NASA-CR-3306] N80-31039
SEA ROUGHNESS
Use of physical culture to increase resistance of sailors to motion sickness
[NASA-TM-76355] N80-32079
SENSORIMOTOR PERFORMANCE
Multiple sensory and motor cues enhance the accuracy of pursuit eye movements
A80-50120
Sensations of heaviness in man --- Thesis
A80-50353
SENSORY PERCEPTION
Equiperception maneuvers --- aircraft motion perception
A80-50123
SIGNS AND SYMPTOMS
Certain features of the cochleovestibular syndrome in the residual stage of traumatic brain disease
[NASA-TM-76337] N80-32073
SINUSES
Review of book-Ultrasound in Otorhinolaryngology
[NASA-TM-76349] N80-32076
SKULL
Deformations of human skull produced by impact /experimental studies and modeling problems/. II - The dynamics of the skull base during impact loading of the vault
A80-47692
SKYLAB PROGRAM
Space motion sickness - Skylab revisited
A80-48094
SODIUM CHLORIDES
The effects of water-salt stresses on orthostatic test endurance under conditions of hypoxia
A80-48611
SOUND PRESSURE
Towards a better understanding of temporary threshold shift of hearing
[BAE-TN-PS-319] N80-32086
SPACE EXPLORATION
Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979
A80-50051
SPACE FLIGHT
A sclerocorneal electrode for the study of the characteristics of primate vision under condition of space flight
A80-50067
Development of higher fungi under weightlessness
A80-50075
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus
A80-50076
SPACE FLIGHT STRESS
Change of biomechanical properties of rat's bones produced by a 19-day spaceflight in the artificial satellite Cosmos-936
A80-47693
Space motion sickness - Skylab revisited
A80-48094
A preliminary study of vestibular equilibrium in primates under space flight conditions
A80-50071
Effects of factors of prolonged space flight on conditions of tortoise skeleton
[NASA-TM-76352] N80-32060
Blood filling and flow in lungs during change in body position in space
[NASA-TM-76333] N80-32071
SPACE FLIGHT TRAINING
Preparation for long-duration flights
A80-50279
SPACE PERCEPTION
The sensing of retinal motion
A80-50249
Ground-referenced visual orientation with imaging displays --- psychophysiology
[AD-A081882] N80-32063
The influence of visual-spatial ability and study procedures on map learning skill
[AD-A087247] N80-32089
SPACE SHUTTLES
Astronauts keep queuing up for Space Shuttle
A80-48796
SPACEBORNE EXPERIMENTS
Predicted LET-spectra of HZE-particles for the Free Flyer Biostack Experiment on the Long Duration Exposure Facility mission
A80-50066
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions
A80-50074
SPACECRAFT ENVIRONMENTS
Advanced flight design systems subsystem performance models. Executive summary
[NASA-CR-160768] N80-31044
Advanced flight design systems subsystem performance models. Sample model: Environmental analysis routine library
[NASA-CR-160770] N80-31046
SPACECREWS
Development of a preprototype vapor compression distillation water recovery subsystem
[NASA-CR-160779] N80-32101
SPEECH RECOGNITION
Team training applications of voice processing technology
[AD-A085999] N80-32092
STATISTICAL ANALYSIS
Implications of probability analysis on the strategy used for noninvasive detection of coronary artery disease
A80-49022
STRESS (PHYSIOLOGY)
The effects of water-salt stresses on orthostatic test endurance under conditions of hypoxia
A80-48611
Cold weather stress on humans. Citations from the NTIS data base
[PB80-810989] N80-31035
The influence of modulated sinusoidal current on the state of chromatin from neurons of the cerebral cortex of rats in hypokinesia
[NASA-TM-76160] N80-32056
The dynamics of certain indicators of nuclein metabolism during hypokinesia in rats of different ages under the influence of sinusoidal modulated currents and measured physical load
[NASA-TM-76162] N80-32058
Absorption of thiamine and nicotinic acid in the rat intestine during fasting and immobilization stress
[NASA-TM-76193] N80-32059
Effects of hirudin-induced activation of nonenzymatic fibrinolysis during immobilization stress
[NASA-TM-76189] N80-32065
STRESS (PSYCHOLOGY)
Cold weather stress on humans. Citations from the NTIS data base
[PB80-810989] N80-31035
SUBMERGED BODIES
Physiological reactions during acute adaptation to reduced gravity
A80-50070
SUBMERGING
Design concepts of survival suits for cold water immersion and their thermal protection performance
A80-50221
SUITS
Design concepts of survival suits for cold water immersion and their thermal protection performance
A80-50221
Thermal insulation materials for diver's underwear garment
[AD-A086743] N80-31048
SURVIVAL EQUIPMENT
Design concepts of survival suits for cold water immersion and their thermal protection performance
A80-50221

SYNTHETIC FIBERS
Thermal insulation materials for diver's underwear garment
[AD-A086743] N80-31048
SYSTEMS ANALYSIS
Advanced flight design systems subsystem performance models. Executive summary
[NASA-CR-160768] N80-31044
Advanced flight design systems subsystem performance models. User guide: Environmental analysis routine library
[NASA-CR-160769] N80-31045
Methods for collecting and analyzing task analysis data
[AD-A087710] N80-32094
The use of information transmission as nonparametric correlation in the analysis of complex behavior: A preliminary report
[AD-A087832] N80-32096
Requirements definition and design guidelines for man-machine interface in C3 system acquisition
[AD-A087258] N80-32102

T

TACHYCARDIA
Coincident loss of consciousness and ventricular tachycardia during +Gz stress
A80-48096
TARGET ACQUISITION
Air-to-air target acquisition factors and means of improvement
[AD-A087848] N80-32095
TARGET RECOGNITION
Detection of moving targets in peripheral vision
[AD-A082541] N80-32083
TEAMS
Team training applications of voice processing technology
[AD-A085999] N80-32092
TECHNOLOGY TRANSFER
Methods for collecting and analyzing task analysis data
[AD-A087710] N80-32094
TECHNOLOGY UTILIZATION
Man, aircraft and navigation systems - An evaluation for the 80s
A80-48137
TEETH
Blood group determination from teeth
A80-50109
TEMPLATES
Template-directed synthesis and selective adsorption of oligoadenylates in hydroxyapatite
A80-49873
THERMAL INSULATION
Thermal insulation materials for diver's underwear garment
[AD-A086743] N80-31048
THERMAL PROTECTION
Design concepts of survival suits for cold water immersion and their thermal protection performance
A80-50221
Proceedings Of a Workshop on Thermal Physiology
[PB80-187867] N80-32087
THERMOREGULATION
Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling
A80-48086
Effect of alcohol on man's response to mild physical activity in a cold environment
A80-48092
Tap water, an efficient method for cooling heatstroke victims - A model in dogs
A80-50122
Thermoregulation in rats: Effects of varying duration of hypergravic fields
[NASA-CR-163481] N80-31030
THIAMINE
Absorption of thiamine and nicotinic acid in the rat intestine during fasting and immobilization stress
[NASA-TM-76193] N80-32059
Mechanisms of oxygen toxicity at the cellular level
[AD-A087831] N80-32084
THRESHOLDS (PERCEPTION)
Velocity specificity of the flicker to pattern sensitivity ratio in human vision
A80-48518
Foveal and peripheral displacement thresholds as a function of stimulus luminance, line length and duration of movement
A80-48520
An investigation of cardiac threshold variability relative to stimulus shape and respiratory cycle
N80-31032
Towards a better understanding of temporary threshold shift of hearing
[RAE-TM-FS-319] N80-32086
Visual scene perception. Frequency domain data and model parameter estimation procedure
[NLR-MP-79009-U] N80-32097
THROMBIN
Effects of hirudin-induced activation of nonenzymatic fibrinolysis during immobilization stress
[NASA-TM-76189] N80-32065
TISSUES (BIOLOGY)
Late degeneration in rabbit tissues after irradiation by heavy ions
A80-50065
Tissue analysis for thiazide diuretics
A80-50105
Changes in bone tissue under conditions of hypokinesia and in connection with age
[NASA-TM-76154] N80-32064
TOLERANCES (PHYSIOLOGY)
The oxygen-adapted rat model - Tolerance to oxygen at 1.5 and 2 ATA
A80-48090
Living without oxygen: Closed and open systems in hypoxia tolerance --- Book
A80-50354
TOPOGRAPHY
Topographical simulation of the blood vessels of the human bulbar conjunctiva and application to pressure-flow relationships
N80-31033
TOXIC DISEASES
The importance of ammonia in the metabolic effects of hydrazine
A80-50126
TOXIC HAZARDS
Pulmonary and symptom threshold effects of ozone in airline passenger and cockpit crew surrogates
A80-50125
The importance of ammonia in the metabolic effects of hydrazine
A80-50126
TOXICITY
Mechanisms of oxygen toxicity at the cellular level
[AD-A087831] N80-32084
Molecular mechanisms of the epithelial transport of toxic metal ions, particularly mercury, cadmium, lead, arsenic, zinc, and copper
[COO-2792-3] N80-32085
TRANQUILIZERS
Pilot study on the value of a beta-blocking drug in initial helicopter training
A80-50130
TREADMILLS
Hypothermia induced by 5-thio-D-glucose - Effects on treadmill performance in the heat
A80-48087

U

ULTRASONIC RADIATION
Automatic contouring for two-dimensional echocardiography
A80-50912
Ultrasonic in medicine. Citations from the Engineering Index data base
[PB80-810930] N80-31038
ULTRASONICS
Ultrasonics in medicine. Citations from the NTIS data base
[PB80-810922] N80-31037
Ultrasonic in medicine. Citations from the Engineering Index data base
[PB80-810930] N80-31038
Review of book-Ultrasound in Otorhinolaryngology
[NASA-TM-76349] N80-32076
ULTRAVIOLET RADIATION
Further studies on the environmental capabilities of fungi - Interactions of salinity, ultraviolet irradiation, and temperature in Penicillium
A80-50058

UNIVERSE
Paths of the origin of life
A80-49425
Is aluminum an essential element for life
A80-50712
UPPER ATMOSPHERE
Description of an apparatus for studying micro-organisms in the upper atmosphere
A80-50057
USER MANUALS (COMPUTER PROGRAMS)
Advanced flight design systems subsystem performance models. User guide: Environmental analysis routine library
[NASA-CR-160769] N80-31045
USER REQUIREMENTS
Project FIRES. Volume 1: Program overview and summary, phase 1B
[NASA-CR-161529] N80-32098
Project FIRES. Volume 3: Protective ensemble design and procurement specification, phase 1B
[NASA-CR-161531] N80-32100

V

VAPORIZING
Development of a preprototype vapor compression distillation water recovery subsystem
[NASA-CR-160779] N80-32101
VARIABILITY
Differentially weighting linear models of behavior: An empirical comparison of six methods
[AD-A086876] N80-31043
VASOCONSTRICTION
Asymptomatic atherosclerotic occlusive vascular disease - Its significance in the evaluation of aircrew members
A80-50116
VERTEBRATES
Temporal precision in circadian systems - A reliable neuronal clock from unreliable components
A80-49849
VERTICAL PERCEPTION
Review of book vestibular crises
[NASA-TM-76354] N80-32078
Vestibular reactions in patients during occlusion form of chorioependymitis
[NASA-TM-76356] N80-32080
VERTIGO
Review of book vestibular crises
[NASA-TM-76354] N80-32078
Vestibular reactions in patients during occlusion form of chorioependymitis
[NASA-TM-76356] N80-32080
VESTIBULAR NYSTAGMUS
Technique of electrical stimulation of the vestibular analyzer under clinical conditions
[NASA-TM-76347] N80-32075
Vestibular reactions in patients during occlusion form of chorioependymitis
[NASA-TM-76356] N80-32080
VESTIBULAR TESTS
Noise-induced hearing loss and vestibular dysfunction
A80-48095
A preliminary study of vestibular equilibrium in primates under space flight conditions
A80-50071
Certain features of the cochleovestibular syndrome in the residual stage of traumatic brain disease
[NASA-TM-76337] N80-32073
Diagnosis of latent forms of labyrinthine affections
[NASA-TM-76338] N80-32074
Review of book vestibular crises
[NASA-TM-76354] N80-32078
Vestibular reactions in patients during occlusion form of chorioependymitis
[NASA-TM-76356] N80-32080
VESTIBULES
Orthoclinostatic test as one of the methods for evaluating the human functional state
[NASA-TM-76321] N80-32070
Occupational changes in the organ of hearing and equilibrium in sailors and fisherman
[NASA-TM-76335] N80-32072
VIBRATION EFFECTS
Effects of whole-body vibrations on standing posture in man
A80-48091
A design tool for estimating passenger ride discomfort within complex ride environments
A80-48949
On human response to prolonged repeated whole-body vibration
A80-49401
VIBRATION PERCEPTION
Psychophysical comparison of vertical and angular vibrations
[AMRL-TR-80-46] A80-48088
VISION
A sclerocorneal electrode for the study of the characteristics of primate vision under condition of space flight
A80-50067
VISUAL ACCOMMODATION
Ground-referenced visual orientation with imaging displays --- psychophysiology
[AD-A081882] N80-32063
VISUAL CONTROL
An analysis of human reliability measures in visual inspection
A80-50267
VISUAL PERCEPTION
Velocity specificity of the flicker to pattern sensitivity ratio in human vision
A80-48518
Wavelength difference limit for binocular color fusion
A80-48519
Multiple sensory and motor cues enhance the accuracy of pursuit eye movements
A80-50120
The sensing of retinal motion
A80-50249
Detection of moving targets in peripheral vision
[AD-A082541] N80-32083
The influence of visual-spatial ability and study procedures on map learning skill
[AD-A087247] N80-32089
Air-to-air target acquisition factors and means of improvement
[AD-A087848] N80-32095
Visual scene perception. Frequency domain data and model parameter estimation procedure
[NLR-MP-79009-U] N80-32097
VISUAL STIMULI
Velocity specificity of the flicker to pattern sensitivity ratio in human vision
A80-48518
Foveal and peripheral displacement thresholds as a function of stimulus luminance, line length and duration of movement
A80-48520
VOICE COMMUNICATION
Response time effects of alerting tone and semantic context for synthesized voice cockpit warnings
A80-48950
Team training applications of voice processing technology
[AD-A085999] N80-32092
VOICE DATA PROCESSING
Team training applications of voice processing technology
[AD-A085999] N80-32092

W

WAKEFULNESS
The effects of various regimes of work and rest following a 64-72 hour period of wakefulness on sleep dynamics
A80-48613
WARNING SYSTEMS
Response time effects of alerting tone and semantic context for synthesized voice cockpit warnings
A80-48950
WATER BALANCE
The effects of water-salt stresses on orthostatic test endurance under conditions of hypoxia
A80-48611
WATER TREATMENT
Development of a preprototype vapor compression distillation water recovery subsystem
[NASA-CR-160779] N80-32101

WAVEFORMS
A microprocessor-based instrument for neural pulse wave analysis A80-50322

WEIGHT (MASS)
Sensations of heaviness in man --- Thesis A80-50353

WEIGHT MEASUREMENT
Mass measurement under conditions of weightlessness --- for astronaut body weight determination A80-47932
Device for mass measurement under zero-gravity conditions A80-51000

WEIGHTLESSNESS
Change of biomechanical properties of rat's bones produced by a 19-day spaceflight in the artificial satellite Cosmos-936 A80-47693
Mass measurement under conditions of weightlessness --- for astronaut body weight determination A80-47932
Physiological aspects of automatic physical training control by biofeedback in weightlessness A80-50069
A preliminary study of vestibular equilibrium in primates under space flight conditions A80-50071
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions A80-50074
Development of higher fungi under weightlessness A80-50075
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus A80-50076
Device for mass measurement under zero-gravity conditions A80-51000

WORK CAPACITY
Changes in alpha activity during decreases in human operator work capacity A80-48612
The effect of mountain conditions on work capacity and acclimatization times A80-49020

WORK-REST CYCLE
The effects of various regimes of work and rest following a 64-72 hour period of wakefulness on sleep dynamics A80-48613

WORKLOADS (PSYCHOPHYSIOLOGY)
A human performance/workload evaluation of the AN/PVS-5 bifocal night vision goggles A80-48093

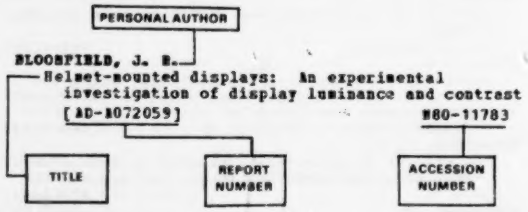
X

X RAY ANALYSIS
Changes in bone tissue under conditions of hypokinesia and in connection with age [NASA-TM-76154] N80-32064

PERSONAL AUTHOR INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 213)* DECEMBER 1980

Typical Personal Author Index Listing


PERSONAL AUTHOR
BLOOMFIELD, J. R.
Helmet-mounted displays: An experimental investigation of display luminance and contrast
[AD-A072059]
N80-11783
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABELES, F. J.
Project FIRES. Volume 1: Program overview and summary, phase 1B
[NASA-CR-161529] N80-32098
Project FIRES. Volume 4: Prototype protective ensemble qualification test report, phase 1B
[NASA-CR-161532] N80-32099
Project FIRES. Volume 3: Protective ensemble design and procurement specification, phase 1B
[NASA-CR-161531] N80-32100
AINSLIE, P. J.
Analysis of human auditory brainstem responses for complex stimuli
N80-31034
AKOEV, I. G.
Genetic effects of space hadrons on bacteriophage under Alpine conditions
A80-50068
ALEKSANDROV, P. N.
Effect of hypokinesia on blood microcirculation
[NASA-TM-76308] N80-32068
ALKOV, R. A.
A questionnaire study of psychological background factors in U.S. Navy aircraft accidents
A80-50121
ARIFDZHANOV, B. K.
Vestibular reactions in patients during occlusion form of chorioependymitis
[NASA-TM-76356] N80-32080
ATHEY, T. W.
Proceedings Of a Workshop on Thermal Physiology
[PB80-187867] N80-32087
AUDET, N. F.
Thermal insulation materials for diver's underwear garment
[AD-A086743] N80-31048
AZHEVSKII, P. IA.
The effects of water-salt stresses on orthostatic test endurance under conditions of hypoxia
A80-48611

B

BABSKII, V. G.
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus
A80-50076
BALAKHOVSKII, I. S.
The effects of water-salt stresses on orthostatic test endurance under conditions of hypoxia
A80-48611
BALASUBRAMANIAN, R.
Possible role of RNA-dependent DNA-polymerase in early stages of evolution
A80-50709
BALLDIN, U. I.
Hemodynamic effects of extreme positive pressure breathing using a two-pressure flying suit
A80-50119
BARANSKI, S.
Physiological aspects of automatic physical training control by biofeedback in weightlessness
A80-50069
BARBER, P. W.
Irradiation of prolate spheroidal models of humans in the near field of a short electric dipole
A80-49868
BARER, A. S.
Deformations of human skull produced by impact /experimental studies and modeling problems/. II - The dynamics of the skull base during impact loading of the vault
A80-47692
BASKOVA, I. P.
Effects of hirudin-induced activation of nonenzymatic fibrinolysis during immobilization stress
[NASA-TM-76189] N80-32065
BASTEK, R.
On human response to prolonged repeated whole-body vibration
A80-49401
BELKIN, V. S.
Genetic effects of space hadrons on bacteriophage under Alpine conditions
A80-50068
BENEL, R. A.
A review of USAFSAM studies employing multiple-tasks performance devices
[AD-A087272] N80-32091
BENSEL, C. K.
The psychomotor performance of men and women wearing two types of body armor
[AD-A086742] N80-31040
BEREGOVOI, G.
Preparation for long-duration flights
A80-50279
BERGTOLD, D. S.
Late degeneration in rabbit tissues after irradiation by heavy ions
A80-50065
BIRK, J.
Orthostatic tolerance testing - Comparison of LBNP and HUT methods
A80-50629
BLAGOVESHCHENSKAIA, N. S.
Review of book vestibular crises
[NASA-TM-76354] N80-32078
BLAIR, N. E.
Experiments on the amplification of optical activity
A80-50707
BOCHAGOVA, O. P.
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus
A80-50076
BONSHTEYN, O. Z.
Orthoclinostatic test as one of the methods for evaluating the human functional state
[NASA-TM-76321] N80-32070

BONNER, W. A.
Experiments on the amplification of optical activity
A80-50707

BORGER, H.-J.
Orthostatic tolerance testing - Comparison of LBNP and HUT methods
A80-50629

BOROWSKY, M. S.
A questionnaire study of psychological background factors in U.S. Navy aircraft accidents
A80-50121

BRACCHI, F.
A microprocessor-based instrument for neural pulse wave analysis
A80-50322

BRAEUER, D.
On human response to prolonged repeated whole-body vibration
A80-49401

BROCK, P. J.
Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling
A80-48086

BROWN, O. R.
Mechanisms of oxygen toxicity at the cellular level
[AD-A087831] N80-32084

BUCHHOLZ, CH.
On human response to prolonged repeated whole-body vibration
A80-49401

BUCKLEY, C. J.
Asymptomatic atherosclerotic occlusive vascular disease - Its significance in the evaluation of aircrew members
A80-50116

BURGEAT, M.
A preliminary study of vestibular equilibrium in primates under space flight conditions
A80-50071

BZHALAVA, I. I.
Physiological reactions during acute adaptation to reduced gravity
A80-50070

C

CARROLL, J. B.
Individual difference relations in psychometric and experimental cognitive tasks
[AD-A086057] N80-32093

CHEN, M.
Gravity and land plant evolution - Experimental induction of lignification by simulated hypergravity and water stress
A80-50073

CHERKESOVA, L. U.
Effects of hirudin-induced activation of nonenzymatic fibrinolysis during immobilization stress
[NASA-TM-76189] N80-32065

CHERNUKH, A. M.
Effect of hypokinesia on blood microcirculation
[NASA-TM-76308] N80-32068

CLEVENSON, S. A.
A design tool for estimating passenger ride discomfort within complex ride environments
A80-48949

COOK, K. M.
Femur-bending properties as influenced by gravity. IV - Limits after high and low weight-bearing
A80-50127

COSTANZA, E. B.
Air-to-air target acquisition factors and means of improvement
[AD-A087848] N80-32095

COX, A. B.
Late degeneration in rabbit tissues after irradiation by heavy ions
A80-50065

D

DALTON, J.
Effect of alcohol on man's response to mild physical activity in a cold environment
A80-48092

DEHART, R. M.
Coronary heart disease - An expensive Air Force problem
A80-50115

DEMAIO, J. C.
Airborne performance measurement assessment: Low altitude tactical formation in two operating environments
[AD-A087068] N80-32090

DEMPSEY, T. K.
A design tool for estimating passenger ride discomfort within complex ride environments
A80-48949

DEVRIES, P. B., JR.
Methods for collecting and analyzing task analysis data
[AD-A087710] N80-32094

DICK, A. O.
Instrument scanning and controlling: Using eye movement data to understand pilot behavior and strategies
[NASA-CR-3306] N80-31039

DLUSSKAIA, I. G.
The effects of water-salt stresses on orthostatic test endurance under conditions of hypoxia
A80-48611

DONALDSON, E.
Pilot study on the value of a beta-blocking drug in initial helicopter training
A80-50130

DOOLING, D.
Astronauts keep queuing up for Space Shuttle
A80-48796

DOROFEEVA, I. K.
On the possibility of life on Mars
A80-50056

DOSKIN, V. A.
Orthoclinostatic test as one of the methods for evaluating the human functional state
[NASA-TM-76321] N80-32070

DUBININ, N. P.
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions
A80-50074

DUDRAGNE, R.
A sclerocorneal electrode for the study of the characteristics of primate vision under condition of space flight
A80-50067

DUMBAI, V. N.
Changes in alpha activity during decreases in human operator work capacity
A80-48612

DURNEY, C. H.
Irradiation of prolate spheroidal models of humans in the near field of a short electric dipole
A80-49868

E

EDDOWES, E. E.
Airborne performance measurement assessment: Low altitude tactical formation in two operating environments
[AD-A087068] N80-32090

EDELSON, E. H.
The possible role of metal ions and clays in prebiotic chemistry
A80-50060

EGOROV, A. D.
Mass measurement under conditions of weightlessness
A80-47932
Device for mass measurement under zero-gravity conditions
A80-51000

ELIVANOV, V. A.
Effects of factors of prolonged space flight on conditions of tortoise skeleton
[NASA-TM-76352] N80-32060

ENRIGHT, J. T.
Temporal precision in circadian systems - A reliable neuronal clock from unreliable components
A80-49849

EPPERSON, W. L.
The effect of physical conditioning on +GZ tolerance
N80-31031

EPSTEIN, S. E.
Implications of probability analysis on the strategy used for noninvasive detection of coronary artery disease
A80-49022

EPSTEIN, Y.
Tap water, an efficient method for cooling heatstroke victims - A model in dogs
A80-50122

ESCHENBRENNER, A. J., JR.
Methods for collecting and analyzing task analysis data
[AD-A087710] N80-32094

EVDOKIMOVA, N. D.
On the possibility of life on Mars
A80-50056

F

FANG, H. S.
Altitude convulsion threshold and time to altitude convulsion in gold thioglucose obese mice
A80-48089

FEDOROV, B. M.
Effect of hypokinesia on blood microcirculation
[NASA-TM-76308] N80-32068

FEDYNSKII, A. V.
Description of an apparatus for studying micro-organisms in the upper atmosphere
A80-50057

FEIGIN, D. S.
Role of radiology in aviation accident investigation
A80-50107

FELDMAN, G. L.
Changes in alpha activity during decreases in human operator work capacity
A80-48612

FENTON, B. M.
Topographical simulation of the blood vessels of the human bulbar conjunctiva and application to pressure-flow relationships
N80-31033

FINK, D. S.
The psychomotor performance of men and women wearing two types of body armor
[AD-A086742] N80-31040

FINOGEYEV, V. I.
Restoration of physical performance capacity of athletes after prolonged restriction of their motor activity
[NASA-TM-76305] N80-32066

FISHER, A. B.
The oxygen-adapted rat model - Tolerance to oxygen at 1.5 and 2 ATA
A80-48090

FLOYD, W. N., JR.
The importance of ammonia in the metabolic effects of hydrazine
A80-50126

FORMAN, H. J.
The oxygen-adapted rat model - Tolerance to oxygen at 1.5 and 2 ATA
A80-48090

FRANCESCONI, R. P.
Hypothermia induced by 5-thio-D-glucose - Effects on treadmill performance in the heat
A80-48087

FREIDEL, V. R.
Mass measurement under conditions of weightlessness
A80-47932

FRENKEL, I. D.
Effect of sinusoidal modulated currents and acute hypoxia on corticosterone content and activity of certain dehydrogenases in tissues of different rat organs during hypokinesia
[NASA-TM-76161] N80-32057

FRIEDMANN, E. I.
Endolithic microbial life in hot and cold deserts
A80-50704

FROELICHER, V. F.
Incidence of complications from coronary angiography in 463 USAF aviators
A80-50131

FUCHS, R. J.
Incidence of complications from coronary angiography in 463 USAF aviators
A80-50131

FUNKE, D. J.
An analysis of human reliability measures in visual inspection
A80-50267

G

GANDEVIA, S. C.
Sensations of heaviness in man
A80-50353

GARRISON, J. B.
Automatic contouring for two-dimensional echocardiography
A80-50912

GARSHIN, M. I.
Certain features of the cochleovestibular syndrome in the residual stage of traumatic brain disease
[NASA-TM-76337] N80-32073

GASAWAY, D. C.
USAFSAM microprocessor audiometer: System reference manual
[AD-A087342] N80-32081

GAUTHIER, G. M.
Effects of whole-body vibrations on standing posture in man
A80-48091

GAZENKO, O. G.
Effect of hypokinesia on blood microcirculation
[NASA-TM-76308] N80-32068

GEBHARDT, U.
Orthostatic tolerance testing - Comparison of LBNP and HUT methods
A80-50629

GIBBS, D.
Template-directed synthesis and selective adsorption of oligoadenylates in hydroxyapatite
A80-49873

GIESS, M. C.
Variations in the recombination rate of Drosophila melanogaster induced by balloon flight
A80-50072

GISSEN, L. D.
Orthoclinostatic test as one of the methods for evaluating the human functional state
[NASA-TM-76321] N80-32070

GLADYSHEV, G. P.
Optical activity and evolution
A80-50706

GLICK, D. D.
A human performance/workload evaluation of the AN/PVS-5 bifocal night vision goggles
A80-48093

GOBLE, L. G.
Human operator interface with FLIR displays
[AD-A086284] N80-31041

GOGEL, W. C.
The sensing of retinal motion
A80-50249

GOLDOVSKAYA, M. D.
Effects of hirudin-induced activation of nonenzymatic fibrinolysis during immobilization stress
[NASA-TM-76189] N80-32065

GOLUBIC, S.
Early photosynthetic microorganisms and environmental evolution
A80-50062

GOSWAMI, D. C.
The relationship between pulse count and energy expenditure at sub maximal work under different ambient temperatures
A80-50577

GRAHAM, T.
Effect of alcohol on man's response to mild physical activity in a cold environment
A80-48092

GRALL, Y.
A sclerocorneal electrode for the study of the characteristics of primate vision under condition of space flight
A80-50067

GRANT-THOMSON, J.
Pilot study on the value of a beta-blocking drug in initial helicopter training
A80-50130

GRAYBIEL, A.
Space motion sickness - Skylab revisited
A80-48094

GRECHKO, G. M.
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus
A80-50076

GREENLEAF, J. E.
Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling
A80-48086

GRIGORIAN, S. S.
Methods of continuum mechanics in investigations of respiration and blood circulation
A80-50563

GROTE, P.
Effects of different body positions on the Eustachian tube function in the selection of airmen
A80-50128

H

HAAKONSON, N. H.
Investigation of life change as a contributing factor in aircraft accidents - A prospectus
A80-50104

HACKNEY, J. D.
Effects of aerosols, oxides of nitrogen, and oxidants on human health
[PB80-184583] N80-32088

HAGENSON, M. J. S.
A paraboloidal flow cytometer for improved fluorescence analysis of single cells
N80-31029

HALLETT, J. W., JR.
Asymptomatic atherosclerotic occlusive vascular disease - Its significance in the evaluation of aircrew members
A80-50116

HANSON, C. A.
Summary of the means used to positively identify the American victims in the Canary Islands crash
A80-50111

HANSON, T.
Human operator interface with FLIR displays
[AD-A086284] N80-31041

HARLAY, F.
Effects of whole-body vibrations on standing posture in man
A80-48091

HARRIS, M. G.
Velocity specificity of the flicker to pattern sensitivity ratio in human vision
A80-48518

HARRISON, R. A.
Cold weather stress on humans. Citations from the NTIS data base
[PB80-810989] N80-31035
Ultrasonics in medicine. Citations from the NTIS data base
[PB80-810922] N80-31037
Ultrasonic in medicine. Citations from the Engineering Index data base
[PB80-810930] N80-31038

HARTMAN, B. O.
A review of USAFSAM studies employing multiple-tasks performance devices
[AD-A087272] N80-32091

HASEGAWA, M.
On the antisymmetry of the amino acid code table
A80-50708

HAYWARD, J. S.
Design concepts of survival suits for cold water immersion and their thermal protection performance
A80-50221

HEINRICH, W.
Predicted LET-spectra of HZE-particles for the Free Flyer Biostack Experiment on the Long Duration Exposure Facility mission
A80-50066

HICKMAN, J. R.
Physical standards for high-performance fighter aircraft pilots
A80-50114

HIGGINS, E. A.
Pulmonary and symptom threshold effects of ozone in airline passenger and cockpit crew surrogates
A80-50125

HIGGINSON, A. G.
Blood group determination from teeth
A80-50109

HILL, I. R.
Dental identification in fatal aircraft accidents
A80-50108
Blood group determination from teeth
A80-50109

HOCHACHKA, P. W.
Living without oxygen: Closed and open systems in hypoxia tolerance
A80-50354

HOLDEN, R. D.
Man-rating of the Navy/Air Force Oxygen Generating System (NAOGS)
[AD-A087270] N80-32103

HOLMQUIST, R.
Life sciences and space research. Volume 18 - Proceedings of the Open Meeting of the Working Group on Space Biology, Bangalore, India, May 29-June 9, 1979
A80-50051

HOLZER, G.
Lipids as a principle for the identification of Archaebacteria
A80-50063

HORDINSKY, J. R.
Orthostatic tolerance testing - Comparison of LBNP and HUT methods
A80-50629

HOROWITZ, J. M.
Thermoregulation in rats: Effects of varying duration of hypergravic fields
[NASA-CR-163481] N80-31030

HORWITZ, B. A.
Thermoregulation in rats: Effects of varying duration of hypergravic fields
[NASA-CR-163481] N80-31030

HREBIEN, L.
An investigation of cardiac threshold variability relative to stimulus shape and respiratory cycle
N80-31032

HUGON, M.
Effects of whole-body vibrations on standing posture in man
A80-48091

HULIN, C. L.
Differentially weighting linear models of behavior: An empirical comparison of six methods
[AD-A086876] N80-31043

I

IAKSHINA, V. M.
On the possibility of life on Mars
A80-50056

IASKOV, E. N.
Changes in the system of external respiration /respiration mechanics/ during cold adaptation
A80-48615

IKEDA, M.
Wavelength difference limit for binocular color fusion
A80-48519

IKELS, K. G.
Man-rating of the Navy/Air Force Oxygen Generating System (NAOGS)
[AD-A087270] N80-32103

IMSHENETSKII, A. A.
On the possibility of life on Mars
A80-50056

ISHIGAMI, M.
Effect of polynucleotides and a basic protein on the condensation of phenylalanyl adenylate
A80-50711

ISKANDER, M. F.
Irradiation of prolate spheroidal models of humans in the near field of a short electric dipole
A80-49868

IUROV, S. S.
Genetic effects of space hadrons on bacteriophage under Alpine conditions
A80-50068

J

JACOBSON, F. H.
Flame testing of two samples of exposure suit material
[AD-A086739] N80-31047

JASLOW, H.
Equiperception maneuvers
A80-50123

JENKINS, R. E.
Automatic contouring for two-dimensional echocardiography
A80-50912

JOHNSON, C. A.
Foveal and peripheral displacement thresholds as a function of stimulus luminance, line length and duration of movement
A80-48520

JOHNSON, G. L.
F/A-18 foot strikes - An update
A80-50222

JOHNSON, K. L.
Development of a preprototype vapor compression distillation water recovery subsystem
[NASA-CR-160779] N80-32101

JOHNSON, S. L.
An analysis of human reliability measures in visual inspection
A80-50267

K

KANIOVSKII, S. S.
The structure of oxygen debt in humans following prolonged hypokinesis
A80-48614

KAPELOVICH, R. L.
Therapeutic gymnastics in comprehensive treatment of patients with generalized myasthenia
[NASA-TM-76312] N80-32069

KARAKOZOV, K. G.
Technique of electrical stimulation of the vestibular analyzer under clinical conditions
[NASA-TM-76347] N80-32075

KARPUSHEVA, V. A.
The effects of water-salt stresses on orthostatic test endurance under conditions of hypoxia
A80-48611

KASATKINA, T. B.
Development of higher fungi under weightlessness
A80-50075

KATKOVSKII, B. S.
The structure of oxygen debt in humans following prolonged hypokinesis
A80-48614

KAZAKOV, G. A.
Description of an apparatus for studying micro-organisms in the upper atmosphere
A80-50057

KELLER, J.
A sclerocorneal electrode for the study of the characteristics of primate vision under condition of space flight
A80-50067

KENG, P. C.
Late degeneration in rabbit tissues after irradiation by heavy ions
A80-50065

KENTON, E.
Helmets: Construction, effectiveness, and human factors. Citations from the NTIS data base
[PB80-810963] N80-32106

KHASANOV, M. N.
Optical activity and evolution
A80-50706

KHECHINASHVILI, S. N.
Technique of electrical stimulation of the vestibular analyzer under clinical conditions
[NASA-TM-76347] N80-32075

KHLOPINA, S. F.
Mass measurement under conditions of weightlessness
A80-47932
Device for mass measurement under zero-gravity conditions
A80-51000

KHMELEVSKIY, I. V.
Absorption of thiamine and nicotinic acid in the rat intestine during fasting and immobilization stress
[NASA-TM-76193] N80-32059

KIMBALL, K. A.
A human performance/workload evaluation of the AN/PVS-5 bifocal night vision goggles
A80-48093

KINJO, M.
Effect of polynucleotides and a basic protein on the condensation of phenylalanyl adenylate
A80-50711

KIRILYUK, O. G.
Absorption of thiamine and nicotinic acid in the rat intestine during fasting and immobilization stress
[NASA-TM-76193] N80-32059

KLEINMAN, M. T.
Effects of aerosols, oxides of nitrogen, and oxidants on human health
[PB80-184583] N80-32088

KNERR, C. M.
Team training applications of voice processing technology
[AD-A085999] N80-32092

KNIAZEVA, I. N.
Genetic effects of space hadrons on bacteriophage under Alpine conditions
A80-50068

KOBRICK, J. L.
The Environmental Symptoms Questionnaire - Revisions and new field data
A80-50124

KOJIMA, G. K.
A microprocessor-based instrument for neural pulse wave analysis
A80-50322

KONAKHEVICH, IU. G.
Deformations of human skull produced by impact /experimental studies and modeling problems/. II - The dynamics of the skull base during impact loading of the vault
A80-47692

KORABLEVA, T. N.
Physical exercises on a bicycle-ergometer and running track to prevent hypodynamia in workers of intellectual labor
[NASA-TM-76306] N80-32067

KORDIUM, E. L.
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions
A80-50074
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus
A80-50076

KORDIUM, V. A.
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions
A80-50074
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus
A80-50076

KOROLEV, V. V.
Effects of factors of prolonged space flight on conditions of tortoise skeleton
[NASA-TM-76352] N80-32060

KORZHENYANTS, V. A.
Effects of factors of prolonged space flight on conditions of tortoise skeleton
[NASA-TM-76352] N80-32060

KOZHARINOV, V. L.
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus
A80-50076

KRAVETZ, G.
The oxygen-adapted rat model - Tolerance to oxygen at 1.5 and 2 ATA
A80-48090

KRAVIK, S.
Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling
A80-48086

KRUPINA, T. N.
Effect of hypokinesia on blood microcirculation
[NASA-TM-76308] N80-32068

KUDIN, V. P.
Significance of the heart factor in manifestations of the initial insufficiency of cerebral blood circulation in pilots
A80-50331

KUEHN, L. A.
The effect of alcohol on body heat loss
A80-50102

KUPFERMAN, E.
Thermal insulation materials for diver's underwear garment
[AD-A086743] N80-31048

KUZIN, A. M.
Genetic effects of space hadrons on bacteriophage under Alpine conditions
A80-50068

KUZIURINA, L. A.
On the possibility of life on Mars
A80-50056

L

LACEY, J. C., JR.
Studies of the chemical basis of the origin of protein synthesis Initiation and direction of peptide growth
A80-49872

LACKNER, J. R.
Multiple sensory and motor cues enhance the accuracy of pursuit eye movements
A80-50120

LADYZHENSKAYA, E. A.
Vestibular reactions in patients during occlusion form of chorioependymitis
[NASA-TM-76356] N80-32080

LAKSHIN, A. M.
Physiological reactions of a passenger to transportation conditions
[NASA-TM-76350] N80-32077

LANCASTER, M. C.
Physical standards for high-performance fighter aircraft pilots
A80-50114

LANDYSHEVA, I. V.
Changes in the system of external respiration /respiration mechanics/ during cold adaptation
A80-48615

LATEGOLA, M. T.
Pulmonary and symptom threshold effects of ozone in airline passenger and cockpit crew surrogates
A80-50125

LAUGHLIN, M. H.
Coincident loss of consciousness and ventricular tachycardia during +Gz stress
A80-48096

LAWLESS, J. G.
The possible role of metal ions and clays in prebiotic chemistry
A80-50060

LAKOWSKI, J. C.
Adhesive coatings for DH-411 helmets
[AD-A087319] N80-32105

LEATHERWOOD, J. D.
A design tool for estimating passenger ride discomfort within complex ride environments
A80-48949

LEE, A. C.
Late degeneration in rabbit tissues after irradiation by heavy ions
A80-50065

LEONTEVA, G. A.
Genetic effects of space hadrons on bacteriophage under Alpine conditions
A80-50068

LETT, J. T.
Late degeneration in rabbit tissues after irradiation by heavy ions
A80-50065

LICHTENSTEIN, J. E.
Role of radiology in aviation accident investigation
A80-50107

LIMMER, R. E.
The effect of alcohol on body heat loss
A80-50102

LINN, W. S.
Effects of aerosols, oxides of nitrogen, and oxidants on human health
[PB80-184583] N80-32088

LITSOV, A. N.
The effects of various regimes of work and rest following a 64-72 hour period of wakefulness on sleep dynamics
A80-48613

LIU, H. J.
Altitude convulsion threshold and time to altitude convulsion in gold thioglucose obese mice
A80-48089

LIVINGSTONE, S. D.
The effect of alcohol on body heat loss
A80-50102

LLOYD, R. E.
Lipids as a principle for the identification of Archaebacteria
A80-50063

LOBOVA, E. N.
Psychological features of the pilot's personality in the case of diseases of the gastrointestinal tract
A80-49021

LOHRMANN, R.
Template-directed synthesis and selective adsorption of oligoadenylates in hydroxyapatite
A80-49873

LOTH, D.
A preliminary study of vestibular equilibrium in primates under space flight conditions
A80-50071

LUKIANOVA, N. F.
Psychological features of the pilot's personality in the case of diseases of the gastrointestinal tract
A80-49021

LYAPINA, L. A.
Effects of hirudin-induced activation of nonenzymatic fibrinolysis during immobilization stress
[NASA-TM-76189] N80-32065

LYSENKO, S. V.
Description of an apparatus for studying micro-organisms in the upper atmosphere
A80-50057

M

MADEWELL, J. E.
Role of radiology in aviation accident investigation
A80-50107

MAGAZANIK, A.
Tap water, an efficient method for cooling heatstroke victims - A model in dogs
A80-50122

MAGER, M.
Hypothermia induced by 5-thio-D-glucose - Effects on treadmill performance in the heat
A80-48087

MANKO, V. G.
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus
A80-50076

MANNING, L. G.
Asymptomatic atherosclerotic occlusive vascular disease - Its significance in the evaluation of aircrew members
A80-50116

MARGULIES, R. A.
Emergency medicine and the airline passenger
A80-50129

MARKIEWICZ, L.
Physiological aspects of automatic physical training control by biofeedback in weightlessness
A80-50069

MARTIN, B.
Effects of whole-body vibrations on standing posture in man
A80-48091

MASHINSKII, A. L.
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions
A80-50074
Development of higher fungi under weightlessness
A80-50075

Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus
A80-50076

MASLEN, K. R.
Towards a better understanding of temporary threshold shift of hearing
[RAE-TM-FS-319] N80-32086

MASSOUDI, H.
Irradiation of prolate spheroidal models of humans in the near field of a short electric dipole
A80-49868

MATHER, J. A.
Multiple sensory and motor cues enhance the accuracy of pursuit eye movements
A80-50120

MAZHBICH, B. I.
Blood filling and flow in lungs during change in body position in space
[NASA-TM-76333] N80-32071

MCMEEKIN, R. R.
An organizational concept for pathologic identification in mass disasters
A80-50106
Role of radiology in aviation accident investigation
A80-50107

MEDVEDEV, S. D.
Changes in alpha activity during decreases in human operator work capacity
A80-48612

MEISTER, A.
On human response to prolonged repeated whole-body vibration
A80-49401

MELESHKO, G. I.
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions
A80-50074

MELIK-ASLANOVA, L. L.
Effect of sinusoidal modulated currents and acute hypoxia on corticosterone content and activity of certain dehydrogenases in tissues of different rat organs during hypokinesia
[NASA-TM-76161] N80-32057

MELLIAN, S. A.
The psychomotor performance of men and women wearing two types of body armor
[AD-A086742] N80-31040

MELTON, C. E.
Pulmonary and symptom threshold effects of ozone in airline passenger and cockpit crew surrogates
A80-50125

MENGUY, C.
A sclerocorneal electrode for the study of the characteristics of primate vision under condition of space flight
A80-50067
A preliminary study of vestibular equilibrium in primates under space flight conditions
A80-50071

MENYAKIN, R. P.
Occupational changes in the organ of hearing and equilibrium in sailors and fisherman
[NASA-TM-76335] N80-32072

MERKIN, E. N.
Orthoclinostatic test as one of the methods for evaluating the human functional state
[NASA-TM-76321] N80-32070

MERRIKEN, R. A.
Tissue analysis for thiazide diuretics
A80-50105

METZ, A.-M.
On human response to prolonged repeated whole-body vibration
A80-49401

MILHAUD, C.
A sclerocorneal electrode for the study of the characteristics of primate vision under condition of space flight
A80-50067

MILLER, J. T.
Methods for collecting and analyzing task analysis data
[AD-A087710] N80-32094

MILLER, R. L.
Man-rating of the Navy/Air Force Oxygen Generating System (NAOGS)
[AD-A087270] N80-32103

MIYATA, T.
On the antisymmetry of the amino acid code table
A80-50708

MOHLER, S. R.
Emergency medicine and the airline passenger
A80-50129

MONTGOMERY, L. D.
Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling
A80-48086

MOORE, A. A.
Man-rating of the Navy/Air Force Oxygen Generating System (NAOGS)
[AD-A087270] N80-32103

MORAY, N.
The use of information transmission as nonparametric correlation in the analysis of complex behavior: A preliminary report
[AD-A087832] N80-32096

MORITA, R. Y.
Biological limits of temperature and pressure
A80-50703

MORSE, J. T.
Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling
A80-48086

MORWOOD, P.
Pilot study on the value of a beta-blocking drug in initial helicopter training
A80-50130

MOZGOVOI, E. G.
Genetic effects of space hadrons on bacteriophage under Alpine conditions
A80-50068

MUKHOPADHYAY, S.
The relationship between pulse count and energy expenditure at sub maximal work under different ambient temperatures
A80-50577

MULLINS, D. W., JR.
Studies of the chemical basis of the origin of protein synthesis Initiation and direction of peptide growth
A80-49872

MURZAKOV, B. G.
On the possibility of life on Mars
A80-50056

N

NAGANO, K.
Effect of polynucleotides and a basic protein on the condensation of phenylalanyl adenylate
A80-50711

NAKASHIMA, Y.
Wavelength difference limit for binocular color fusion
A80-48519

NEEB, D.
Myocardial ischemia and its risk factors
A80-47783

NEFEDOV, IU. L.
Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus
A80-50076

NICOGOSSIAN, A.
Emergency medicine and the airline passenger
A80-50129

NOVOSELOV, V. P.
Physiological reactions of a passenger to transportation conditions
[NASA-TM-76350] N80-32077

O

OCONNOR, N.
Pilot study on the value of a beta-blocking drug in initial helicopter training
A80-50130

ODOM, D. G.
Clays in prebiological chemistry
A80-49871

OOSTERVELD, W. J.
Noise-induced hearing loss and vestibular dysfunction
A80-48095

OPARIN, A. I.
Paths of the origin of life
A80-49425
ORGEL, L. E.
Template-directed synthesis and selective adsorption of oligoadenylates in hydroxyapatite
A80-49873
ORNER, G. M.
Thermal insulation materials for diver's underwear garment
[AD-A086743] N80-31048
ORO, J.
Clays in prebiological chemistry
A80-49871
Lipids as a principle for the identification of Archaebacteria
A80-50063

P

PALCHIKOV, P. A.
The effect of mountain conditions on work capacity and acclimatization times
A80-49020
PALMBAKH, L. R.
Development of higher fungi under weightlessness
A80-50075
PANFILOV, V. E.
Physiological reactions during acute adaptation to reduced gravity
A80-50070
PARKER, K. C.
Advanced flight design systems subsystem performance models. Executive summary
[NASA-CR-160768] N80-31044
Advanced flight design systems subsystem performance models. User guide: Environmental analysis routine library
[NASA-CR-160769] N80-31045
Advanced flight design systems subsystem performance models. Sample model: Environmental analysis routine library
[NASA-CR-160770] N80-31046
PARHENOV-TRIFILOV, D. I.
Significance of the heart factor in manifestations of the initial insufficiency of cerebral blood circulation in pilots
A80-50331
PARSONS, C. K.
Differentially weighting linear models of behavior: An empirical comparison of six methods
[AD-A086876] N80-31043
PESQUIES, P. C.
A preliminary study of vestibular equilibrium in primates under space flight conditions
A80-50071
PETLIUK, V. KH.
Deformations of human skull produced by impact /experimental studies and modeling problems/. II - The dynamics of the skull base during impact loading of the vault
A80-47692
PHILLIPS, N. S.
Analysis and measurement of helmeted aircrewman response resulting from birdstrike
[AD-A087737] N80-32082
PLANEL, H.
Variations in the recombination rate of Drosophila melanogaster induced by balloon flight
A80-50072
PODRUSHNYAK, E. P.
Changes in bone tissue under conditions of hypokinesia and in connection with age
[NASA-TM-76154] N80-32064
POGODIN, A. S.
Blood filling and flow in lungs during change in body position in space
[NASA-TM-76333] N80-32071
POLIAKOV, V. M.
The effects of water-salt stresses on orthostatic test endurance under conditions of hypoxia
A80-48611
POLMAN, A. R.
Noise-induced hearing loss and vestibular dysfunction
A80-48095
POLYAKOV, A. N.
Effects of factors of prolonged space flight on conditions of tortoise skeleton
[NASA-TM-76352] N80-32060
POPELKA, B. A.
Team training applications of voice processing technology
[AD-A085999] N80-32092
POPERETSKAYA, V. I.
Occupational changes in the organ of hearing and equilibrium in sailors and fisherman
[NASA-TM-76335] N80-32072
POPOVA, A. F.
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions
A80-50074
PRATT, P. D.
Human operator interface with FLIR displays
[AD-A086284] N80-31041
PROSKURINA, T. N.
Effect of hypokinesia on blood microcirculation
[NASA-TM-76308] N80-32068
PROUST, J.
Variations in the recombination rate of Drosophila melanogaster induced by balloon flight
A80-50072
PRUDHOMMEAU, C.
Variations in the recombination rate of Drosophila melanogaster induced by balloon flight
A80-50072
PUKACH, L. P.
The effect of mountain conditions on work capacity and acclimatization times
A80-49020

R

RADEMACHER, L.
Myocardial ischemia and its risk factors
A80-47783
RAMFEROVA, E. Y.
Effect of hypokinesia on blood microcirculation
[NASA-TM-76308] N80-32068
RAO, M.
Clays in prebiological chemistry
A80-49871
REMIZOV, S. A.
Change of biomechanical properties of rat's bones produced by a 19-day spaceflight in the artificial satellite Cosmos-936
A80-47693
ROLL, J. P.
Effects of whole-body vibrations on standing posture in man
A80-48091
ROSCOE, S. N.
Ground-referenced visual orientation with imaging displays
[AD-A081882] N80-32063
ROTHE, R.
On human response to prolonged repeated whole-body vibration
A80-49401
RUBIN, A. B.
Development of higher fungi under weightlessness
A80-50075
RUBIN, G.
Human operator interface with FLIR displays
[AD-A086284] N80-31041
RUCK, H. W.
Methods for collecting and analyzing task analysis data
[AD-A087710] N80-32094

S

SALANIN, I. V.
Use of physical culture to increase resistance of sailors to motion sickness
[NASA-TM-76355] N80-32079
SAMORUKOV, I. A.
Mass measurement under conditions of weightlessness
A80-47932
SAMPSON, J. B.
The Environmental Symptoms Questionnaire - Revisions and new field data
A80-50124

SANDERS, M. G.
A human performance/workload evaluation of the AN/PVS-5 bifocal night vision goggles
A80-48093

SANDRY, D. L.
An investigation of the dual task performance relationship to hemispheric specialization
[AD-A086808] N80-31042

SARKAR, D. N.
The relationship between pulse count and energy expenditure at sub maximal work under different ambient temperatures
A80-50577

SAROL, Z.
Physiological aspects of automatic physical training control by biofeedback in weightlessness
A80-50069

SARYCHEV, S. B.
Orthoclinostatic test as one of the methods for evaluating the human functional state
[NASA-TM-76321] N80-32070

SARYCHEV, V. A.
Mass measurement under conditions of weightlessness
A80-47932
Device for mass measurement under zero-gravity conditions
A80-51000

SAZONOV, V. V.
Mass measurement under conditions of weightlessness
A80-47932
Device for mass measurement under zero-gravity conditions
A80-51000

SCHLAG, J. H.
USAFSAM microprocessor audiometer: System reference manual
[AD-A087342] N80-32081

SCHOONHEYT, J.
Noise-induced hearing loss and vestibular dysfunction
A80-48095

SCOBEY, R. P.
Foveal and peripheral displacement thresholds as a function of stimulus luminance, line length and duration of movement
A80-48520

SEETHARAMULU, P.
Possible role of RNA-dependent DNA-polymerase in early stages of evolution
A80-50709

SEIDEL, H.
On human response to prolonged repeated whole-body vibration
A80-49401

SENGUPTA, A. K.
The relationship between pulse count and energy expenditure at sub maximal work under different ambient temperatures
A80-50577

SETLIK, I.
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions
A80-50074

SGUERRI, F.
Man, aircraft and navigation systems - An evaluation for the 80s
A80-48137

SHAGAL, D. I.
Effect of hypokinesia on blood microcirculation
[NASA-TM-76308] N80-32068

SHAPIRO, P. B.
Effects of hirudin-induced activation of nonenzymatic fibrinolysis during immobilization stress
[NASA-TM-76189] N80-32065

SHAPIRO, Y.
Tap water, an efficient method for cooling heatstroke victims - A model in dogs
A80-50122

SHEPELEV, E. IA.
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions
A80-50074

SHOENBERGER, R. W.
Psychophysical comparison of vertical and angular vibrations
[AMRL-TR-80-46] A80-48088

SHOLPO, L. N.
Deformations of human skull produced by impact /experimental studies and modeling problems/. II - The dynamics of the skull base during impact loading of the vault
A80-47692

SHULZHENKO, E. B.
Physiological reactions during acute adaptation to reduced gravity
A80-50070

SHVARTZ, E.
Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling
A80-48086

SIEGEL, B. Z.
Further studies on the environmental capabilities of fungi - Interactions of salinity, ultraviolet irradiation, and temperature in Penicillium
A80-50058
Gravity and land plant evolution - Experimental induction of lignification by simulated hypergravity and water stress
A80-50073

SIEGEL, S. M.
Further studies on the environmental capabilities of fungi - Interactions of salinity, ultraviolet irradiation, and temperature in Penicillium
A80-50058
Gravity and land plant evolution - Experimental induction of lignification by simulated hypergravity and water stress
A80-50073

SIMPSON, C. A.
Response time effects of alerting tone and semantic context for synthesized voice cockpit warnings
A80-48950

SKRYLEV, L. P.
Significance of the heart factor in manifestations of the initial insufficiency of cerebral blood circulation in pilots
A80-50331

SMITH, S. L.
Requirements definition and design guidelines for man-machine interface in C3 system acquisition
[AD-A087258] N80-32102

SNYDER, H. L.
Air-to-air target acquisition factors and means of improvement
[AD-A087848] N80-32095

SOHAR, E.
Tap water, an efficient method for cooling heatstroke victims - A model in dogs
A80-50122

SOKOLOVA, Z. A.
The influence of modulated sinusoidal current on the state of chromatin from neurons of the cerebral cortex of rats in hypokinesia
[NASA-TM-76160] N80-32056
The dynamics of certain indicators of nuclein metabolism during hypokinesia in rats of different ages under the influence of sinusoidal modulated currents and measured physical load
[NASA-TM-76162] N80-32058

SOLDATOV, A. D.
Restoration of physical performance capacity of athletes after prolonged restriction of their motor activity
[NASA-TM-76305] N80-32066

SOLDATOV, I. V.
Review of book-Ultrasound in Otorhinolaryngology
[NASA-TM-76349] N80-32076

SONOV, V. I.
Mass measurement under conditions of weightlessness
A80-47932
Device for mass measurement under zero-gravity conditions
A80-51000

STACEY, S. R.
Air-to-air target acquisition factors and means of improvement
[AD-A087848] N80-32095

STARIKOV, L. I.
Significance of the heart factor in manifestations of the initial insufficiency of cerebral blood circulation in pilots
A80-50331

STASZ, C.
The influence of visual-spatial ability and study procedures on map learning skill
[AD-A087247] N80-32089

STEPANOV, V. K.
The effects of water-salt stresses on orthostatic test endurance under conditions of hypoxia
A80-48611

STILLWELL, W.
Facilitated diffusion as a method for selective accumulation of materials from the primordial oceans by a lipid-vesicle protocell
A80-50710

STONE, L. W.
A human performance/workload evaluation of the AN/PVS-5 bifocal night vision goggles
A80-48093

STORM, W. F.
A review of USAFSAM studies employing multiple-tasks performance devices
[AD-A087272] N80-32091

STRIBLEY, R. F.
Thermal conditions in the cockpit of USAF aircraft: Inflight measurements from the A-7, A-10, F-4, F-15, and KC-10
[AD-A087273] N80-32104

STUPAKON, G. P.
Effects of factors of prolonged space flight on conditions of tortoise skeleton
[NASA-TM-76352] N80-32060

STUPAKOV, G. P.
Change of biomechanical properties of rat's bones produced by a 19-day spaceflight in the artificial satellite Cosmos-936
A80-47693

SU, C. M.
Late degeneration in rabbit tissues after irradiation by heavy ions
A80-50065

SUSLOV, E. I.
Changes in bone tissue under conditions of hypokinesia and in connection with age
[NASA-TM-76154] N80-32064

SUTHERLAND, H. C.
USAFSAM microprocessor audiometer: System reference manual
[AD-A087342] N80-32081

SYTNIK, K. M.
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions
A80-50074

Growth and cell structure of Proteus vulgaris when cultivated in weightlessness in the Cytos apparatus
A80-50076

T

TASAKI, I.
Introduction to electrochemistry of nerve membranes
[PB80-178908] N80-31036

THOMAS, R. N.
Incidence of complications from coronary angiography in 463 USAF aviators
A80-50131

THORNDYKE, P. W.
The influence of visual-spatial ability and study procedures on map learning skill
[AD-A087247] N80-32089

TIGRANIAN, R. A.
Physiological reactions during acute adaptation to reduced gravity
A80-50070

TIPPETT, R.
Pilot study on the value of a beta-blocking drug in initial helicopter training
A80-50130

TIPTON, C. M.
Femur-bending properties as influenced by gravity. IV - Limits after high and low weight-bearing
A80-50127

TJERNSTROM, O.
Effects of different body positions on the Eustachian tube function in the selection of airmen
A80-50128

TOLAN, G. D.
Incidence of complications from coronary angiography in 463 USAF aviators
A80-50131

TOMOTSUKA-OHTA, N.
Effect of polynucleotides and a basic protein on the condensation of phenylalanyl adenylate
A80-50711

TORIAN, J. G.
Advanced flight design systems subsystem performance models. Executive summary
[NASA-CR-160768] N80-31044

Advanced flight design systems subsystem performance models. User guide: Environmental analysis routine library
[NASA-CR-160769] N80-31045

Advanced flight design systems subsystem performance models. Sample model: Environmental analysis routine library
[NASA-CR-160770] N80-31046

TORNABENE, T. G.
Lipids as a principle for the identification of Archaebacteria
A80-50063

TOUPET, M.
A preliminary study of vestibular equilibrium in primates under space flight conditions
A80-50071

TOWILL, D. R.
Man-machine interaction in aerospace control systems
A80-50196

TRIEBWASSER, J. H.
Physical standards for high-performance fighter aircraft pilots
A80-50114

TRUBIN, V. V.
Physical exercises on a bicycle-ergometer and running track to prevent hypodynamia in workers of intellectual labor
[NASA-TM-76306] N80-32067

TWOREK, H. L.
USAFSAM microprocessor audiometer: System reference manual
[AD-A087342] N80-32081

U

UDASSIN, R.
Tap water, an efficient method for cooling heatstroke victims - A model in dogs
A80-50122

UGLANOVA, N. A.
Deformations of human skull produced by impact /experimental studies and modeling problems/. II - The dynamics of the skull base during impact loading of the vault
A80-47692

UHL, G. S.
Coincident loss of consciousness and ventricular tachycardia during +Gz stress
A80-48096

USHAKOV, V. F.
Changes in the system of external respiration /respiration mechanics/ during cold adaptation
A80-48615

UZHVA, V. P.
The effect of mountain conditions on work capacity and acclimatization times
A80-49020

V

VALKOVIC, V.
Is aluminum an essential element for life
A80-50712

VAN BEAUMONT, W.
Fluid-electrolyte shifts and thermoregulation - Rest and work in heat with head cooling
A80-48086

VASILYEVA, V. V.
Physical exercises on a bicycle-ergometer and running track to prevent hypodynamia in workers of intellectual labor
[NASA-TM-76306] N80-32067

VASLILYEVA, V. P.
Diagnosis of latent forms of labyrinthine affections
[NASA-TM-76338] N80-32074

VAULINA, E. N.
Biological studies of Chlorella pyrenoidosa /strain LARG-1/ cultures grown under space flight conditions
A80-50074
Development of higher fungi under weightlessness
A80-50075
VLASKINA, L. A.
Changes in alpha activity during decreases in human operator work capacity
A80-48612
VOGE, V. M.
Acceleration forces on the human subject
A80-50103
VOLOZHIN, A. I.
Change of biomechanical properties of rat's bones produced by a 19-day spaceflight in the artificial satellite Cosmos-936
A80-47693
Effects of factors of prolonged space flight on conditions of tortoise skeleton
[NASA-TM-76352] N80-32060
VOLYANSKIY, V. Y.
Certain features of the cochleovestibular syndrome in the residual stage of traumatic brain disease
[NASA-TM-76337] N80-32073

W

WALD, J.
Human operator interface with FLIR displays
[AD-A086284] N80-31041
WALKER, J. C. G.
The influence of life on the evolution of the atmosphere
A80-50061
WARD, F. E.
Detection of moving targets in peripheral vision
[AD-A082541] N80-32083
WASSERMAN, R. H.
Molecular mechanisms of the epithelial transport of toxic metal ions, particularly mercury, cadmium, lead, arsenic, zinc, and copper
[COO-2792-3] N80-32085
WEATHERSON, B.
The effect of alcohol on body heat loss
A80-50102
WEWERINKE, P. H.
Visual scene perception. Frequency domain data and model parameter estimation procedure
[NLR-MP-79009-U] N80-32097
WHINNERY, J. E.
Coincident loss of consciousness and ventricular tachycardia during +Gz stress
A80-48096
WICKENS, C. D.
An investigation of the dual task performance relationship to hemispheric specialization
[AD-A086808] N80-31042
WILEY, R. W.
A human performance/workload evaluation of the AN/PVS-5 bifocal night vision goggles
A80-48093
WILLIAMS, D. H.
Response time effects of alerting tone and semantic context for synthesized voice cockpit warnings
A80-48950
WILLIAMS, L. G.
Human operator interface with FLIR displays
[AD-A086284] N80-31041
WINBURN, D. C.
Laser protective eyewear program at the Los Alamos Scientific Laboratory
[LA-UR-80-1038] N80-31049
WINKLER, E. R.
F/A-18 foot strikes - An update
A80-50222
WIRTH, J.
Myocardial ischemia and its risk factors
A80-47783
WOLCOTT, J. H.
Role of radiology in aviation accident investigation
A80-50107
Summary of the means used to positively identify the American victims in the Canary Islands crash
A80-50111
WRANNE, B.
Hemodynamic effects of extreme positive pressure breathing using a two-pressure flying suit
A80-50119
WUNDER, C. C.
Femur-bending properties as influenced by gravity. IV - Limits after high and low weight-bearing
A80-50127

Y

YAGODOVSKIY, V. S.
Effects of factors of prolonged space flight on conditions of tortoise skeleton
[NASA-TM-76352] N80-32060

Z

ZARGARYAN, B. M.
Technique of electrical stimulation of the vestibular analyzer under clinical conditions
[NASA-TM-76347] N80-32075
ZASYPKIN, V. V.
Change of biomechanical properties of rat's bones produced by a 19-day spaceflight in the artificial satellite Cosmos-936
A80-47693
ZHARIKOVA, G. G.
Development of higher fungi under weightlessness
A80-50075
ZLATORUNSKII, A.
Device for mass measurement under zero-gravity conditions
A80-51000
ZLATORUNSKII, A. A.
Mass measurement under conditions of weightlessness
A80-47932
ZORYA, L. V.
Changes in gas exchange, tissue respiration and glycolysis in rats during hypokinesia
[NASA-TM-76149] N80-32055

1. Report No.
NASA SP-7011(213)

2. Government Accession No.

3. Recipient's Catalog No.

4. Title and Subtitle
AEROSPACE MEDICINE AND BIOLOGY
A Continuing Bibliography (Supplement 213)

5. Report Date
December 1980

6. Performing Organization Code

7. Author(s)

8. Performing Organization Report No.

9. Performing Organization Name and Address
National Aeronautics and Space Administration
Washington, D. C. 20546

10. Work Unit No.

11. Contract or Grant No.

12. Sponsoring Agency Name and Address

13. Type of Report and Period Covered

14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This bibliography lists 180 reports, articles, and other documents introduced into the NASA scientific and technical information system in November 1980.

17. Key Words (Suggested by Author(s))
Aerospace Medicine
Bibliographies
Biological Effects

18. Distribution Statement
Unclassified - Unlimited

19. Security Classif. (of this report)
Unclassified

20. Security Classif. (of this page)
Unclassified

21. No. of Pages
68

22. Price*
$7.00

*For sale by the National Technical Information Service, Springfield, Virginia 22161

best copy available

NASA-Langley, 1980

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to eleven special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley
COLORADO
University of Colorado, Boulder
DISTRICT OF COLUMBIA
Library of Congress
GEORGIA
Georgia Institute of Technology, Atlanta
ILLINOIS
The John Crerar Library, Chicago
MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge
MISSOURI
Linda Hall Library, Kansas City
NEW YORK
Columbia University, New York
OKLAHOMA
University of Oklahoma, Bizzell Library
PENNSYLVANIA
Carnegie Library of Pittsburgh
WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library
COLORADO
Denver Public Library
CONNECTICUT
Hartford Public Library
MARYLAND
Enoch Pratt Free Library, Baltimore
MASSACHUSETTS
Boston Public Library
MICHIGAN
Detroit Public Library
MINNESOTA
Minneapolis Public Library
MISSOURI
Kansas City Public Library
St. Louis Public Library
NEW JERSEY
Trenton Public Library
NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library
OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library
TENNESSEE
Memphis Public Library
TEXAS
Dallas Public Library
Fort Worth Public Library
WASHINGTON
Seattle Public Library
WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019.

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy of microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESA - Information Retrieval Service, European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

U.S.MAIL

0

NASA

POSTMASTER: If Undeliverable (Section 158
Postal Manual) Do Not Return

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP-7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP-7037	AERONAUTICAL ENGINEERING Engineering, design, and operation of aircraft and aircraft components	Monthly
NASA SP-7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP-7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP-7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP-7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C. 20546

NAS1.21:7011(219)

NASA

Aerospace Medicine
and Biology
A Continuing
Bibliography
with Indexes

NASA SP-7011(219)
May 1981

ORIGINAL

COMPLETED
53

National Aeronautics and
Space Administration

Aerospace Medicine & Biolog
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi
ine & Biology Aerospace Medi
ce Medicine & Biology Aerospa
Aerospace Medicine & Biology
& Biology Aerospace Medicine
edicine & Biology Aerospace
space Medicine & Biology Aer
logy Aerospace Medicine & Bi

NASA SP-7011(219)
Aerospace Medicine and Biology

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges.

STAR (N-10000 Series)	N81-15968 – N81-17980
IAA (A-10000 Series)	A81-19673 – A81-23368

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by PRC Data Services Company.

NASA SP-7011(219)

AEROSPACE MEDICINE AND BIOLOGY

A CONTINUING BIBLIOGRAPHY WITH INDEXES

(Supplement 219)

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in April 1981 in

- *Scientific and Technical Aerospace Reports (STAR)*
- *International Aerospace Abstracts (IAA)*

NASA Scientific and Technical Information Branch 1981
National Aeronautics and Space Administration
Washington, DC

I

NASA SP-7011 and its supplements are available from the National Technical Information Service (NTIS). Questions on the availability of the predecessor publications, Aerospace Medicine and Biology (Volumes I - XI) should be directed to NTIS.

This supplement is available as NTISUB/123/093 from the National Technical Information Service (NTIS), Springfield, Virginia 22161 at the price of $7.00 domestic; $14.00 foreign.

BEST DOCUMENT AVAILABLE

II

INTRODUCTION

This Supplement to *Aerospace Medicine and Biology* (NASA SP-7011) lists 118 reports, articles and other documents announced during April 1981 in *Scientific and Technical Aerospace Reports (STAR)* or in *International Aerospace Abstracts (IAA)*. The first issue of the bibliography was published in July 1964; since that time, monthly supplements have been issued.

In its subject coverage, *Aerospace Medicine and Biology* concentrates on the biological, physiological, psychological, and environmental effects to which man is subjected during and following simulated or actual flight in the earth's atmosphere or in interplanetary space. References describing similar effects of biological organisms of lower order are also included. Such related topics as sanitary problems, pharmacology, toxicology, safety and survival, life support systems, exobiology, and personnel factors receive appropriate attention. In general, emphasis is placed on applied research, but references to fundamental studies and theoretical principles related to experimental development also qualify for inclusion.

Each entry in the bibliography consists of a bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections: *IAA Entries* and *STAR Entries*, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in *IAA* or *STAR*, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Two indexes -- subject and personal author -- are included.

An annual index will be prepared at the end of the calendar year covering all documents listed in the 1981 Supplements.

BEST DOCUMENT AVAILABLE

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A81-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc. (AIAA) as follows: Paper copies of accessions are available at $7.00 per document up to a maximum of 40 pages. The charge for each additional page is $0.25. Microfiche[1] of documents announced in *IAA* are available at the rate of $3.00 per microfiche on demand, and at the rate of $1.25 per microfiche for standing orders for all *IAA* microfiche. The price for the *IAA* microfiche by category is available at the rate of $1.50 per microfiche plus a $1.00 service charge per category per issue. Microfiche of all the current AIAA Meeting Papers are available on a standing order basis at the rate of $1.50 per microfiche.

Minimum air-mail postage to foreign countries is $1.00 and all foreign orders are shipped on payment of pro-forma invoices.

All inquiries and requests should be addressed to AIAA Technical Information Service. Please refer to the accession number when requesting publications.

STAR ENTRIES (N81-10000 Series)

One or more sources from which a document announced in *STAR* is available to the public is ordinarily given on the last line of the citation. The most commonly indicated sources and their acronyms or abbreviations are listed below. If the publication is available from a source other than those listed, the publisher and his address will be displayed on the availability line or in combination with the corporate source line.

Avail: NTIS. Sold by the National Technical Information Service. Prices for hard copy (HC) and microfiche (MF) are indicated by a price code followed by the letters HC or MF in the *STAR* citation. Current values for the price codes are given in the tables on page vii.

Documents on microfiche are designated by a pound sign (#) following the accession number. The pound sign is used without regard to the source or quality of the microfiche.

Initially distributed microfiche under the NTIS SRIM (Selected Research in Microfiche) is available at greatly reduced unit prices. For this service and for information concerning subscription to NASA printed reports, consult the NTIS Subscription Section, Springfield, Va. 22161.

NOTE ON ORDERING DOCUMENTS: When ordering NASA publications (those followed by the * symbol), use the N accession number. NASA patent applications (only the specifications are offered) should be ordered by the US-Patent-Appl-SN number. Non-NASA publications (no asterisk) should be ordered by the AD, PB, or other *report* number shown on the last line of the citation, not by the N accession number. It is also advisable to cite the title and other bibliographic identification.

Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The current price and order number are given following the availability line. (NTIS will fill microfiche requests, at the standard $3.50 price, for those documents identified by a # symbol.)

---

[1] A microfiche is a transparent sheet of film, 105 by 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 26:1 reduction).

BEST DOCUMENT AVAILABLE

Avail NASA Public Document Rooms Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the NASA Space Technology Laboratories, and the NASA Pasadena Office at the Jet Propulsion Laboratory

Avail DOE Depository Libraries Organizations in U.S. cities and abroad that maintain collections of Department of Energy reports, usually in microfiche form, are listed in *Energy Research Abstracts* Services available from the DOE and its depositories are described in a booklet, *DOE Technical Information Center - Its Functions and Services* (TID-4660), which may be obtained without charge from the DOE Technical Information Center

Avail Univ Microfilms Documents so indicated are dissertations selected from *Dissertation Abstracts* and are sold by University Microfilms as xerographic copy (HC) and microfilm. All requests should cite the author and the Order Number as they appear in the citation

Avail USGS Originals of many reports from the U.S. Geological Survey, which may contain color illustrations, or otherwise may not have the quality of illustrations preserved in the microfiche or facsimile reproduction, may be examined by the public at the libraries of the USGS field offices whose addresses are listed in this introduction The libraries may be queried concerning the availability of specific documents and the possible utilization of local copying services, such as color reproduction

Avail HMSO Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc. (PHI), Redwood City, California The U.S. price (including a service and mailing charge) is given, or a conversion table may be obtained from PHI

Avail BLL (formerly NLL) British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England Photocopies available from this organization at the price shown (If none is given, inquiry should be addressed to the BLL.)

Avail Fachinformationszentrum Karlsruhe Sold by the Fachinformationszentrum Energie, Physik, Mathematik GMBH, Eggenstein Leopoldshafen, Federal Republic of Germany, at the price shown in deutschmarks (DM)

Avail Issuing Activity, or Corporate Author, or no indication of availability Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document

Avail U.S. Patent and Trademark Office Sold by Commissioner of Patents and Trademarks, U.S. Patent and Trademark Office, at the standard price of 50 cents each, postage free

Other availabilities If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is $65.00 domestic; $130.00 foreign. All questions relating to the subscriptions should be referred to NTIS.

BEST DOCUMENT AVAILABLE

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics
and Astronautics
Technical Information Service
555 West 57th Street, 12th Floor
New York, New York 10019

British Library Lending Division,
Boston Spa, Wetherby, Yorkshire,
England

Commissioner of Patents and
Trademarks
U.S. Patent and Trademark Office
Washington, D.C. 20231

Department of Energy
Technical Information Center
P.O. Box 62
Oak Ridge, Tennessee 37830

ESA-Information Retrieval Service
ESRIN
Via Galileo Galilei
00044 Frascati (Rome) Italy

Fachinformationszentrum Energie, Physik,
Mathematik GMBH
7514 Eggenstein Leopoldshafen
Federal Republic of Germany

Her Majesty's Stationery Office
P.O. Box 569, S.E. 1
London, England

NASA Scientific and Technical Information
Facility
P.O. Box 8757
B. W. I. Airport, Maryland 21240

National Aeronautics and Space
Administration
Scientific and Technical Information
Branch (NST-41)
Washington, D.C. 20546

National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

Pendragon House, Inc.
899 Broadway Avenue
Redwood City, California 94063

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

University Microfilms
A Xerox Company
300 North Zeeb Road
Ann Arbor, Michigan 48106

University Microfilms, Ltd.
Tylers Green
London, England

U.S. Geological Survey
1033 General Services Administration
Building
Washington, D.C. 20242

U.S. Geological Survey
601 E. Cedar Avenue
Flagstaff, Arizona 86002

U.S. Geological Survey
345 Middlefield Road
Menlo Park, California 94025

U.S. Geological Survey
Bldg. 25, Denver Federal Center
Denver, Colorado 80225

BEST DOCUMENT AVAILABLE

NTIS PRICE SCHEDULES

Schedule A

STANDARD PAPER COPY PRICE SCHEDULE

(Effective January 1, 1981)

Price Code	Page Range	North American Price	Foreign Price
A01	Microfiche	$ 3.50	$ 7.00
A02	001-025	5.00	10.00
A03	026-050	6.50	13.00
A04	051-075	8.00	16.00
A05	076-100	9.50	19.00
A06	101-125	11.00	22.00
A07	126-150	12.50	25.00
A08	151-175	14.00	28.00
A09	176-200	15.50	31.00
A10	201-225	17.00	34.00
A11	226-250	18.50	37.00
A12	251-275	20.00	40.00
A13	276-300	21.50	43.00
A14	301-325	23.00	46.00
A15	326-350	24.50	49.00
A16	351-375	26.00	52.00
A17	376-400	27.50	55.00
A18	401-425	29.00	58.00
A19	426-450	30.50	61.00
A20	451-475	32.00	64.00
A21	476-500	33.50	67.00
A22	501-525	35.00	70.00
A23	526-550	36.50	73.00
A24	551-575	38.00	76.00
A25	576-600	39.50	79.00
	601-up	1/	2/

A99 Write for quote

1/ Add $1.50 for each additional 25 page increment or portion thereof for 601 pages up

2/ Add $3.00 for each additional 25 page increment or portion thereof for 601 pages and more

Schedule E

EXCEPTION PRICE SCHEDULE

Paper Copy & Microfiche

Price Code	North American Price	Foreign Price
E01	$ 5.50	$ 11.50
E02	6.50	13.50
E03	8.50	17.50
E04	10.50	21.50
E05	12.50	25.50
E06	14.50	29.50
E07	16.50	33.50
E08	18.50	37.50
E09	20.50	41.50
E10	22.50	45.50
E11	24.50	49.50
E12	27.50	55.50
E13	30.50	61.50
E14	33.50	67.50
E15	36.50	73.50
E16	39.50	79.50
E17	42.50	85.50
E18	45.50	91.50
E19	50.50	100.50
E20	60.50	121.50
E99 Write for quote		
N01	28.00	40.00

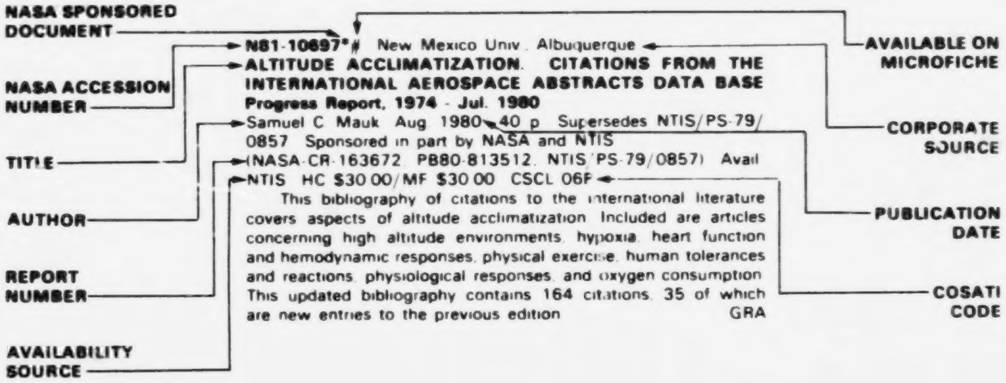
BEST DOCUMENT AVAILABLE

TABLE OF CONTENTS

Page
IAA ENTRIES (A81-10000) 63
STAR ENTRIES (N81-10000) 73

Subject Index I-1
Personal Author Index I-17

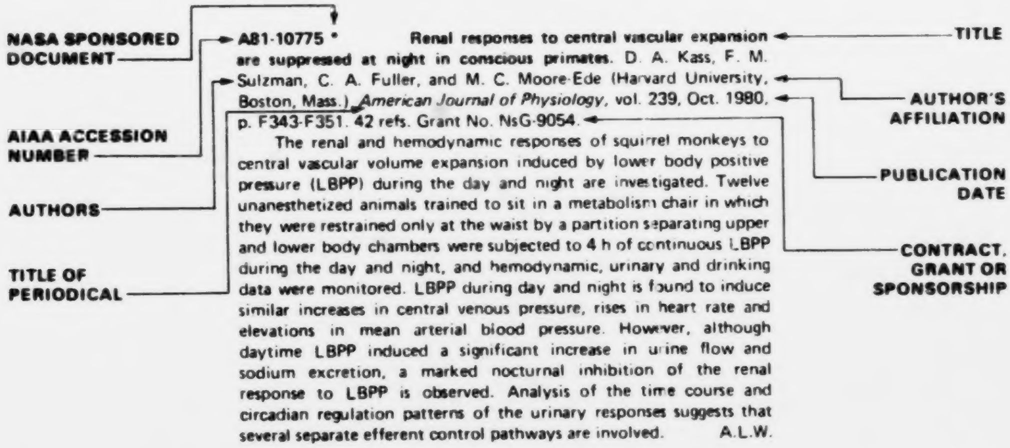
TYPICAL CITATION AND ABSTRACT FROM *STAR*


NASA SPONSORED DOCUMENT
NASA ACCESSION NUMBER
TITLE
AUTHOR
REPORT NUMBER
AVAILABILITY SOURCE
AVAILABLE ON MICROFICHE
CORPORATE SOURCE
PUBLICATION DATE
COSATI CODE

N81-10697*# New Mexico Univ , Albuquerque
ALTITUDE ACCLIMATIZATION. CITATIONS FROM THE INTERNATIONAL AEROSPACE ABSTRACTS DATA BASE Progress Report, 1974 - Jul. 1980
Samuel C Mauk Aug 1980 40 p Supersedes NTIS/PS-79/0857 Sponsored in part by NASA and NTIS
(NASA-CR-163672 PB80-813512 NTIS/PS-79/0857) Avail NTIS HC $30 00/MF $30 00 CSCL 06P

This bibliography of citations to the international literature covers aspects of altitude acclimatization Included are articles concerning high altitude environments, hypoxia, heart function and hemodynamic responses, physical exercise, human tolerances and reactions, physiological responses, and oxygen consumption This updated bibliography contains 164 citations, 35 of which are new entries to the previous edition GRA

TYPICAL CITATION AND ABSTRACT FROM *IAA*


NASA SPONSORED DOCUMENT
AIAA ACCESSION NUMBER
AUTHORS
TITLE OF PERIODICAL
TITLE
AUTHOR'S AFFILIATION
PUBLICATION DATE
CONTRACT, GRANT OR SPONSORSHIP

A81-10775 * **Renal responses to central vascular expansion are suppressed at night in conscious primates.** D. A. Kass, F. M. Sulzman, C. A. Fuller, and M. C. Moore-Ede (Harvard University, Boston, Mass.) *American Journal of Physiology*, vol. 239, Oct. 1980, p. F343-F351. 42 refs. Grant No. NsG-9054.

The renal and hemodynamic responses of squirrel monkeys to central vascular volume expansion induced by lower body positive pressure (LBPP) during the day and night are investigated. Twelve unanesthetized animals trained to sit in a metabolism chair in which they were restrained only at the waist by a partition separating upper and lower body chambers were subjected to 4 h of continuous LBPP during the day and night, and hemodynamic, urinary and drinking data were monitored. LBPP during day and night is found to induce similar increases in central venous pressure, rises in heart rate and elevations in mean arterial blood pressure. However, although daytime LBPP induced a significant increase in urine flow and sodium excretion, a marked nocturnal inhibition of the renal response to LBPP is observed. Analysis of the time course and circadian regulation patterns of the urinary responses suggests that several separate efferent control pathways are involved. A.L.W.

BEST DOCUMENT AVAILABLE

AEROSPACE MEDICINE AND BIOLOGY

A Continuing Bibliography (Suppl. 219)

MAY 1981

IAA ENTRIES

A81-19678 # **Heliobiological research - Present status and prospects (Geliobiologicheskie issledovaniia - Sovremennoe sostoianie i perspektivy).** V. N. Benevolenskii and A. D. Voskresenskii. *Akademiia Nauk SSSR, Vestnik*, no. 10, 1980, p. 54-64. 13 refs. In Russian.

The state of knowledge on the relationships in the system 'sun-biosphere' is reviewed with reference to statistics on disease incidence and rate of mortality from suicides, noninfectious diseases, and road accidents correlated with aperiodic (magnetic storms) and periodic solar events. Consideration is given to the mechanisms of biological effects of heliophysical factors and specific reactions of living organisms to external influences related to solar activity. V.L.

A81-19711 **Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979.** Edited by J. H. K. Vogel (Goleta Valley Community Hospital, Santa Barbara, Calif.). Basel, S. Karger AG (Advances in Cardiology. Volume 27), 1980. 367 p. $118.75.

Papers are presented concerning the current status of clinical cardiology in the areas of high-altitude effects, noninvasive cardiographic techniques, coronary artery disease, pediatric heart disease, valvular heart disease and the management of cardiological disorders. Specific topics include the clinical treatment of acute mountain sickness, methodologies and applications of two-dimensional echocardiography, the status of radionuclide imaging in the evaluation of patients with cardiovascular disease, the applicability of electrocardiographic stress testing in the detection of coronary artery disease, means for infarct size reduction and the detection and management of asymptomatic patients with coronary artery disease. Attention is also given to the state of open heart surgery in the first year of life, the status of valvular xenograft and valvular xenobioprosthesis, the implications and treatment of premature ventricular complexes, and the role of biochemical factors in ventricular dysrhythmia accompanying ischemia. A.L.W.

A81-19712 **Speculations on the pathogenesis of high-altitude pulmonary edema.** R. F. Grover (Colorado, University, Denver, Colo.). In: Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979. Basel, S. Karger AG, 1980, p. 1-5. 9 refs. Grant No. NIH-14985.

Possible mechanisms for the onset of high-altitude pulmonary edema upon the extended exposure of certain healthy, fit individuals to hypoxia at altitudes above 9000 ft are considered. Evidence is presented which indicates that pulmonary hypertension is a major cause of the pulmonary edema, and possible sources of the obstruction to pulmonary blood flow are discussed, including the constriction of small muscular pulmonary arteries, the mechanical plugging of vessels by platelet clumps or thrombi, and endothelial swelling due to exercise at high altitude. On the basis of these considerations, it is postulated that the individual susceptible to high-altitude pulmonary edema is characterized by a poor hyperventilatory response to high altitude, possibly related to an inherently small hypoxic ventilatory response. A.L.W.

A81-19713 **Acute mountain sickness - The clinical approach.** P. H. Hackett (Colorado, University, Medical Center, Denver, Colo.). In: Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979. Basel, S. Karger AG, 1980, p. 6-10. 7 refs.

The clinical evaluation and management of acute mountain sickness are discussed. It is pointed out that although the only definitive therapy for acute mountain sickness is descent, it may not be necessary or possible in certain cases, and a scheme for the management of acute mountain sickness is presented based on the severity of the symptoms. Effective treatments are indicated for high-altitude headache (the first sign of mountain sickness), mild acute mountain sickness, which is characterized by any combination of headache, nausea or lack of appetite, insomnia and lassitude, and serious acute mountain sickness, which is characterized by additional symptoms including vomiting, severe headache, ataxia and severe shortness of breath. Treatment to be performed prior to and during descent in cases of high-altitude pulmonary edema and cerebral edema are also pointed out. It is noted that persons having recovered from acute mountain sickness can usually reascend, as long as it is done slowly and cautiously, and with proper prophylactic measures. A.L.W.

A81-19714 **Two-dimensional echocardiography - Methodology and application in clinical cardiology.** R. P. Martin (Virginia, University, Charlottesville, Va.). In: Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979. Basel, S. Karger AG, 1980, p. 17-39. 14 refs.

The clinical application of two-dimensional echocardiography as a diagnostic tool is discussed. The development of wide-angle real-time systems which could produce tomographic sections or images of the heart in a dynamic format is reviewed, and the various types of electrical and mechanical real-time sector scanners are presented, including linear and phased arrays, and single and multiple transducers. The views affordable by two-dimensional echocardiography are then examined, with attention given to the advantages and means of obtaining the parasternal long-axis view, the parasternal short-axis views, the apical long-axis view, the apical short-axis view and the subxyphoid views. Means of applying two-dimensional echocardiography in the evaluation of left ventricular function and coronary artery disease, myopathies, valvular abnormalities and pericardial abnormalities are discussed, and limitations to the current state of the art are pointed out. A.L.W.

A81-19715 **Echocardiographic studies evaluating the effects of exercise training on the heart.** V. F. Froelicher (University Hospital, San Diego, Calif.). In: Current concepts in clinical

BEST DOCUMENT AVAILABLE

cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979.
Basel, S. Karger AG, 1980, p. 51-57. 10 refs. Grant No. NIH-HL-17682.

A81-19716 **Electrocardiographic stress testing - The debate goes on /probably/.** J. S. Forrester (Cedars-Sinai Medical Center, Los Angeles, Calif.) and G. A. Diamond (California, University, Los Angeles, Calif.). In: Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979. Basel, S. Karger AG, 1980, p. 83-92. 18 refs.

Various approaches to the interpretation of the results of electrocardiographic stress testing are evaluated in light of the current controversy over the diagnostic value of the stress test. Consideration is given to the values and limitations of the categorical approach, whereby the stress test is categorized as positive or negative based on the ST segment response alone, the judgemental approach, which includes the judgement of an experienced clinician, the ordinal approach, which assigns arbitrary weightings to judgemental factors, the multivariate approach, in which each clinical modifier is mathematically weighted, and the probabilistic approach, which determines the probability of coronary artery disease in a patient on the basis of Bayes' theorem. It is suggested that due to the strengths and weaknesses of all the approaches examined, a combination of techniques, specifically initial probabilistic analysis modified by judgemental interpretation, may represent the optimum synthesis of the most desirable aspects of the various methods of electrocardiographic stress test interpretation. A.L.W.

A81-19717 **Detection and management of the asymptomatic patient with coronary artery disease.** C. R. Conti (Florida, University, Gainesville, Fla.). In: Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979.
Basel, S. Karger AG, 1980, p. 181-190. 9 refs.

Methods for the detection and management of coronary artery disease in patients lacking coronary symptoms are discussed. Results of a study illustrating the inconsistency of symptoms in patients with transient electrocardiographic evidence of myocardial ischemia are indicated, and a case history demonstrating the problems of interpreting a positive exercise stress test in an asymptomatic individual is presented. Experimental confirmations performed by means of exercise thallium perfusion and exercise isotope angiography of coronary artery disease in asymptomatic patients are pointed out, as well as the confirmation by angiography of coronary artery disease in 10 out of a sample of 17 asymptomatic patients with a positive stress test. Guidelines are presented for the systematic evaluation of asymptomatic individuals who present with a positive exercise stress test, and an approach is suggested to the management of patients who have not exhibited pain during exercise-induced S-T segment depression and who have undergone coronary angiography. A.L.W.

A81-19718 **Does exercise protect from coronary artery disease.** V. F. Froelicher (University Hospital, San Diego, Calif.). In: Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979. Basel, S. Karger AG, 1980, p. 237-242. Grant No. NIH-HL-17682.

Results of recent epidemiological studies of the relation of physical activity levels to the incidence of coronary artery disease are presented in an attempt to evaluate the relative contributions of physical activity per se and selection for physical activity to the observed lower incidence of the disease in physically active populations. Consideration is given to the longitudinal studies of longshoremen and college alumni with different levels of energy output reported by Paffenbarger et al. (1978). The studies are shown to support the protective rather than the selective effects of physical exercise, which is found to most likely decrease the risk for coronary heart disease as well as other risk factors for coronary disease. A.L.W.

A81-19719 **Premature ventricular complexes - Therapeutic dilemmas and decisions.** D. W. Snyder, D. J. Sheridan, and B. E. Sobel (Washington University, St. Louis, Mo.). In: Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979.
Basel, S. Karger AG, 1980, p. 322-342. 80 refs. Grant No. NIH-HL-17646.

The diagnosis, incidence and treatment of ventricular ectopic activity (VEA) are discussed. The diagnostic features of typical premature ventricular complexes (PVCs) are indicated, and the Lown classification of PVC severity on the basis of frequency, electrocardiographic morphology and timing is introduced. The incidence of VEA in the pre-hospital, early hospital, late hospital and convalescent phases of acute myocardial infarction, in ambulatory patients with stable coronary artery disease and in ostensibly normal subjects is examined, and it is pointed out that adult subjects with high-grade VEA have an increased risk of sudden death, most likely reflecting a predisposition to ventricular fibrillation. Approaches to the pharmocological, electrical and surgical management of VEA are considered, indications for treatment are discussed, and it is argued that low-grade VEA does not require treatment in ambulatory patients without specific indications. A.L.W.

A81-19720 **The role of biochemical factors in ventricular dysrhythmia accompanying ischemia.** P. B. Corr and B. E. Sobel (Washington University, St. Louis, Mo.). In: Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979.
Basel, S. Karger AG, 1980, p. 346-360. 50 refs. Grants No. NIH-NL-17646; No. NIH-HL-21654.

The role of biochemical factors in precipitating the electrophysiological changes characterizing malignant ventricular dysrhythmia which accompany ischemia is discussed. The nature of the electrophysiological changes observed in vitro and in vivo in heart tissue after ischemia is considered, and the possible roles of slow-response action potentials in dysrhythmias early after the onset of ischemia and of reperfusion are pointed out. The effects of metabolic and biochemical factors, including hypoxia, lactate, pH and mono- and divalent cation concentrations, on ventricular electrophysiology are then examined, together with the possible influence of the autonomic nervous system, cyclic AMP accumulation, free fatty acids and fatty acid esters and lysophosphoglycerides. It is concluded that regional, heterogeneous accumulations of noxious ions and metabolites as well as hypoxia play a significant role in mediating the effects of ischemia on ventricular function, and that elucidation of the biochemical mechanisms responsible is of particular importance to the development of therapeutic interventions of high specificity. A.L.W.

A81-19841 **A hierarchical programming approach to robot assembly.** D. S. Seltzer. In: Advanced manufacturing technology: Programming research and operations logistics; Proceedings of the Fourth International Conference, Ann Arbor, Mich., May 21-23, 1979. Amsterdam, North-Holland Publishing Co., 1980, p. 237-246. 11 refs.

A software control system was developed for industrial assemblies by a multiaxis manipulator which partitions the programming tasks into a four level programmer hierarchy. This allows the operation of a sophisticated software system by floor personnel without programming experience. The first level of the hierarchy is the Systems Programmer responsible for the framework of the run-time system; a Strategy Programmer writes a library of general Fortran strategy routines; a Task Sequence Programmer uses this library in solving particular tasks; and finally, the Shop Floor Programmer/Operator provides the real world positioning information using the manipulator arm as a surveying instrument. A.T.

BEST DOCUMENT AVAILABLE

A81-19842 **Partly unmanned machining.** O. Bjorke and A. Rolstadas. In: Advanced manufacturing technology: Programming research and operations logistics; Proceedings of the Fourth International Conference, Ann Arbor, Mich., May 21-23, 1979. Amsterdam, North-Holland Publishing Co., 1980, p. 271-284. 6 refs.

A manufacturing system design using the building block principle so that it is constructed of conventional parts permitting evolutionary development is discussed. Motion, state survey, and diagnostic functions can be included in a system which is implemented as a hierarchy consisting of the machine tool, the cell, and the total factory. The control system can be divided into management, technology, direct equipment, and diagnosis control portions. A.T.

A81-19900 # **Dynamics of the state of redox systems in structural elements of the cerebral cortex during oxygen deficiency /cytophotometric study in vivo/ (Dinamika sostoianiia redoks-sistem strukturnykh elementov kory mozga pri kislorodnom golodanii /prizhiznennoe tsitofotometricheskoe issledovanie/).** M. O. Samoilov, D. G. Semenov, and A. N. Derii (Akademiia Nauk SSSR, Institut Fiziologii, Leningrad, USSR). *Akademiia Nauk SSSR, Doklady*, vol. 255, no. 3, 1980, p. 766-768. 11 refs. In Russian.

Quantitative studies were used to determine redox system dynamics in various types of pyramidal neurons and in adjacent areas of the sensomotor region in the cerebral cortex of cats and rabbits. In vivo measurements of nearby oxygen tension and spectrophotometric recordings of oxidized forms of staining solutions were employed to study effects of hypoxia levels. Factors responsible for disturbances of redox processes on the cellular level are discussed. T.M.

A81-20052 # **Effects of internal noise on helicopter operation - An aircrew view.** J. E. Maitland (RAF, London, England). In: Symposium on Internal Noise in Helicopters, Southampton, England, July 17-20, 1979, Proceedings. Southampton, England, University of Southampton, 1980, p. A1 1, A1 2.

Various factors bearing on internal helicopter noise are discussed in the context of effective helicopter operation. Light structures, such as honeycomb, are necessary to ensure structural integrity under battle conditions, even though such structures may increase internal noise levels owing to their resonance. It is also noted that quilted insulating materials add to the weight and pose a fire hazard when saturated with oil or hydraulic fluid. Noise can even be useful; changes in pitch or intensity may warn of such faults as fluctuations in rotor RPM or trouble in an ancillary drive. On the other hand, noise interferes with communication between crew members. It also induces fatigue and makes direct-voice rebriefing of troops being transported by helicopter difficult. Noise may also raise the stress experienced by a rescued person. Improvements must therefore be made only when all operational needs are considered. C.R.

A81-20056 # **The effective acoustic environment of helicopter crewman.** R. T. Camp, Jr. (U.S. Army, Aeromedical Research Laboratory, Fort Rucker, Ala.). In: Symposium on Internal Noise in Helicopters, Southampton, England, July 17-20, 1979, Proceedings. Southampton, England, University of Southampton, 1980, p. B1 1-B1 4.

One of the primary reasons for quantification of the acoustic noise in helicopters is to assess the acoustic hazards to the crew and passengers. The usual sound-level meter or dosimeter measures of the internal and external noise levels do not yield a good estimate of the actual or 'effective acoustic environment' of the crew and passengers. Realistic estimates of the effective acoustic environments require the application of reliable narrow-band analyses of the noise from all sources including the system noise of electronic communication systems, the spectra of which must be corrected for its attenuation characteristics of helmets and hearing protectors. The problems of ascertaining the composite acoustic stimuli and the application of corrections for other variables that affect the effective acoustic environment are included in this presentation. (Author)

A81-20057 * # **Acceptance and control of aircraft interior noise and vibration.** D. G. Stephens and J. D. Leatherwood (NASA, Langley Research Center, Hampton, Va.). In: Symposium on Internal Noise in Helicopters, Southampton, England, July 17-20, 1979, Proceedings. Southampton, England, University of Southampton, 1980, p. B2 1-B2 14. 22 refs.

Ride quality criteria for noise, vibration, and their combination in the helicopter cabin environment are discussed. Results are presented of laboratory and field studies of passenger responses to interior noise and vibration during the performance of a listening task and during reverie, as well as to the interaction of noise with multi-frequency and multi-axis vibration. A study of means for reducing helicopter interior noise based on analytical, experimental and flight studies of the near-field noise source characteristics of the aircraft, the transmission of noise through aircraft structures and the attenuation of ~~noise by~~ various noise control treatments is then presented which has resulted in a reduction of 3 dB in helicopter cabin noise. Finally, a model under development to evaluate passenger acceptance of a helicopter noise and vibration environment is indicated which incorporates the observed noise and vibration effects on comfort and is expected to provide insights for more effective noise and vibration control. A.L.W.

A81-20059 **Factors affecting acceptable noise levels in helicopters.** K. R. Maslen (Royal Aircraft Establishment, Human Engineering Div., Farnborough, Hants., England). In: Symposium on Internal Noise in Helicopters, Southampton, England, July 17-20, 1979, Proceedings. Southampton, England, University of Southampton, 1980, p. B4 1-B4 9. 14 refs.

Difficulties encountered in defining acceptable noise levels inside helicopters are discussed. Since the bulk of helicopter noise is of low frequency and contains narrow bands of high sound pressure levels, there is a danger of indirect masking of speech and other signals. The low-frequency noise and infrasound, especially when combined with vibration, may have disturbing subjective effects, and isolated noise peaks may cause annoyance. It is thought that the danger of incurring permanent hearing loss in helicopter noise will differ from that in fixed-wing aircraft for the same A-weighted levels at the ear. C.R.

A81-20467 * **Human factors by descent energy management.** R. E. Curry (NASA, Ames Research Center, Aviation Safety Research Office, Moffett Field, Calif.). In: Conference on Decision and Control, and Symposium on Adaptive Processes, 18th, Fort Lauderdale, Fla., December 12-14, 1979, Proceedings. Volume 1. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 422-426. 5 refs.

This paper describes some of the results of a human factors study of energy management during descent using standard aircraft displays. Discussions with pilots highlighted the practical constraints involved and the techniques (algorithms) used to accomplish the descent. The advantages and disadvantages of these algorithms are examined with respect to workload and their sensitivity to disturbances. Vertical navigation and flight performance computers are discussed in terms of the information needed for effective pilot monitoring and takeover. (Author)

A81-20499 * **Mental workload in decision and control.** T. B. Sheridan (MIT, Cambridge, Mass.). In: Conference on Decision and Control, and Symposium on Adaptive Processes, 18th, Fort Lauderdale, Fla., December 12-14, 1979, Proceedings. Volume 2. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 977-982. 21 refs. U.S. Department of Transportation Contract No. OS-70055; Grant No. NsG-2118.

This paper briefly reviews the problems of defining and measuring the 'mental workload' of aircraft pilots and other human operators of complex dynamic systems. Of the alternative approaches the author indicates a clear preference for the use of subjective scaling. Some recent experiments from MIT and elsewhere

BEST DOCUMENT AVAILABLE

are described which utilize subjective mental workload scales in conjunction with human decision and control tasks in the laboratory. Finally a new three-dimensional mental workload rating scale, under current development for use by IFR aircraft pilots, is presented. (Author)

A81-20500 **Frequency domain measures of human performance under G-stress.** J. Korn, D. L. Kleinman (Connecticut, University, Storrs, Conn.), and D. W. Repperger (USAF, Aerospace Medical Research Laboratories, Wright-Patterson AFB, Ohio). In: Conference on Decision and Control, and Symposium on Adaptive Processes, 18th, Fort Lauderdale, Fla., December 12-14, 1979, Proceedings. Volume 2. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 983-988. 13 refs. Contract No. F33615-78-C-0517.

Results of compensatory tracking experiments under G-stress are presented which confirm the hypothesis that human performance deteriorates under linear acceleration. The optimal control model (OCM) validates the experimental data. It is shown that the OCM parameters which are most affected include the motor noise, observation noise, neuromotor time constant, and reaction time-delay, all of which significantly increase under G-stress. In addition, some accumulative G-effects are evident as the neuromotor time constant remains higher than nominal in the post-G runs, reflecting a lower control bandwidth and perhaps fatigue. V.L.

A81-20501 * **Human controller modeling in environments that include non-control tasks.** T. Govindaraj (Purdue University, West Lafayette, Ind.), and W. B. Rouse. In: Conference on Decision and Control, and Symposium on Adaptive Processes, 18th, Fort Lauderdale, Fla., December 12-14, 1979, Proceedings. Volume 2. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 989-994. 7 refs. Grant No. NsG-2119.

In complex environments where the human operator is a supervisor, he must allocate his attention between different kinds of tasks for optimum overall performance. When a portion of the future reference trajectory for the control task is available for preview, scheduling various activities is possible. A model has been developed for this situation using dynamic programming to solve an optimal control problem. An experiment was conducted where subjects controlled an airplane symbol over a map, shown a fixed distance into the future. Discrete, non-control tasks were introduced as number entry tasks. Results from the model are compared with experimental results. (Author)

A81-20502 **Helicopter pilot performance and workload as a function of night vision symbologies.** E. J. Hartzell (U.S. Army, Aeromechanics Laboratory, Moffett Field, Calif.). In: Conference on Decision and Control, and Symposium on Adaptive Processes, 18th, Fort Lauderdale, Fla., December 12-14, 1979, Proceedings. Volume 2. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 995, 996.

A full six-degree-of-freedom motion simulation of an advanced U.S. Army helicopter flying a night time nap-of-the-earth scenario was conducted in order to assess pilot performance, training requirements, and workload as a function of the flight control symbologies used. The results of the time estimation techniques used in conjunction with this experiment support the predicted levels of difficulty designed into the flight scenario. Time estimation provides a relative scale of workload between hover maneuvers and suggests that there is no significant difference in workload between the three symbology types studied. V.L.

A81-20503 **Evaluation and prediction of the vertical situation from a horizontal situation display.** S. G. Hart and L. L. Loomis (Tufts University, Medford, Mass.). In: Conference on Decision and Control, and Symposium on Adaptive Processes, 18th, Fort Lauderdale, Fla., December 12-14, 1979, Proceedings. Volume 2. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 997-1001.

This study was designed to provide additional information about the content, symbology, and format of a cockpit display of traffic information (CDTI). Several different symbols for other aircraft and different ways to display information about its status that pilots had preferred in an earlier survey based on static displays and pilot opinion were evaluated. In addition, different features of the vertical and horizontal situation of two aircraft (e.g. angular separation, relative altitude, difference in ground speed) were studied to determine the interaction between parameters of an encounter between two aircraft displayed on a simple dynamic CDTI and display symbologies on pilot perception of relative motion and separation. (Author)

A81-20511 * **An analysis of the human as a predictor model.** J. G. Kreifeldt (Tufts University, Medford, Mass.). In: Conference on Decision and Control, and Symposium on Adaptive Processes, 18th, Fort Lauderdale, Fla., December 12-14, 1979, Proceedings. Volume 2. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 1074-1077. 7 refs. Grant No. NsG-2156.

A hybrid sampled data-continuous impulse response of a preview tracker using a fast time model predictor aid is derived. The model can accept transient and nontransient imputs and is suitable for studying a human preview tracker using an internalized or externalized predictor display. The model is shown to behave reasonably in a simple example and its implications for modeling studies are discussed. (Author)

A81-20845 # **The colony-forming capacity of bone marrow cells in a tissue culture after uniform and nonuniform radiation (O kolonieobrazuiushchei sposobnosti kletok kostnogo mozga v kul'ture tkani posle ravnomernogo i neravnomernogo oblucheniia).** L. B. Berlin, T. D. Pozharisskaia, E. N. Sokolova, and A. D. Smirnov (Voenno-Meditsinskaia Akademiia, Leningrad, USSR). *Akademiia Nauk SSSR, Doklady*, vol. 255, no. 4, 1980, p. 983-985. 6 refs. In Russian.

A81-20849 # **The flowering and ripening of Arabidopsis seeds under weightlessness conditions - Biosatellite Kosmos 1129 experiment (Tsvetenie i sozrevanie semian Arabidopsisa v nevesomosti - Eksperiment na biosputnike 'Kosmos-1129').** G. P. Parfenov and V. M. Abramova (Ministerstvo Zdravookhraneniia SSSR, Institut Mediko-Biologicheskikh Problem, Moscow, USSR). *Akademiia Nauk SSSR, Doklady*, vol. 256, no. 1, 1981, p. 254-256. 15 refs. In Russian.

The generative cycle of Arabidopsis thaliana, paca Enkheim-1 seeds was observed under weightless conditions of spaceflight for 18 days from the fertilization stage through its ripening. The number of fertile seeds sharply decreased and the quantity of abortive formations increased during the flight, this increase resulted from unfavorable conditions of weightlessness, and were not of hereditary nature. A.T.

A81-20916 * **Cockpit displayed traffic information and distributed management in air traffic control.** J. G. Kreifeldt (Tufts University, Medford, Mass.). *Human Factors*, vol. 22, Dec. 1980, p. 671-691. 24 refs. Grant No. NsG-2156.

A graphical display of information (such as surrounding aircraft and navigation routes) in the cockpit on a cathode ray tube has been proposed for improving the safety, orderliness, and expeditiousness of the air traffic control system. An investigation of this method at NASA-Ames indicated a large reduction in controller verbal work load without increasing pilot verbal load, the visual work may be increased. The cockpit displayed traffic and navigation information system reduced response delays permitting pilots to maintain their spacing more closely and precisely than when depending entirely on controller-issued radar vectors and speed command. A.T.

A81-20917 **Predicting search performance for multiple targets.** T. Morawski, C. G. Drury, and M. H. Karwan (New York, State University, Amherst, N.Y.). *Human Factors*, vol. 22, Dec. 1980, p. 707-718. 18 refs.

BEST DOCU

Performance in a visual search task is usually measured by the cumulative probability of locating a target, F(t), in a given time (t). Two extreme F(t) against (t) relationships have been postulated, one assuming that search is random, and the other assuming that search is systematic. However, these relationships have been available for the situation in which each search field contains a single occurrence of a single type of target. This paper extends both search models (random and systematic) first to the case of multiple occurrences of a single fault type within a search field and second to the case of multiple fault types. For systematic search, these two cases can be combined to predict the effects of multiple occurrences of multiple fault types. The general F(t) relationships are given in each case and illustrated with a worked example. (Author)

A81-20925 **Implications of a critical level in the ear for assessment of noise hazard at high intensities.** G. R. Price (U.S. Army, Human Engineering Laboratory, Aberdeen Proving Ground, Md.). *Acoustical Society of America, Journal*, vol. 69, Jan. 1981, p. 171-177. 33 refs.

The argument is advanced that there is a critical level (CL) for the ear at high intensities where the loss mechanism undergoes a fundamental change. In physiological terms, CL probably represents the intensity at which a given level of mechanical stress is reached in the Organ of Corti. Electrophysiological, histological, and threshold shift data support this contention. Further, CL varies as a function of the spectrum of the sound. A preliminary estimate of the freefield SPL reaching CL in the human ear has been calculated as has been the distribution of CL. The implications for human exposure and damage-risk criteria are discussed. (Author)

A81-21020 **A recursive Lagrangian formulation of manipulator dynamics and a comparative study of dynamics formulation complexity.** J. M. Hollerbach (MIT, Cambridge, Mass.). *IEEE Transactions on Systems, Man, and Cybernetics*, vol. SMC-10, Nov. 1980, p. 730-736. 23 refs. Contract No. N00014-77-C-0389.

An efficient Lagrangian formulation of manipulator dynamics has been developed. The efficiency derives from recurrence relations for the velocities, accelerations, and generalized forces. The number of additions and multiplications varies linearly with the number of joints, as opposed to past Lagrangian dynamics formulations with a fourth-power joint number dependence. With this formulation it should be possible in principle to compute the Lagrangian dynamics in real time. The computational complexities of this and other dynamic formulations including recent Newton-Euler formulations and tabular formulations are compared. It is concluded that recursive formulations based either on the Lagrangian or Newton-Euler dynamics offer the best method of dynamics calculation. (Author)

A81-21023 **A stochastic differential game theory approach to human operators in adversary tracking encounters.** J. L. Speyer (Texas, University, Austin, Tex.), S. Samn, and R. Albanese (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). *IEEE Transactions on Systems, Man, and Cybernetics*, vol. SMC-10, Nov. 1980, p. 755-762. 22 refs.

The paper examines whether conclusions based upon passive signal analysis using linear quadratic Gaussian differential game theory with perfect state information are applicable to the complex adversary encounter. It is shown that the available information on passive (compensatory) tracking may be extended to the case when the display is perturbed by a second intelligent operator acting as an adversary. Conclusions based on passive encounter usually do not predict the active encounter; an example is given of the tracking error variance and control effort computed for the passive case which are smaller than that predicted by the active encounter. A.T.

A81-21024 **Master-slave manipulator performance for various dynamic characteristics and positioning task parameters.** W. J. Book and D. P. Hannema (Georgia Institute of Technology, Atlanta, Ga.). *IEEE Transactions on Systems, Man, and Cybernetics*, vol. SMC-10, Nov. 1980, p. 764-771. 17 refs. Research supported by Du Pont de Nemours and Co.; Grant No. NIH-5-505-R-7-24-10.

The relationship between the performance of an experimental master-slave manipulator and natural frequency, Coulomb friction, and backlash was quantified by time measurements for accomplishing a simple positioning task. Statistical analysis indicated that a simple linear model could be constructed to relate the task parameters of distance and width to manipulator performance and characteristics. The results can be used for the cost-performance tradeoff of the manipulator design; they have been interpreted in terms of an information transmission model of the man-machine system with separate transmission rates for gross motions and a point of transfer between the two motions. A.T.

A81-21031 **Learning and control for a compliant computer-controlled manipulator.** A. Liegeois, E. Dombre, and P. Borrel (Montpellier II, Université, Montpellier, France). *IEEE Transactions on Automatic Control*, vol. AC-25, Dec. 1980, p. 1097-1102. 18 refs.

Precise automated manipulation and assembly by means of a computer-controlled manipulator with elastic drives require a model of the compliant structure. A calibration procedure based on a learning technique is used to identify the structural parameters of the model. The force reflecting performances of the cable drives makes possible simple continuous active accommodations to adapt the apparent compliance in the task space during fine motions. The damping of oscillations induced by fast transient motions is carried out by means of measurements of cable deformations and their derivatives. Experimental results with a computer-controlled slave telemanipulator show that performance may be improved by adaptive control. (Author)

A81-21125 # **Data acquistion system for thermal stress studies.** R. P. Layton and W. H. Mints, Jr. (U.S. Naval Medical Research Institute, Bethesda, Md.). *American Society of Mechanical Engineers, Winter Annual Meeting, Chicago, Ill., Nov. 16-21, 1980, Paper 80-WA/OCE-14.* 3 p. Members, $2.00; nonmembers, $4.00.

A system is described that monitors cutaneous heat flow and temperature at individual body sites using commerical thermoelectric heat flow transducers and thermistors. The system can operate either dry or immersed in water at pressures up to 16 atmospheres absolute (ATA) and at ambient temperatures between 0 C and 50 C. The data output from the 15 heat flux transducers and 15 thermistor temperature sensors are presented as a two-channel multiplexed signal. The small size of the system and output cable give the subject freedom of movement for performing various tasks with minimal hindrance from the monitoring package. Designed to monitor exposure to cold stress in hyperbaric environments, this system is directly applicable to studies of thermal stress in general and easily can be adapted to accommodate the requirements of other physiological studies. (Author)

A81-21450 # **On the binaural processing of stimuli with different interaural phase relations.** J. Raatgever. Delft, Technische Hogeschool, Doctor in de technische Wetenschappen Dissertation, 1980. 133 p. 99 refs.

Binaural hearing mechanisms are examined with regard to the processing of interaural time differences. The internal coding of interaural time differences in the temporal fine structure of binaural stimuli is investigated, consequently, signals containing frequency parts below 1600 Hz are of interest. Particular consideration is given to dichotic pitch, lateralization of low-frequency signals, a spectral model for lateralization and dichotic pitch, lateralization of different dichotic pitch phenomena, and binaural masking with dichotic pitch stimuli. B.J.

A81-21471 **Control of breathing during prolonged exercise.** R. J. Martin, E. J. Morgan, C. W. Zwillich, and J. V. Weil (Colorado, University, Medical Center, Denver, Colo.). *Journal of*

BEST DOCUMENT AVAILABLE

Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 50, Jan. 1981, p. 27-31. 30 refs. Grant No. NIH-HL-14985.

Mechanisms for the steady upward drift of minute ventilation throughout prolonged heavy exercise are investigated. The roles of elevated body temperature, lactate and catecholamine levels, increased metabolic rate and changes in respiratory pattern were examined during one hour of bicycle ergometer exercise at 2/3 maximal aerobic capacity in ten healthy subjects, during which minute ventilation was observed to increase by 13%. The rise in ventilation is not found to be affected by an artificial elevation of body temperature, and to occur despite unchanged arterial CO2 pressure, lactate and pH levels and CO2 ventilation. The ventilation increase is attributed to increased dead space ventilation, with tidal volume unchanged, which cannot be accounted for by rapid shallow breathing. The factors responsible for the observed upward drift in minute ventilation thus remain undetermined. A.L.W.

A81-21472 **Responses to dry heat of men and women with similar aerobic capacities.** A. J. Frye and E. Kamon (Pennsylvania State University, University Park, Pa.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 50, Jan. 1981, p. 65-70. 25 refs.

A81-21473 * **Plasma volume, osmolality, vasopressin, and renin activity during graded exercise in man.** V. A. Convertino, L. C. Keil, E. M. Bernauer, and J. E. Greenleaf (NASA, Ames Research Center, Biomedical Research Div., Moffett Field, Calif.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 50, Jan. 1981, p. 123-128. 33 refs. Grant No. NCA2-OR-180-703.

The influence of work intensity on plasma volume, osmolality, vasopressin and renin activity and the interrelationships between these responses are investigated. Plasma volume, renin activity and osmotic, sodium and arginine vasopressin concentrations were measured in venous blood samples taken from 15 healthy male subjects before and after six minutes of bicycle ergometer exercise at 100, 175 and 225 W. Plasma volume is found to decrease significantly with increasing work intensity, while increases in Na(+) concentration, osmolality and vasopressin are only observed to be significant when the work intensity exceeds 40% maximal aerobic capacity and plasma renin activity increased linearly at all work levels. In addition, significant correlations are observed between plasma volume and osmolality and sodium changes, and between vasopressin and osmolality and sodium content changes. Data thus support the hypotheses that (1) vasopressin may be the primary controlling endocrine for fluid and electrolyte levels following exercise; (2) an exercise intensity greater than 40% maximal aerobic capacity is required to stimulate vasopressin release through changes in plasma osmolality; and (3) the stimulation of the renin-angiotensin system is a more general stress response. A.L.W.

A81-21474 **Diffusing capacity of the lung during hypoxia - Role of capillary recruitment.** R. L. Capen, L. P. Latham, and W. W. Wagner, Jr. (Colorado, University, Denver, Colo.). *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology*, vol. 50, Jan. 1981, p. 165-171 34 refs. Grants No. NIH-HL-14985; No. NIH-HL-07171.

The effects of lung capillary recruitment induced by hypoxia on the diffusing capacity of the lung are investigated. In vivo microscopy of healthy adult dogs was performed to monitor capillary recruitment in the upper part of the lung, and lung diffusing capacity for carbon monoxide was measured during conditions of normoxia, hypoxia, hypoxia with the intravenous infusion of a vasodilator, and normoxia with continuing vasodilator infusion. The pulmonary diffusing capacity as measured by a rebreathing technique is found to be significantly correlated with the extent of capillary perfusion under both hypoxic and normoxic conditions, even with the acceleration of the reaction rate between carbon monoxide and hemoglobin under hypoxic conditions taken into account. The evidence thus suggests that the capillary recruitment elicited during airway hypoxia causes an increase in the diffusion rate and is of physiological benefit, and that the microscopic observations are representative of much of the lung. A.L.W.

A81-21726 * **The role of simulation in Space Shuttle training.** J. W. Bilodeau (NASA, Johnson Space Center, Houston, Tex.). In: Summer Computer Simulation Conference, Toronto, Canada, July 16-18, 1979, Proceedings. Montvale, N.J., AFIPS Press, 1980, p. 813-818.

The content and the scope of the flight crew training program for the Space Shuttle are discussed with emphasis on the role of simulation in such training. The training flow chart is presented and requirements in hours are given for each of the subject areas. V.L.

A81-21727 **An integrated training approach.** A. D. Windsor (U.S. Navy, Corpus Christi, Tex.) and H. Brouwer (Gould, Inc., Melville, N.Y.). In: Summer Computer Simulation Conference, Toronto, Canada, July 16-18, 1979, Proceedings. Montvale, N.J., AFIPS Press, 1980, p. 821, 822.

The training program for U.S. Navy pilots that has evolved in response to high turnover and rising costs is discussed. It is noted that the Navy Integrated Flight Training System introduces instrument flying skills very early in the pilot's course. Here, systems operations training is facilitated by the use of specially designed, computer driven graphic panels that provide visual representation of system functions in both normal and degraded conditions. Trainees move next to the procedures trainer and then to the flight simulator. It is noted that training devices provide effective initial training for student pilots, maintain and improve the proficiency of experienced pilots, reduce training and operating costs, and conserve scarce resources, such as energy, weapons, and ammunition. C.R.

A81-21728 **Task segmentation - An approach to simulator task fidelity.** E. A. Stark (Singer Co., Link Div., Binghamton, N.Y.). In: Summer Computer Simulation Conference, Toronto, Canada, July 16-18, 1979, Proceedings. Montvale, N.J., AFIPS Press, 1980, p. 835-838.

It is noted that the complex motion and visual cuing systems offered by simulators today provide more information than is required for effective training. Attention is also given to the high cost of these simulators. The need for a careful identification of task/cue relationships and dynamics is stressed. A method of analyzing skilled operator tasks as more or less complex procedures is proposed as a way of identifying the minimum simulator complexity required for full task fidelity. Three distinct phases of learning - cognitive, perceptual, and psychomotor - are identified, and the role to be played by the simulator in each phase is discussed. It is noted that the first approach to the definition of minimum cue requirements is in the segmentation of the maneuvers to be learned. It is concluded that while providing very little information by itself, segmentation furnishes a structure in which simulator designers, training analysts, instructors, and pilots can explore the processes by which flight skills are developed and maintained. C.R.

A81-21923 # **Analysis and modeling of the cephalic response of a human operator subjected to binaural stimulation in a sound localization task (Analyse et modélisation de la réponse céphalique d'un opérateur humain soumis à une stimulation binauriculaire dans une tâche de localisation d'un son).** J.-P. Bourrieres. Lille I, Université, Docteur-Ingénieur Thesis, 1979. 181 p. 43 refs. In French. Research supported by the Direction des Recherches, Etudes et Techniques.

Systematic relationships are obtained between the physical characteristics of binaural sound stimuli and the perception of the lateral position of the sound source. The objective parameters of binaural hearing are reviewed, with particular attention given to the spatial and energetic characteristics of binaural stimulation. An

BEST DOCUMENT AVAILABLE

experimental apparatus developed to investigate perceptual responses to binaural stimulation is then presented in which head position is used to indicate the sound source position, and in which the operator is placed in the loop as the error detector. Means for the processing of the input signal and output head response data are examined, and statistical results concerning the abilities of the 10 subjects to localize the sources are presented. A behavioral model is then proposed to explain the results based on the mean response to a position corresponding to the eccentricity of the sound source. A.L.W.

A81-21987 # **Development of a secondary task method for measuring operator workload. II - A change of secondary task performance with acquisition of flying skill by Link Trainer.** Y. Nagasawa, H. Hagihara, S. Aramaki, and N. Utsuki (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports,* vol. 21, June 1980, p. 61-73. 6 refs. In Japanese, with abstract in English.

A81-21988 # **Experimental studies on the survival capacity in the sealed environment. I - Effect of cooping up in the individual sealed chamber of various volume on survival time in rats of various body weight.** H. Fujiwara (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports,* vol. 21, June 1980, p. 75-86. 37 refs. In Japanese, with abstract in English.

The effects of sealed environments on the survival times and the lethal concentration of oxygen and carbon dioxide in 45 Sprague-Dawley male rats is evaluated. Mean survival times are given for each group of 60, 210 and 420 grams in body weight for sealed chambers of 10, 20 and 30 liter volume. The mean lethal concentrations of oxygen and carbon dioxide were 2.9 plus or minus .9% and 14.7 plus or minus .3% respectively for all groups. L.S.

A81-21989 # **Structural analysis of factor patterns on EEG under various states of consciousness.** Y. Kurihara (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports,* vol. 21, June 1980, p. 87-101. 58 refs. In Japanese, with abstract in English.

The direct varimax method of factor analysis was applied to the electroencephalogram to investigate the effects under 12 situations of consciousness. A small number of common factors in the EEG were used. Correlation coefficients of the factor loading patterns were very high, suggesting the stability of the factor loading. L.S.

A81-21990 # **Statistical studies on blood pressure of JASDF pilots. III - Relationship between physical constitution and blood pressure.** Y. Kurihara (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Japan). *Japan Air Self Defence Force, Aeromedical Laboratory, Reports,* vol. 21, June 1980, p. 103-114. 65 refs. In Japanese, with abstract in English.

A81-22077 **Evaluation of full-head enclosed breathing system for extended exposure at high altitude.** G. Dixon, J. D. Adams, and A. Moore (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). In: Survival and Flight Equipment Association, Annual Symposium, 17th, Las Vegas, Nev., December 2-6, 1979, Proceedings. Canoga Park, Calif., Survival and Flight Equipment Association, 1980, p. 12-14.

An evaluation of a full-head enclosed breathing system for oxygen prebreathing prior to high-altitude exposure or EVA is presented. The breathing system, consisting of a completely enclosed stocking cap type of rubberized head enclosure with oxygen or air supply through an oro-nasal diffuser or a spray bar extending across the upper portion of the face plate, was measured for rates of oxygen flow, breathing resistance, mask pressures and ease and comfort to the wearer over periods of five to seven hours. Results obtained indicate the mask to be adequate in providing oxygen in a high-altitude environment, characterized by ease of operation and long-term comfort, the provision of oxygen with minimal negative pressure or increased breathing resistance, and no apparent leakage when properly fit. A.L.W.

A81-22081 **An improved oxygen mask for high-altitude protection.** W. Sears, J. Ernsting, R. Krutz, Jr., R. Shaffstall, R. Holden (USAF, School of Aerospace Medicine, Brooks AFB, Tex.), and D. Root (USAF, Aeronautical Systems Div., Wright-Patterson AFB, Ohio). In: Survival and Flight Equipment Association, Annual Symposium, 17th, Las Vegas, Nev., December 2-6, 1979, Proceedings. Canoga Park, Calif., Survival and Flight Equipment Association, 1980, p. 42, 43.

In a continuing effort to provide nonencumbering short-duration protection at altitudes above 50,000 ft, several studies have been completed using the RAF high-altitude protective ensemble. Recently six samples of the RAF P/Q masks have been modified to be compatible with standard USAF helmets and intercommunication systems. Basic changes included: reducing the microphone impedance from 300 to 7 ohms; a new harness and mask hookup assembly; and a synthetic rather than the natural rubber facepiece. The modified masks have been shown to withstand windblast to 650 knots, with good retention, on a manikin, and the results of preliminary inflight and groundlevel tests of the masks have been very encouraging. The new mask, coupled with a jerkin and g-suit, provides: compatibility with standard USAF life-support and intercommunications equipment; nonencumbering high-altitude protection; low-breathing resistance; an increased shelf life, and improved retention during high-g maneuvering. (Author)

A81-22082 **Onboard oxygen generation.** R. L. Miller, K. G. Ikels, and L. J. Luskus (USAF, School of Aerospace Medicine, Brooks AFB, Tex.). In: Survival and Flight Equipment Association, Annual Symposium, 17th, Las Vegas, Nev., December 2-6, 1979, Proceedings. Canoga Park, Calif., Survival and Flight Equipment Association, 1980, p. 44-47. 5 refs.

The basic operating characteristics of two systems for the in-flight generation of aviators' breathing gas to replace stored oxygen supplies are discussed in relation to potential applications in Air Force aircraft. Consideration is given to the concepts and realizations of the fluomine system, in which a solid cobalt chelate forms a reversible complex with molecular oxygen which is released at higher temperature, and the molecular seive system, in which synthetic zeolites selectively absorb nitrogen and most other compounds from the ambient air, thus concentrating the oxygen in the effluent breathing gas. Advantages of simplicity, relatively long chemical lifetime, effective filtration and a built-in dilution mechanism inherent in the molecular sieve concept are pointed out, and it is concluded that molecular sieves are most suitable for fighter, attack, and trainer aircraft with a maximum of three crew. Conversely, the fluomine system appears to scale more easily to larger crew sizes, but suffers from system complexity, a high power penalty and low chemical lifetime. A.L.W.

A81-22083 **Development of an automatic opening lap belt buckle for aircrew restraint systems.** E. D. Kenzie (Irvin Industries Canada, Ltd., Fort Erie, Ontario, Canada). In: Survival and Flight Equipment Association, Annual Symposium, 17th, Las Vegas, Nev., December 2-6, 1979, Proceedings. Canoga Park, Calif., Survival and Flight Equipment Association, 1980, p. 65-69.

The design of an automatic-opening lap belt buckle currently under development for ejection seat restraint harnesses is presented. The buckle was designed in view of potential problems such as inadvertent release, environmental durability, gas pressure retention, actuation pressure, manual override, operating simplicity, maintainability, durability and reliability to permit both manual and automatic release of the restraint harness. The basic buckle concept is that of a main base ring with the top interior rim providing the latching surface for hook-type harness lugs, with a spool-shaped cover moving up and down in the center of the ring to hold or release the harness lug hooks. Supplementary features include a parachute

BEST DOCUMENT AVAILABLE

arming lanyard key, an automatic parachute arming lanyard key, an override push button, a safety interlock socket, and gas operation of the automatic release. Results of limited tests of prototype units have been found encouraging. A.L.W.

A81-22084 New developments in restraint systems. L. Farris (Pacific Scientific Co., Anaheim, Calif.). In: Survival and Flight Equipment Association, Annual Symposium, 17th, Las Vegas, Nev., December 2-6, 1979, Proceedings. Canoga Park, Calif., Survival and Flight Equipment Association, 1980, p. 70-72.

The development of hardware and theories for aircrew restraint systems for use in current and future high-performance aircraft is discussed. Attention is given to a two-motion lift-lever buckle for lap belt systems, a heavy-duty rotary buckle, a two-motion rotary buckle, a mini rotary buckle with dual inertia lock reels, a gas-operated lift-lever buckle, the use of polyester webbing, a recyclable powered inertia lock reel for command prepositioning the aircrew during adverse maneuvers, limb restraints during ejection, and a dual tension inertia reel. The current need for the development of advanced aircrew restraints for high performance aircraft is emphasized as a means of preventing injury and saving lives. A.L.W.

A81-22085 Physiological responses of human subjects wearing thermal protective clothing assemblies in varying environments. D. C. Johanson, S. M. Reeps, and L. J. SantaMaria (U.S. Naval Material Command, Naval Air Development Center, Warminster, Pa.). In: Survival and Flight Equipment Association, Annual Symposium, 17th, Las Vegas, Nev., December 2-6, 1979, Proceedings. Canoga Park, Calif., Survival and Flight Equipment Association, 1980, p. 77-83.

A group of representative free world anti-exposure suit configurations was selected for a test program designed to evaluate their relative effects on aviator performance in the areas of mobility loss, heat stress, and immersion hypothermia protection. Sequential testing was utilized to eliminate those configurations which did not meet predetermined requirements to satisfy the operational need of naval forces. Mobility loss and heat stress testing at 35 C have been completed. Immersion hypothermia testing in 7.2 C water is currently being conducted with tests in 0 C water to follow. (Author)

A81-22086 Effectiveness and wearability of immersion hypothermia protection equipment. R. M. Harnett, E. M. O'Brien, F. R. Sias (Clemson University, Clemson, S.C.), and J. R. Pruitt (Oconee Memorial Hospital, Seneca, S.C.). In: Survival and Flight Equipment Association, Annual Symposium, 17th, Las Vegas, Nev., December 2-6, 1979, Proceedings. Canoga Park, Calif., Survival and Flight Equipment Association, 1980, p. 84-87. 6 refs. U.S. Department of Transportation Contract No. CG-72074-A.

A wide range of personal equipment for protection from immersion hypothermia was studied through experiments involving human volunteers. Immersion experiments in a tank of refrigerated water revealed the protection effectiveness of each test article. This effectiveness is expressed in terms of estimates of survival time in 35 F water for 'thin, average and heavy' individuals. 'Wearability' was established (through stress testing) in terms of reductions in mobility, heat loading and fatigue induced during selected exercises as compared to similar results obtained while the subjects were wearing nominal clothing. The results indicate clear trade-offs between effectiveness and wearability and provide a basis for informed selections of protection equipment. (Author)

A81-22092 Crew station assessment using the Bioman modeling system. G. D. Frisch (U.S. Naval Aerospace Medical Center, Naval Aerospace Medical Research Laboratory, New Orleans, La.) and L. A. D'Aulerio (U.S. Naval Material Command, Naval Air Development Center, Warminster, Pa.). In: Survival and Flight Equipment Association, Annual Symposium, 17th, Las Vegas, Nev., December 2-6, 1979, Proceedings. Canoga Park, Calif., Survival and Flight Equipment Association, 1980, p. 132-137. 9 refs.

The use of the Bioman modeling system in the evaluation of the physical compatibility of crew members with crew stations under emergency egress conditions is demonstrated. The Bioman system, which is comprised of cockpit geometry, occupant anthropometry and gross motion simulation subprograms, was used to evaluate the proposed F-18 crew station, and simulation results were compared with those obtained from track and tower tests using instrumented dummies and physiological acceptance tests using human subjects. Results of the simulations indicated a possible foot-instrument panel contact problem that was confirmed by the dummy and human tests. Further modeling was then undertaken to quantify the severity of the problem, and the simulated acceleration profiles were found to be in good agreement with experimental measurements. As a result of the simulation and the dummy and human tests, the proposed crew station configuration was deemed unacceptable, and modifications to the station, including a dynamic kick plate to prevent foot-instrument panel contact during ejection, were analyzed. A.L.W.

A81-22105 Long-term follow-up of lung volume measurements in initially healthy young aviators. N. R. MacIntyre, R. E. Mitchell, A. Oberman, W. R. Harlan, and A. Graybiel (U.S. Naval Aerospace Medical Center, Naval Aerospace Medical Research Laboratory, Pensacola, Fla.; Alabama, University, Birmingham, Ala.). *Aviation, Space, and Environmental Medicine*, vol. 52, Jan. 1981, p. 1-5. 19 refs.

Lung volume measurements on a large number of initially healthy young military aviators were recorded periodically in follow-up from 1940-69. Vital capacities were measured spirometrically and total lung capacities were measured planimetrically from chest roentgenograms. Residual volumes were calculated by subtracting the vital capacity from the total lung capacity in each subject. Additional variables available for analysis were cigarette smoking histories, family histories, aviation career patterns, pulmonary symptoms, cardiac disease diagnoses, and anthropometric measurements. Multiple linear regression techniques were used on these variables to construct prediction equations for each lung volume in 1969. From these longitudinal analyses, cigarette smoking and pulmonary symptoms were found to be associated with an obstructive lung volume pattern in 1969, while coronary artery disease and weight gain were found to be associated with a restrictive lung volume pattern in 1969. A career in military aviation had no significant association with lung volumes. (Author)

A81-22106 Response to transient haemorrhage after acute and chronic section of the carotid sinus nerves. A. Howe and A. N. Nicholson. *Aviation, Space, and Environmental Medicine*, vol. 52, Jan. 1981, p. 11-15. 25 refs.

Adaptation to denervation of the carotid sinus region was studied in cats during hypotension induced by a controlled hemorrhage. After denervation, the fall in arterial pressure in response to hemorrhage was increased, but the partial recovery of blood pressure was preserved. In chronic animals, this pattern of response was also seen, but a resting hypertension developed and ensured that the minimal blood pressure and the recovery reached during the hemorrhage were similar to those of intact animals. The studies suggest that the primary role of the carotid receptors is to minimize the effect of stresses which lead to hypotension, rather than to set the level of the resting blood pressure. (Author)

A81-22107 Cardiovascular and biochemical response to simulated space flight entry. J. R. Hordinsky, U. Gebhardt, H. M. Wegmann, and G. Schafer (Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt, Institut fur Flugmedizin, Bonn, West Germany). *Aviation, Space, and Environmental Medicine*, vol. 52, Jan. 1981, p. 16-18. 7 refs.

Twelve men and 12 women were exposed to two types of short-duration (6 h) space flight entry simulation: bedrest (no head-down tilt) and water immersion (to the neck). Preceding and following the simulation, orthostatic tolerance testing using LBNP

BEST DOCUMENT AVAILABLE

(Lower Body Negative Pressure) was performed. Male LBNP tolerance was greater than female LBNP tolerance at all four comparison points (pre- and post-bedrest, pre- and post-water immersion); whereas the short-duration bedrest reduces female LBNP tolerance about as effectively as water immersion, only water immersion leads to marked LBNP intolerance in the male subjects. If the water immersion model simulates zero G, loss of male and female orthostatic tolerance will be about equal after short-duration space flight. On the other hand, the bedrest simulation would indicate a greater loss of orthostatic tolerance for females. (Author)

A81-22108 Dopaminergic agonists and conditioned avoidance response in normoxic or hypoxic rats. C. Saligaut, N. Moore, J.-L. Leclerc, and F. Boismare (Rouen, Université, Rouen, France). *Aviation, Space, and Environmental Medicine*, vol. 52, Jan. 1981, p. 19-23. 30 refs.

The actions of four dopaminergic agonists (apomorphine, bromocriptine, amantadine, piribedil) on a conditioned avoidance response were studied in normoxic or hypobaric hypoxic rats. Low doses of agonists have no effects in normoxis, but induce an anthihypoxic protection (improvement of learning in hypoxia). In contrast, the higher doses impair learning both in normoxia and hypobaric hypoxia. The possibility of an antihypoxic property induced by dopaminergic post-synaptic receptors stimulation is discussed and seems to be the main phenomenon while action or other nonspecific sites seems to be responsible for the high dose-induced impairment of learning and of resistance to hypoxia. (Author)

A81-22109 Postmortem coronary atherosclerosis findings in general aviation accident pilot fatalities - 1975-77. C. F. Booze, J. K. Pidkowicz, A. W. Davis, and F. A. Bolding (FAA, Civil Aeromedical Institute, Oklahoma City, Okla.). *Aviation, Space, and Environmental Medicine*, vol. 52, Jan. 1981, p. 24-27. 7 refs.

The autopsies of 764 pilots involved in fatal general aviation accidents during the years 1976-77 were reviewed to appraise the age specific prevalence of coronary atherosclerosis among the autopsied group. Of the pilots killed in aircraft accidents and autopsied during 1975-77, 51% were found to have some degree of coronary atherosclerosis ranging from minimal to severe. However, only about 5% of the autopsied group were categorized as having severe coronary atherosclerosis. The rate per 1,000 of severe coronary atherosclerosis increased with age from 14.5 for ages less than 30, to 89.9 for ages 50 years and above; the rate nearly tripled from ages 30-39 to 40-49 (22.1 to 63.6). The prevalence of coronary atherosclerosis among this group of autopsied airmen is less than would have been expected based on the results of other recent studies. (Author)

A81-22110 Effect of body supination angle on subjective response to whole-body vibration. C. B. Harrah and R. W. Shoenberger (USAF, Aerospace Medical Research Laboratory, Wright-Patterson AFB, Ohio). *Aviation, Space, and Environmental Medicine*, vol. 52, Jan. 1981, p. 28-32. 6 refs. Contract No. F33615-79-C-0509.

Three experiments were conducted to evaluate the subjective symptomatology associated with various combinations of supination angle and vibration spectral composition. Sinusoidal, sum-of-sine, and random vibration were used in the first, second, and third experiments, respectively. All exposure periods were 40 s and the supination angle was varied from 13-65 deg. Subjective response was evaluated by means of a physical symptom survey incorporating a discomfort rating scale. For all three experiments, the results indicated a primary effect of supination angle was to shift the vibration-induced sensations across body regions. Small angles (nearly seated upright) were most often associated with stomach, abdomen, and head discomfort; large angles were most often associated with upper back, neck, and sacral discomfort. With respect to the calculated total-body response, results indicated a preference for the 30 deg supination angle for both complex vibration spectrums used and for all three sinusoidal frequencies. This finding suggests the existence of an optimal supination angle for comfort under vibration. (Author)

A81-22111 Brain/computer communication to reduce human error - A perspective. C. W. Sem-Jacobsen (EEG Research Institute, Oslo, Norway). *Aviation, Space, and Environmental Medicine*, vol. 52, Jan. 1981, p. 33-37. 10 refs.

Recent developments in physiology and neurophysiology, biomedical monitoring, and micro-processors has made it possible to give the pilot improved electronic support and to increase flight safety. Direct brain/computer communication is a new way to combat human error. Monitoring ECG will give information on the operator's physical and mental load/overload situation as well as on impending cardiac failure. Information presented to the operator will elicit different biological patterns whether the operator is alert and takes the information into his stream of thoughts or not. Together with the reaction time, this will give needed information about the operator's alertness and responsiveness. In the future, with this approach, the computer may know on-line to what extent the operator perceives all the information given, as well as the operator's physical and mental load/overload situation and health. Brain/computer communication should be developed to support key-operating personnel and to reduce human error. (Author)

A81-22112 Antidiuretic hormone excretion at high altitude. M. J. Harber (Kidney Research Unit for Wales Foundation, Institute of Renal Disease, Cardiff, Wales), J. D. Williams (Welsh National School of Medicine, Cardiff, Wales), and J. J. Morton (Medical Research Council, Blood Pressure Unit, Glasgow, Scotland). *Aviation, Space, and Environmental Medicine*, vol. 52, Jan. 1981, p. 38-40. 15 refs. Research supported by the Kidney Research Unit for Wales Foundation.

Urinary excretion of electrolytes, creatinine, urea, and antidiuretic hormone - measured as arginine vasopressin (AVP) by radioimmunoassay - was investigated in eight Himalayan mountaineers during ascent on foot from 1900-5400 m. Specimens were collected from each individual whenever urine was voided, preserved with 1% boric acid, and subsequently pooled to give samples representative of 24-h collections. AVP was found to be reasonably stable under simulated conditions of storage. In all subjects, the observed AVP excretion rates were mostly in the lower region of the normal range and there was generally no correlation with altitude, urine osmolality, electrolyte excretion, or occurrence of AMS symptoms - even in a fatal case of cerebral oedema. It is concluded that AVP does not play a primary role in the changes in fluid balance which accompany either acclimatization to high altitude or the onset of AMS. (Author)

A81-22113 2,3-diphosphoglycerate and night vision. W. J. Schull, J. Clench, R. E. Ferrell, S. A. Barton (Texas, University, Houston, Tex.), R. I. Goldsmith (Michigan, University, Ann Arbor, Mich.), and F. Rothhammer (Universidad de Chile, Santiago, Chile). *Aviation, Space, and Environmental Medicine*, vol. 52, Jan. 1981, p. 41-44. 14 refs. Grant No. NIH-19514.

Recovery of night vision at altitude has been examined in relationship to changes in 2,3-diphosphoglycerate (DPG). It appears that, if DPG influences night adaptation, its effect is small. Inter-individual variability is large, both in terms of DPG and performance on the MESOP, the device used to measure dark adaptation. (Author)

A81-22114 The physician's determination of personnel reliability in sensitive occupations. D. K. Kentsmith (Mental Hygiene Clinic, Omaha, Neb.). *Aviation, Space, and Environmental Medicine*, vol. 52, Jan. 1981, p. 45-49. 14 refs.

The Air Force Medical Officer through AFR 35-99 (Personnel Reliability Program) is responsible for the medical evaluation, psychological assessment, and surveillance of persons who will work in sensitive occupations. This paper addresses various personality factors which indicate poor personnel reliability and suggest an interviewing technique of open-ended questions and developmental

BEST DOCUMENT AVAILABLE

history assessment to help determine reliability. Once a person is selected into a Personnel Reliability Program, the physician must be alert to the importance of social stress on personnel reliability and performance. (Author)

A81-22550 # **The response of a realistic computer model for sitting humans to different types of shocks.** H. Mertens and L. Vogt (Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt, Institut fur Flugmedizin, Bonn, West Germany). *Deutsche Gesellschaft fur Luft- und Raumfahrt, Symposium uber Aerodynamischen Wiederstand, Cologne, West Germany, Nov. 25, 26, 1980, Paper.* 17 p. 10 refs.

A mechanical model of the human body in the sitting posture is described. The model parameters were derived from the results of steady state vibration experiments conducted under various levels of static acceleration up to +4 Gz. The resulting nonlinear behavior of the human body was modeled by calculating the characteristics of the model elements. To investigate the model's response under impact loads, the characteristics of the elements were extrapolated beyond 4 G. The results show that the model is able to predict the forces in the vertebral column for arbitrary input pulse shapes. The fact that a rectangular acceleration pulse of 20 Gz causes spinal injuries could be demonstrated by the response of the model. (Author)

A81-22610 * # **Advanced control techniques for teleoperation in earth orbit.** A. K. Bejczy and T. L. Brooks (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.). In: Association for Unmanned Vehicle Systems, Annual Technical Symposium, 7th, Dayton, Ohio, June 16-18, 1980, Proceedings.

Dayton, Ohio, Association for Unmanned Vehicle Systems, 1980, p. 59-74. 23 refs. Contracts No. NAS7-100; No. N00014-77-C-0256.

Emerging teleoperation tasks in space invite advancements in teleoperator control technology. This paper briefly summarizes the generic issues related to earth orbital applications of teleoperators, and describes teleoperator control technology development work including visual and non-visual sensors and displays, kinesthetic feedback and computer-aided controls. Performance experiments were carried out using sensor and computer aided controls with promising results which are briefly summarized. (Author)

A81-23092 **Histochemical study of lipid-like material in photochemically formed jeewanu, the protocell, with formaldehyde partially replaced by other organic sources.** K. Bahadur and P. K. Varma (Allahabad University, Allahabad, India). *British Interplanetary Society, Journal (Interstellar Studies)*, vol. 34, Mar. 1981, p. 100-102. 14 refs.

A81-23093 **Hominid evolution and SETI.** E. J. Coffey. *British Interplanetary Society, Journal (Interstellar Studies)*, vol. 34, Mar. 1981, p. 107-114. 30 refs.

Various preconceptions about human origins and the character of the processes of thinking are shown to be misleading. The extent of the relationship between perceiving and thinking is revealed. It is shown that understanding human evolution requires consideration of human biological adaptations, rather than any supposed human uniqueness. Evidence from various sources is shown to be consistent with the notion of man as a neotenous ape. Bipedalism is shown to be the basic hominid adaptation, and a necessary precondition for the emergence of both technology and language. Hominid evolution is shown to have involved two stages. On the basis of these, the concept of the parallel evolution of intelligence, and the possibility of emergence of creatures with a human-like behavioral capacity, are considered. The unlikelihood of either is indicated. (Author)

A81-23097 **The effect of expectations on slow oculomotor control. III - Guessing unpredictable target displacements.** E. Kowler (New York University, New York, N.Y.) and R. M. Steinman (Maryland, University, College Park, Md.). *Vision Research*, vol. 21, no. 2, 1981, p. 191-203. 15 refs. NSF Grant No. BNS 77-16474.

Previously, we had shown that expectations about the direction of future target motion produce involuntary anticipatory smooth eye movements in the direction of the expected target motion (Kowler and Steinman, 1979). The present experiments extend these results to expected target motions in unpredictable directions. Subjects showed anticipatory smooth eye movements while tracking an unfamiliar pattern of right- and left-going target steps while they were guessing the direction of the expected steps. Eye velocity increased when subjects became certain that they knew what the pattern was. Guesses also produced anticipatory smooth eye movements for both expected target steps and ramps in one of 12 unknown directions. Anticipatory smooth eye movements produced by guesses and by certain knowledge of target direction were not affected when subjects performed a distracting task (mental arithmetic). These results show that the effect of expectations on slow eye movements cannot be removed simply by making target motions unpredictable. Models of the slow oculomotor subsystems, to be complete, require development of techniques to predict the direction and certainty of human expectations about unpredictable patterns of target motion. A technique, which may serve this purpose, is described. (Author)

A81-23098 **Displacement detection in human vision.** G. E. Legge (Minnesota, University, Minneapolis, Minn.) and F. W. Campbell (Cambridge University, Cambridge, England). *Vision Research*, vol. 21, no. 2, 1981, p. 205-213. 46 refs.

The displacement threshold is defined to be the smallest instantaneous target displacement that can be detected. Properties of the displacement threshold for a small, luminous spot were measured psychophysically. In a structureless field the displacement threshold was near 1.5 arcmin subject to individual variation. The effects of pattern were studied by measuring displacement thresholds at the centers of a set of annuli ranging from 2.85-728 arcmin in diameter. Displacement thresholds were reduced by the presence of the annuli and were as low as 0.3 arcmin. This threshold reduction could not be fully attributed to processes of relative spatial localization because displacement thresholds were lower than spatial localization thresholds for annulus diameters greater than 20 arcmin. The displacement threshold is virtually independent of orientation and pupil size. It increased about 75% with a three log unit decrease in photopic target luminance. Displacement detection appears to depend upon the motion sense rather than the position sense. It may be limited by fixation accuracy. (Author)

A81-23099 **Direction-specific and position-specific effects upon detection of displacements during saccadic eye movements.** S. Heywood and J. Churcher (Warwick, University, Coventry, England). *Vision Research*, vol. 21, no. 2, 1981, p. 255-261. 15 refs. Medical Research Council Grant No. G976 154 N.

BEST DOCUMENT AVAILABLE

STAR ENTRIES

N81-16717 California Univ., Berkeley
NEUROENDOCRINE STRATEGIES FOR ADAPTATION TO HIGH ALTITUDE Ph.D. Thesis
Susan Fong Akana 1980 145 p
Avail: Univ. Microfilms Order No 8029309

Some of the neuroendocrine adaptations which occur in rats after exposure to high altitude are addressed, particularly the responses of the adrenal cortex and their relation to certain aspects of central and peripheral neurotransmitter metabolism. Whether the enhancement of tyrosine hydroxylase activity which occurs in rats at high altitude in select regions of the brain and in the adrenal gland is induced by high levels of corticosterone was experimentally investigated. Major results confirm an increase in tyrosine hydroxylase in the brain and adrenal gland and an increase in corticosterone levels in the juvenile rat developing at high altitude as compared to the young sea level controls. When the adrenocortical function was depressed by administration of metyrapone, both at sea level and high altitude, tyrosine hydroxylase activity remained unchanged. It is suggested from the data that the increase in adrenocortical function and the increase in tyrosine hydroxylase activity in brain and adrenal gland of rats born and maintained at high altitude are two independent adapations to the hypoxic environment.
Dissert. Abstr.

N81-16718*# National Aeronautics and Space Administration, Washington, D. C.
LIFE OF THE ONION NOT KNOWING UP FROM DOWN
A. Gordeyev Aug. 1980 9 p refs Transl. into ENGLISH from Znaiye - Sila, (USSR), v. 12, no. 630, Dec. 1979 p 9-10 Transl. by Kanner (Leo) Associates, Redwood City, Calif.
(Contract NASw-3199)
(NASA-TM-76353) Avail: NTIS HC A02/MF A01 CSCL 06C

The absence of the force of gravity has a negative effect on plant life. Plants grown on spacecraft have died prematurely. Tests are being made to discover whether or not electricity will compensate for the absence of gravitation. It was found that an onion under current is not subject to the force of gravity. Tremendous possibilities are opened up by these experiments.
Author

N81-16719*# National Aeronautics and Space Administration, Washington, D. C.
HEMORHEOLOGICAL CHANGES, THE STATE OF MICROCIRCULATION, AND BLOOD ACID-BASE BALANCE IN RATS UNDER CONDITIONS OF A 30-DAY LIMITING OF THE MOTOR ACTIVITY
Yu. M. Shtykhno and V. I. Udovichenko Dec. 1980 8 p refs Transl. into ENGLISH from Vestn. Akad. Med. Nauk. SSSR (USSR), no. 2, 1978 p 68-71 Transl. by Scientific Translation Service, Santa Barbara, Calif. Original doc. prep. by Inst. of General Pathology and Pathological Physiology of the Akademii Meditsinskikh Nauk, Moscow
(Contract NASw-3198)
(NASA-TM-76464) Avail: NTIS HC A02/MF A01 CSCL 06S

Changes were expressed in reduction in number of true capillaries, the appearance of nonfunctioning empty vessels and in the opening of the arteriolo-venular shunts. Changes in the acid-base balance in the direction of reduction of buffer blood content were also noted. T.M.

N81-16720 Utah Univ., Salt Lake City
CARDIORESPIRATORY AND PERCEPTUAL RECOVERY FROM A MARATHON RUN BY NOVICE AND EXPERIENCED WOMEN MARATHON RUNNERS Ph.D. Thesis
Carol Lynette Christensen 1980 133 p
Avail: Univ. Microfilms Order No 8101001

Subjects performed tests of maximum oxypen consumption (VO2max), 7-9 days before, and 15-16 days after a marathon. They also completed four 30 minute runs on the treadmill at their planned race pace, 6-7 days before, and 2-3 days, 6-7 days, and 13-14 days after the marathon. The five novice and eight experienced women marathon runners who served as subjects in the second experiment, performed VO2max tests 8-11 days before, and 7-9 days after a marathon held approximately 5 months after the first experiment. Cardiorespiratory and perceptual parameters do not appear to be decremented by a marathon run nor does marathon running experience appear to affect the time-course of recovery of these parameters. Other factors, such as stiffness, soreness, motivation, and biochemical indices may recover more slowly, but are apparently not reflected in the gross metabolic response to exercise or feelings of exertion following a marathon run. Dissert. Abstr.

N81-16721 Washington Univ., Seattle.
PRESSURE-FLOW HYSTERESIS IN THE PULMONARY VASCULATURE Ph.D. Thesis
Kenneth Charles Beck 1980 94 p
Avail: Univ. Microfilms Order No 8029733

Pulmonary vessels are composed of soft tissue that contains smooth muscle, and are embedded in the soft tissue of lung parenchyma. Both vascular tissue and pulmonary parenchyma were shown to be hysteretical, i.e., the tissues do not have a unique length-tension or pressure-volume relationship, their mechanical properties depending strongly on stress history. Therefore, the pulmonary vascular bed as a whole should not have a unique pressure-volume relationship. Furthermore, vascular resistance should also be history-dependent, in a way that ought to parallel pressure-volume hysteresis. Pressure-flow hysteresis was studied by fixing outflow pressure (P sub pv) and cycling flow (Q) while measuring inflow pressure (P sub pa) and fixing Q and cycling P sub pv while measuring P sub pa. Vascular volume changes were estimated from changes in the perfusion circuit reservoir. Dissert. Abstr.

N81-16722*# National Aeronautics and Space Administration, Washington, D. C.
ANTIBODIES TO MYOFIBRIL ANTIGENS IN COSMONAUTS AFTER SPACEFLIGHTS
R. Yu. Tashpulatov, T. A. Danilova, A. T. Lesnyak, V. I. Legenkov, V. S. Znamenskiy, and Ye. Yu. Dedyuyeva Aug. 1980 8 p refs Transl. into ENGLISH from Zh. Mikrobiol. Epidemiol. Immunobiol. (USSR), no. 12, Dec. 1979 p 36-39 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Moscow Gamalei Inst. for Epidemiology and Microbiol.
(Contract NASw-3199)
(NASA-TM-76300) Avail: NTIS HC A02/MF A01 CSCL 06P

Serum samples obtained from 15 astronauts before and after spaceflights were studied with the use of the indirect immunofluorescent method. In seven astronauts antibodies to different elements of the human heart muscle appeared after flights. Strong and very strong luminescence of the elements of heart muscle tissue was detected in the astronauts after the third space flight. In a study of the sera on sections of bovine heart muscle tissue the reactions of the sera taken before and after flight were found to show no essential differences. E.D.K.

N81-16723*# National Aeronautics and Space Administration, Washington, D. C.
WAYS OF INCREASING MUSCULAR ACTIVITY BY MEANS OF ISOMETRIC MUSCULAR EXERTION
A. V. Kovalik Aug. 1980 9 p refs Transl. into ENGLISH from Teor. i Prakt. Fizicheskoy Kultury (USSR), no. 12, Dec. 1979 p 38-40 Transl. by Kanner (Leo) Associated, Redwood City, Calif. Original doc. prep. by Penza Factory Higher to Technical

// BEST DOCUMENT AVAILABLE

Inst., USSR
(Contract NASw-3199)
(NASA-TM-76307) Avail: NTIS HC A02/MF A01 CSCL 06P

The effect of isometric muscular exertion on the human body was investigated by having subjects perform basic movements in a sitting position in the conventional manner with additional muscle tension at 50% maximum force and at maximum force. The pulse, arterial pressure, skin temperature, respiratory rate, minute respiratory volume and electrical activity of the muscles involved were all measured. Performance of the exercises with maximum muscular exertion for 20 sec and without movement resulted in the greatest shifts in these indices; in the conventional manner substantial changes did not occur; and with isometric muscular exertion with 50% maximum force with and without movement, optimal functional shifts resulted. The latter is recommended for use in industrial exercises for the prevention of hypodynamia. Ten exercises are suggested. E.D.K.

N81-16724*# National Aeronautics and Space Administration, Washington, D. C.
PHARMACOLOGICAL ACTIVITY AND TOXICITY OF SOME NEUROTROPIC AGENTS UNDER CONDITIONS OF EXPERIMENTAL HYPODYNAMIA
L. T. Kirichek Sep. 1980 8 p refs Transl. into ENGLISH from Farmakol. Toksikol. (USSR), v. 42, no. 3, May - Jun. 1979 p 221-225 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Kharkov Medical Inst. (USSR)
(Contract NASw-3199)
(NASA-TM-76371) Avail: NTIS HC A02/MF A01 CSCL 06T

The indices of pharmacological range, risk coefficients, ED50, LD50, the size of the area of toxic activity, and maximal tolerated and absolute lethal doses were compared in hypodynamic mice. The pharmacological activity of the test neurotropic agents exhibiting a central action underwent change, but their toxicity remained unchanged. T.M.

N81-16725*# National Aeronautics and Space Administration, Washington, D. C.
AUTOREGULATION OF CEREBRAL BLOOD CIRCULATION UNDER ORTHOSTATIC TESTS
M. D. Gay.vyy, V. G. Maltsev, and V. E. Pogorelyy Sep. 1980 10 p refs Transl. into ENGLISH from Fiz. Zh. SSR (USSR), v. 65, no. 2, 1979 p 263-268 Original language document announced as A79-36098 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Pyatogorsk Pharmaceutical Inst., USSR
(Contract NASw-3199)
(NASA-TM-76372) Avail: NTIS HC A02/MF A01 CSCL 06P

Autoregulation of cerebral blood flow (ACBF) under orthostatic tests (OT) was estimated in acute experiments on rabbits and rats under local anesthesia according to changes of perfusion pressure (PP) in carotid arteries, cerebral blood flow, pressure in the venous system of the brain, and resistance of cerebral vessels. The OT were conducted by turning a special table with the animal fastened to it from a horizontal to a vertical (head up or head down) position at 40 to 80 deg. In most experiments ACBF correlated with the changes of PP. Different variations of ACBF and its possible mechanisms are discussed. E.D.K.

N81-16726*# National Aeronautics and Space Administration, Washington, D. C.
EFFECT OF CERVICOLABYRINTHINE IMPULSATION ON THE SPINAL REFLEX APPARATUS
A. I. Yarotskiy Sep. 1980 7 p refs Transl. into ENGLISH of Fiziol. Zh. SSSR (USSR), v. 75, no. 12, Dec. 1979 p 1838-1840 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Uzbek Inst. for Physical Culture, Tashkent, USSR
(Contract NASw-3199)
(NASA-TM-76375) Avail: NTIS HC A02/MF A01 CSCL 06P

In view of the fact that the convergence effect of vestibular impulsation may both stimulate and inhibit intra and intersystemic coordination of physiological processes, an attempt was made to define the physiological effect on the spinal reflex apparatus of the convergence of cervicolabyrinthine impulsation on a model of the unconditioned motor reflex as a mechanism of the common final pathway conditioning the formation and realization of a focused beneficial result of human motor activities. More than 100 persons subjected to rolling effect and angular acceleration during complexly coordinated muscular loading were divided according to typical variants of the functional structure of the patella reflex in an experiment requiring 30 rapid counterclockwise head revolutions at 2/sec with synchronous recording of a 20 item series of patella reflex acts. A knee jerk coefficient was used in calculations. In 85 percent of the cases 2 patellar reflexograms show typical braking and release of knee reflex and 1 shows an extreme local variant. The diagnostic and prognostic value of these tests is suggested for determining adaptive possibilities of functional systems in respect to acceleration and proprioceptive stimuli. T.M.

N81-16727*# National Aeronautics and Space Administration, Washington, D. C.
RHEOENCEPHALOGRAPHY IN MENIERE'S DISEASE
M. P. Nikolayev and O. N. Mertsalova Sep. 1980 7 p refs Transl. into ENGLISH from Vestn. Otorinol-Laringol. (USSR), no. 3, May-Jun. 1979 p 12-15 Transl. by Kanner (Leo) Associated, Redwood City, Calif. Original doc. prep. by Botkin Clinical Hospital
(Contract NASw-3199)
(NASA-TM-76387) Avail: NTIS HC A02/MF A01 CSCL 06E

Rheoencephalography (REG) was used on 35 patients with Meniere's disease to determine tonus and perfusion of cerebral vessels. The analysis took account of age, duration of the disease and presence or absence of cervical osteochondrosis. Hypertensive symptoms in the vertebro-basilar system predominated in the under 45 age group, while for the over 45 patients and those suffering for more than 5 years, hypertensive symptoms were likewise noted in the internal carotid arterial system. Signs of angiospasm were revealed both for patients with cervical osteochondrosis and without it. Hypertensive signs were noted in 88.5% of patients with Meniere's disease and as a rule they were noted in the entire vertebro-basilar system without respect to the presence or absence of concurrent cervical osteochondrosis and uni- or bilateral affection of the labyrinth; in patients over 45 who had suffered more than 5 years this also applied to the internal carotid arterial system. Identification of the condition of cerebral circulation and the planning of more effective therapy that influences vascular tone is made possible by REG. E.D.K.

N81-16728*# National Aeronautics and Space Administration, Washington, D. C.
HYDROELASTIC EFFECTS IN THE AORTA BIFURCATION ZONE
A. S. Volmir, M. S. Gersheyn, and B. A. Purinya Oct. 1980 7 p refs Transl. into ENGLISH of Mekh. Polim. (USSR), v. 7, Jan. - Feb. 1971 p 164-165 Original language document announced as A71-28657 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. Prep. by Latvian SSR Acad. of Sci., USSR
(Contract NASw-3199)
(NASA-TM-75432) Avail: NTIS HC A02/MF A01 CSCL 06P

The mechanical behavior of the vessels and blood is mathematically analyzed at the point of aortic bifurcation using a homogeneous single layer channel as a model of the aorta. Allowance is made for the fact that the aortic intima is considerobley less rigid than the other layers. For analysis of blood flow in the major arteries, the blood is treated as a viscous Newtonian fluid whose movements are described by Navier-Stokes equations and a continuity equation. Blood flow dynamics at the aortic bifurcation are discussed on the basis of the results. E.D.K.

N81-16729*# National Aeronautics and Space Administration, Washington, D. C.

BEST DOCUMENT AVAILABLE

ORTHOSTATIC HYPOTENSION
J. J. Grimm Dec. 1980 11 p refs Transl. into ENGLISH of Rev. Suisse de Medecine (Switzerland), 69, no. 16, 1980 p 518-521 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Univ. Med. Policlinic, Lausanne, Switzerland
(Contract NASw-3199)
(NASA-TM-75433) Avail: NTIS HC A02/MF A01 CSCL 06S

Following a brief physiopathological review, orthostatic hypotension is classified into three groups: organic, functional and medication-dependent. The importance of etiological diagnosis, the use of objective tests and appropriate therapy, especially concerning the organic forms, is stressed. Author

N81-16730*# National Aeronautics and Space Administration, Washington, D. C.
DOSIMETRIC INVESTIGATIONS OF COSMIC RADIATION ABOARD THE KOSMOS-936 AES (JOINT SOVIET-AMERICAN EXPERIMENT K-206)
E. V. Benton, Ye. Ye. Kovalyev, and V. Ye. Dudkin Apr. 1980 90 p refs Transl. into ENGLISH of "Dozimetricheskiye Issledovaniya Kosmicheskikh Izlucheniy na Bortu ISZ Kosmos-936 (Sovmestnyy Sovetsko-Amerikanskiy Eksperiment K-206)" Moscow, 1979 124 p Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Inst. of Midico-Biological Problems, Ministry of Health, Moscow
(Contract NASw-3199)
(NASA-TM-75772) Avail: NTIS HC A05/MF A01 CSCL 06R

The Soviet and American parts of the experiment are described separately. Particular attention was given to the following problems: placement of the detectors; study of neutron radiation within the biosatellite; and studies of fragmentation of heavy nuclei on accelerators. Unified methods were developed for the calibration of Soviet and American detectors. T.M.

N81-16731*# Tennessee Univ., Memphis.
RELATIVE TOXICITY TESTING OF SPACECRAFT MATERIALS. 1: SPACECRAFT MATERIALS Annual Report, 10 Nov. 1978 - 9 Nov. 1980
W. H. Lawrence 6 Nov. 1980 83 p refs
(Contract NAS9-15670)
(NASA-CR-160908) Avail: NTIS HC A05/MF A01 CSCL 06T

In chamber thermodegradation procedures were used to access the lethality to rats of the pyrolysis/combustion products of three foams, an adhesive backed metallic tape and RTV silicone rubber adhesive sealant used in spacecraft construction. The role of carbon monoxide in the overall pyrolysate toxicity was also investigated. Post exposure observation of the rats, histological evaluation of selected organs, carbon monoxide concentration in the chamber atmosphere during exposure and the percent carboxyhemoglobin in the animals expiring in the chamber are discussed. Thermogravimetric analysis and dosage response results are given. The lethal effect of the RTV silicon appears to be due to physical obstruction of the respiratory system by particulate matter from pyrolysis. A.R.H.

N81-16732*# Tennessee Univ., Memphis.
RELATIVE TOXICITY TESTING OF SPACECRAFT MATERIALS. 2: AIRCRAFT MATERIALS Annual Report, 10 Nov. 1978 - 9 Nov. 1980
W. H. Lawrence 6 Nov. 1980 111 p refs
(Contract NAS9-15670)
(NASA-CR-160907) Avail: NTIS HC A06/MF A01 CSCL 06T

The relative toxicity of thermodegradation (pyrolysis/combustion) products of aircraft materials was studied. Two approaches were taken to assess the biological activity of the pyrolysis/combustion products of these materials: (1) determine the acute lethality to rats from inhalation of these pyrolysates and (2) examine the tendency for sublethal exposure to the pyrolysates to disrupt behavioral (shock avoidance) performance of exposed rats. The relative importance of lethality vs. behavioral effects in selection of a material may be dictated by whether or not individuals potentially exposed to such products, would have an opportunity to escape if they were behaviorally capable of doing so. If so, the second parameter would assume greater importance, but if not the first parameter may be of much greater importance in selecting materials. E.D.K.

N81-16733# McDonnell-Douglas Astronautics Co., St. Louis, Mo. Engineering Psychology Dept.
DYNAMIC TARGET ACQUISITON: EMPIRICAL MODELS OF OPERATOR PERFORMANCE Final Report, Jul. 1977 - Jun. 1980
Larry R. Beideman, Frank E. Gomer, and Sheldon H. Levine Aug. 1980 221 p refs
(Contract F49620-77-C-0100; AF Proj. 2313)
(AD-A092263; MDC-E2305; AFOSR-80-1177TR) Avail: NTIS HC A10/MF A01 CSCL 17/8

The intent of this three year research program has been to evaluate detection and recognition processes as observers view dynamic sensor imagery for target acquisition purposes. Moreover, we have attempted to specify differences in human performance which can be attributed to inherent differences between IR and TV target signatures. In all experiments, we have emulated the image dynamics associated with a ground-stabilized, narrow FOV sensor. Further, we have used experienced observers as subjects in these experiments. The operational characteristics of certain attack aircraft and imaging missiles led us to examine initial slant ranges to target of 30,000, 15,000, and 5,000 ft. Comparisons of operator performance with simulated IR vs. TV imagery at all initial slant ranges indicated that IR targets were detected more quickly and at greater stand-off ranges than comparable TV targets, especially when targets were embedded in background scenes of medium or high complexity. This occurred even though we simulated optimal visibility conditions, with no significant atmospheric attenuation or distortion of the energy received by the imaging sensor. GRA

N81-16734# Civil Aeromedical Inst., Oklahoma City, Okla.
EFFECTS OF OZONE (0.30 PARTS PER MILLION, APPROXIMATELY 600 MU G/M 3) ON SEDENTARY MEN REPRESENTATIVE OF AIRLINE PASSENGERS AND COCKPIT CREWMEMBERS
E. A. Higgins, M. T. Lategola, C. E. Melton, and J. A. Vaughan Mar. 1980 54 p refs
(AD-A092268; FAA-AM-80-9) Avail: NTIS HC A04/MF A01 CSCL 01/2

This study was undertaken to determine the effects of 0.30 ppmv ozone on 40 men representative of airline pilots. All were medically fit; 20 were smokers and 20 were nonsmokers. Subjects were divided into two age groups, 40-49 years and 50-59 years. The experiments consisted of exposure to 0.30 ppmv ozone and, on another occasion, to air only for 3 h at a simulated altitude of 6,000 ft mean sea level. Subjects were sedentary throughout the experiment. Ozone had no effect on heart rate and short-term memory. The group showed a statistically significant incidence of symptoms related to ozone exposure; most were shown by the 40 to 49 year old nonsmoking group while at altitude and postaltitude, and in smokers in the 50 to 59 year age group only at altitude. Eye irritation was the commonest symptom, followed by headache, nasal irritation, and throat irritation. Data showed significant effects of ozone on forced expiratory volume, 1 second forced expiratory volume, and forced end-expiratory flow. The pulmonary effect of ozone appears to be principally on the small airways. Impairment of visual accommodation was associated with ozone. Dark adaptation threshold was elevated in ozone in the 50 to 59 year nonsmoking age group. Retinal bleach recovery time was retarded and blink rate was higher during ozone exposure. It is concluded that 0.30 ppmv ozone is near threshold for adverse effects of ozone. The data are also applicable to passengers who fit into the same category as these sedentary subjects. GRA

N81-16735# School of Aerospace Medicine, Brooks AFB, Tex. Aerospace Medical Div.
EVALUATION OF SIMULATED RADIOFREQUENCY HEAT-

BEST DOCUMENT AVAILABLE

ING PROCEDURES Interim Report, 1 Jul. 1978 - 1 Jun. 1979
John C. Burr, Jerome H. Krupp, Doris A. Hamill, and Mary E. Donahue Oct. 1980 28 p refs
(AF Proj. 7757)
(AD-A092731; SAM-TR-80-30) Avail: NTIS HC A03/MF A01 CSCL 06/16

A method for simulating radiofrequency radiation (RFR) heating at 1.2 GHz E-field oriented in the rat using warm moist (90% relative humidity) air is presented. The method can adequately simulate the overall linear rate of internal heating in the rate and the peak temperature excursion but fails to simulate the initial rapid rate of temperature rise due to RFR. Even with this shortcoming it appears that this moist heat simulation is superior to previous hot air simulations. GRA

N81-16736# New York Univ., N. Y. Neuromagnetism Lab.
MAGNETIC FIELDS OF THE CEREBRAL CORTEX
Samuel J. Williamson and Lloyd Kaufman 15 Jun. 1980 51 p refs Submitted for publication
(Contract N00014-76-C-0568; NR Proj. 201-209)
(AD A086288, Rept-6) Avail NTIS HC A04/MF A01 CSCL 06/16

The observed patterns over the scalp of magnetic fields evoked by visual, somatic, and auditory stimuli are analyzed to deduce the position and depth of the equivalent current dipole generating source. Expressions are developed for both sphere and half space models for the head, and graphs are presented to correct for the use of a pickup coil of finite diameter. For all three responses, the position of the generating source is deduced to lie in the corresponding primary projection area of the cortex. GRA

N81-16737# Saint Elizabeth's Hospital, Brighton, Mass.
DEVELOPMENT OF PERCUTANEOUS ENERGY TRANSMISSION SYSTEMS Annual Progress Report, Apr. 1979 - Mar. 1980
Benedict D. T. Daly, Michael Szycher, Michael Worthington, Victor L. Poirier, Roger G. Warren, Christian C. Haudenschild, Michael B. Lewis, Charles E. Scheller, Jon N. Meliones, and Donald Dempsey 11 Jun 1980 290 p refs
(Contract N01-HV-8-2919)
(PB81-109381, NIH-N01-HV-8-2919-2) Avail NTIS HC A13/MF A01 CSCL 06B

A system designed to transmit energy to intracorporeal blood pumps was developed. This system utilized polytetrafluroethylene (PTFE) to provide a connective tissue biomaterial seal limiting epidermal migration and sinus formation. Eight iterations were evaluated in vivo. These studies have demonstrated that PTFE will support ingrowth and that this ingrowth limits epidermal migration. The interface is protected by a polyester velour covered skirt which provides strain relief and this must be implanted subdermally. Mobility of the tissues surrounding the device is important to allow displacement which provides additional strain relief. A semiquantitative swab culture technique predicts incipient infection. Nutritional deprivation adversely affects biomaterial tissue interactions. GRA

N81-16738# California Univ., San Diego. Center for Human Information Processing.
ERRORS IN HUMAN PERFORMANCE Final Report, 1 Jun. 1979 - 31 May 1980
Donald A. Norman 15 Aug. 1980 50 p refs
(Contract N00014-79-C-0515; ARPA Order 3767; NR Proj. 157-434)
(AD-A091925, Rept-8004) Avail: NTIS HC A03/MF A01 CSCL 05/8

Work on this contract examined various applications of human information processing, focusing on the analysis of human error. As a result of the contract investigations, several areas of potential application were identified. One area of immediate possible application is in the design of human-machine interfaces, with particular concern for aspects of system design that lead to human error, taking into account what is known about human attentional and short-term memory limitations. The major focus of the research effort was devoted to the study of human error, especially those made by highly skilled operators in complex, high-demand systems. A classification scheme for these errors was developed. GRA

N81-16739# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).
TECHNICAL EVALUATION REPORT OF THE AEROSPACE MEDICAL PANEL WORKING GROUP WG-08 ON EVALUATION OF METHODS TO ASSESS WORKLOAD
Bryce O. Hartman (USAF School of Aerospace Medicine, Brooks AFB, Tex.) Nov 1980 21 p
(AGARD-AR-139; ISBN-92-835-1374-6) Avail NTIS HC A02/MF A01

Military aircraft are becoming increasingly complex the associated avionics systems more sophisticaed and the mission profiles more demanding. The problem is to establish if such an increase in aircrew workload has become a limiting factor in the operational employment of some aircraft and to select viable methods to assess it. This companion document to 'Survey of Methods to Assess Workload' sets forth conclusions on workload measurement methodology. S.F.

N81-16740*# Acurex Corp., Mountain View, Calif. Aerospace Systems Div.
FURTHER STUDY FOR FABRICATION, EVALUATION, AND TESTING OF MONOLAYER WOVEN MATERIALS FOR SPACE SUIT INSULATION Final Report
Robert Short Sep 1980 12 p
(Contract NAS2-10542; Acurex Proj. 6246)
(NASA-CR-166140; ACUREX-TR-80-31/AS) Avail NTIS HC A02/MF A01 CSCL 06K

Improvements to the monolayer woven pile concept were evaluated in terms of increased durability and thermal performance. Three varieties of the monolayer material were tested for thermal conductance under various conditions simulating those which occur in space. In addition, the tendency of the pile to unravel was subjectively evaluated. E.D.K.

N81-16741*# Vought Corp., Dallas, Tex.
DEVELOPMENT AND FABRICATION OF AN ADVANCED LIQUID COOLING GARMENT Final Report
C. W. Hixon 6 Mar 1978 87 p
(Contract NAS2-9026)
(NASA-CR-152101; Rept-2-53200/8R-3462) Avail: NTIS HC A05/MF A01 CSCL 06G

A tube/fin concept liquid cooling garment head cooler was developed, fabricated and delivered to NASA-ARC. The head cooler was fabricated from polyurethane film which sandwiches the transport fluid tubing and a thermally conductive fin material. The head cooler garment is sewn to form a skull cap and covered with a comfort liner. In addition, two Neonate heating garments were fabricated and supplied to NASA for further finishing and use in medical tests. The resulting garment is flexible, elastic and conforms to the head comfortably. Tests on a tube/fin element of identical construction as the head cooler demonstrated good thermal effectiveness. Use of commercially available materials and development of relatively simple fabrication techniques give the potential for a low garment cost. Author

N81-16742# Boeing Aerospace Co., Seattle, Wash. Engineering Technology Div.
NAVY MANAGER'S GUIDE FOR THE DESIGN SECTIONS OF MIL-H-46855 Final Report, 27 Sep. 1979 - 26 Sep. 1980
Mildred English 26 Sep 1980 70 p refs
(Contract N62269-79-R-0740)
(AD-A092009; D180-26111-1; NADC-79219-60) Avail: NTIS HC A04/MF A01 CSCL 05/5

This document explains how to implement the design sections of MIL-H-46855, Human Engineering Requirements for Military Systems, Equipment and Facilities. It was written for Navy and contractor Human Factors Engineering (HFE) managers. DoD and Navy requirements for performing HFE design during system acquisition are cited. Eight standard HFE design techniques and 9 design techniques using computers are described. When and how techniques are used, their products and purpose, and advantages and limitations are explained. GRA

N81-16743# Virginia Polytechnic Inst. and State Univ., Blacksburg. Human Factors Lab.
HUMAN VISUAL PERFORMANCE AND FLAT PANEL DISPLAY IMAGE QUALITY
Harry L. Snyder Jul. 1980 463 p refs
(Contract N00014-78-C-0238; NR Proj. 196-155)
(AD-A092685; VPI-HFL-80-1/ONR-80-1) Avail: NTIS HC A20/MF A01 CSCL 05/5

This is the Final Technical Report of Task I. Human Engineering Survey and Analysis of the subject contract. The task is a survey of the pertinent visual performance, display system capability, and human engineering design requirements for flat panel visual displays, as applied to U.S. Navy Airborne, Shipborne, and Land-Based Systems. The report contains two application examples of the selection of flat panel displays for both airborne and ship-based information systems. It also surveys the current state-of-the-art of flat panel display technologies, and the manner by which existing visual performance and theory can be applied to the selection and evaluation of flat panel technologies for various applications. The flat panel technologies surveyed are light emitting diodes, electroluminescence, liquid crystal, electrochromic, electrophoretic, and gas (plasma) discharge. A uniform set of performance variables is used to compare the various technologies, both among themselves and with the traditional cathode ray tube. Similarly, these technologies are evaluated against design criteria and current models of image quality which relate human performance to display characteristics. Pertinent human visual performance data are presented as the basis for selecting and applying image quality models. Data gaps and needs are summarized at the end of the report. GRA

N81-16744# Massachusetts Inst. of Tech., Cambridge. Sea Grant Coll. Program.
AN ASSESSMENT OF UNDERSEA TELEOPERATORS
Thomas Nico Sofyanos and Thomas B. Sheridan Jun. 1980 316 p refs
(Grant NOAA-79AA-D-00101)
(PB81-102535; MITSG-80-11; NOAA-80082504) Avail: NTIS HC A14/MF A01 CSCL 13J

The current and near future applications of undersea teleoperators and competing modes of underwater intervention are assessed. It identifies the role of remotely operated vehicle systems and the implications on diving safety and underwater inspection of offshore installations. The current development trends for teleoperator systems are examined and federally supported programs are evaluated. GRA

N81-17691*# California Univ., Irvine. Dept. of Developmental and Cell Biology.
DEVELOPMENT OF GUAYULE (PARTHENIUM ARGENTATUM) RESEARCH IN CELL CULTURE Final Report
Ernest A. Bell 1 Jan. 1981 14 p refs Prepared for JPL
(Contracts NAS7-100; JPL-954955)
(NASA-CR-163945; UCI-59913) Avail: NTIS HC A02/MF A01 CSCL 08C

Utilizing the lateral buds of known high rubber producing plants as explants in culture medium specifically designed to engender shoot development and to prevent callus formation, unlimited numbers of replicate plants can be produced. Each has the same genotype as the parent. This procedure has long been used to rid plants of virus, the latter generally does not occur in the embryonic tissues of the bud; it also, by virtue of its axenic nature, eliminates all microorganisms characteristic of the parent plant. Auxins were found essential to callus formation, but since the latter is known to bring about chromosomal aberrations, it was avoided. The cytokinin benzylaminopurine strongly stimulated shoot growth, and the number of regenerated buds on the inoculum was proportional to its concentration. These buds produced shoots several centimeters in length which were caused to root on medium containing indolebutyric acid. Transferred to the septic condition of soil, the plantlets were gradually brought into full sunlight where they showed a brief vegetative growth with production of mature leaves, and flowered. Author

N81-17692*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.
USE OF AN ELECTRICAL RESISTANCE HYGROMETER TO MEASURE HUMAN SWEAT RATES
Toshiyuki Suga Oct. 1980 30 p refs
(NASA-TM-81223; A-8306) Avail: NTIS HC A03/MF A01 CSCL 06P

The application of the resistance hygrometer as a tool to measure the localized sweat rate from the human body in both the active and passive sweat regions was studied. It was found that the physiological function of the skin membrane and fluid carrier transport phenomena from the outer skin have an indistinguishable effect on the observed findings from the instrument. The problems associated with the resistance hygrometer technique are identified and the usage of the instrument in the physiological experimentation from the engineering standpoint is evaluated. Author

N81-17693# Academy of Natural Sciences of Philadelphia, Pa. Div. of Limnology and Ecology.
PHYTOPLANKTON STUDIES AND NUTRIENT CONCENTRATIONS IN THE VICINITY OF THE C. P. CRANE GENERATING STATION Final Report, Jul. 1979 - Mar. 1980
K. C. Sellner, L. A. Lyons, R. K. Mahoney, M. M. Olson, and E. S. Perry 17 Sep. 1980 75 p refs Sponsored by Maryland Dept. of Natural Resources
(PB81-114746; PPSP-CPC-80-5) Avail: NTIS HC A04/MF A01 CSCL 06F

Plant operations appeared to stimulate phytoplankton productivity at plant discharge and in upper Saltpeter Creek. Carbon fixation rates and assimulation ratios were enhanced in wholewater and nanoplankton size fractions for the three upper Saltpeter Creek stations compared to data collected at intake (Seneca Creek). However, few significant alterations in phytoplankton biomass (chlorophyll alpha) resulting plant operations were noted in the vicinty of the C.P. Crane plant. Enhanced productivities were probably a function of ambient water temperature. Delta Ts observed between intake and the impacted areas and species composition of the phytoplankton. GRA

N81-17695# Army Research Inst. of Environmental Medicine, Natick, Mass. Military Ergonomics Div.
PHYSIOLOGICAL AND HEMATOLOGICAL RESPONSES TO SUMMER AND WINTER DRY-HEAT ACCLIMATION
Yair Shapiro, Roger W. Hubbard, Claire M. Kimbrough, and Kent B. Pandolf 25 Jul. 1980 35 p refs
(AD-A093194; USARIEM-M-31/80) Avail: NTIS HC A03/MF A01 CSCL 06/19

Differences between acclimation to heat at the end of winter (W) and at the end of summer (S) were studied on the same 8 male volunteers. Subjects were exposed to 40 C, 30% rh for 10 days on two separate occasions approximately 5 months apart (S and W). Daily exposures lasted 120 min: 10 min rest, 50 min walking 1.34m/s on the level, 10 min rest, 50 min walking. During W acclimation, rectal temperature (Tre) and heart rate (HR) decreased, sweat rate (msw) remained unchanged, and plasma and red cell volume of the blood expanded. During S acclimation, HR decreased while Tre and msw remained unchanged, and plasma volume increased. The Tre of the acclimated subjects remained higher in W and msw lower than in S. It was concluded that acclimation does not totally eliminate the seasonal differences in thermoregulatory set-point and sweat sensitivity. Further, acclimation to a more severe heat did not improve the thermoregulatory set-point that was achieved by natural acclimatization to a milder heat, but affected the cardiovascular adjustment and caused greater plasma volume expansion. W acclimation caused both plasma and blood cell volume expansion while S acclimation affected only plasma volume. GRA

BEST DOCUMENT AVAILABLE

N81-17696# Army Research Inst. of Environmental Medicine, Natick, Mass.

THERMAL COMFORT IN AN ERA OF ENERGY SHORTAGE

Ralph F. Goldman 6 Oct. 1980 27 p refs
(AD-A093193; USARIEM-M-30/80) Avail: NTIS HC A03/MF A01 CSCL 15/5

Human thermal comfort rests upon the interactions among six ket factors: four from the environment and two regulated by the individual and his job. The four ambient environmental factors include air temperature, air motion, vapor pressure, and the mean radiant temperature of the surroundings. Heat production and clothing are the individual factors. The correlation of these factors were studied and the results for office environments are presented. T.M.

N81-17697# Connecticut Univ., Storrs.

TOXICOLOGY AND METABOLISM OF NICKEL COMPOUNDS: COMPREHENSIVE REPORT OF OVERALL ACTIVITIES DURING THE THREE-YEAR PERIOD FROM 1 DECEMBER 1977 - 30 NOVEMBER 1980

F. W. Sunderman, Jr. 15 Aug. 1980 18 p refs
(Contract DE-AS02-76EV-03140)
(DOE/EV-03140/5-T1) Avail: NTIS HC A02/MF A01

The principal areas of investigation were: embryotoxicity, teratogenicity, and mutagenicity of nickel carbonyl; metabolism, detoxification, and excretion of nickel compounds; studies of nickel carcinogenesis; nickel anlaysis in body fluids and tissues to monitor occupational exposures; and nephrotoxicity of nickel compounds. The hematological effects of nickel compounds were also examined. DOE

N81-17698# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).

SPATIAL DISORIENTATION IN FLIGHT: CURRENT PROBLEMS

G. Perdriel, ed. (French Air Force, Paris) and A. J. Benson, ed. (RAF, Farnborough, England) Oct. 1980 99 p refs In ENGLISH and FRENCH Proc. of Conf. held in Bodo, Norway, 20-23 May 1980
(AGARD-CP-287; ISBN-92-835-0278-7) Avail: NTIS HC A05/MF A01

The correlation between spatial disorientation in flight and the occurrence of aircraft accidents is discussed in detail. Particular attention is placed on determining the perceptual errors that characterize spatial disorientation in flight.

N81-17699# Centre de Recherches du Service de Sante des Armees, Clamart (France).

PHYSIOLOGICAL MECHANISMS OF SPATIAL DISORIENTATION NOT OF VISUAL ORIGIN [LES MECHANISMS PHYSIOLOGIQUES DE LA DESORIENTATION SPATIALE D'ORIGINE NON VISUELLE]

J. Colin *In* AGARD Spatial Disorientation in Flight Oct. 1980 6 p refs In FRENCH

Avail: NTIS HC A05/MF A01

Spatial orientation involves the complex integration of data emanating from numerous receptors. In most cases, a disorientation occurs when the visual system, which plays the principle role, can no longer perform its function and the other systems are influenced by a gravito-inertial environment. The reactions thrown out of gear by linear and radial acceleration and then by angular acceleration are reviewed. For a third time the factors modifying the intensity of these reactions are recalled. This permits insisting on the concept of visual dominance and vestibular suppression, which is at the origin of the essential means of preventing spatial disorientation in flight. An aeromedical formation of the crew is particularly important in the visual presentation of information required for piloting, for repeated carry over for flight formation and for flight without visibility. Transl. by A.R.H.

N81-17700# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).

AN UPDATE OF FINDINGS REGARDING SPATIAL DISORIENTATION IN FLIGHT: A RECONSIDERATION OF UNDERLYING MECHANISMS

F. H. Monesi *In its* Spatial Disorientation in Flight Oct. 1980 6 p refs
Avail: NTIS HC A05/MF A01

The anatomical foundations, physiological mechanisms and mental functions known to influence spatial orientation on Earth and in flight are reviewed. The effects of flight environment on visual, vestibuler and kiaesthetic cues as well as on mental functions able to induce perceptual errors conducive to spatial disorientation are reconsidered with a view of identifying the theories accounting for disorientation incidents and accidents in flight. R.C.T.

N81-17701# Italian Air Force Medical Services, Bari-Palese AFB.

PERCENTUAL ERRORS IN FLIGHT: A SURVEY OF 100 MILITARY PILOTS ON ACTIVE DUTY

Pietro DeGiosa *In* AGARD Spatial Disorientation in Flight Oct. 1980 7 p refs
Avail: NTIS HC A05/MF A01

A survey was given to 80 pilots and 20 cadet pilots in flight activity to determine some of the problems associated with perceptive disturbances in flight. The survey consisted of 116 questions, divided into 6 major parts: the first contains biographical data such as age, total hours of flight and the hours of flight activity during 1979, type of aircraft piloted, flight accident if any; the second part is relative to the possible correlation between on the one hand psycho-affective or psycho-social situation and type of mission and on the other hand disturbances if any; the third part refers to the correlation between on the one hand physical conditions, life, habits, the use of drugs and on the other hand possible perceptive alterations they can cause; the fourth part investigates the relations between the type of aircrafts and perceptive alterations; the fifth part deals with different atmospheric conditions in which the flight is possible; with some of the questions we investigate the duration of the disturbances and the time of the disappearance of these perceptive disturbances initially felt; and the last part investigates the perceptive disturbances suffered out of the flight and the quality considered indispensable in avoiding them. R.C.T.

N81-17702# Pennsylvania State Univ., University Park.

THE AMBIENT VISUAL SYSTEM AND SPATIAL ORIENTATION

H. W. Liebowitz and J. Dichgans (Tuebingen Univ.) *In* AGARD Spatial Disorientation in Flight Oct. 1980 4 p refs

(Grants MH-08061; EY-03276)
Avail: NTIS HC A05/MF A01

Two modes of processing visual information are reviewed with particular emphasis on their independent functions and the role of the ambient visual system in orientation. The multisensory basis of orientation and the central integration of signals are discussed. Disorientation is assumed to result from a mismatch, in comparison with the previous experience of the individual, of these simultaneously occurring signal patterns. It is suggested that disorientation in aircraft under instrument flight conditions may result from the substitution of an unnatural symbolic indicator to replace the visual stimuli normally involved in orientation and the failure of a learned cognitive skill to compensate for mismatched signals. R.C.T.

N81-17703# School of Aerospace Medicine, Brooks AFB, Tex. Ophthalmology Branch.

VISUAL ILLUSIONS AS A PROBABLE CAUSE OF AIRCRAFT ACCIDENTS

Thomas J. Tredici *In* AGARD Spatial Disorientation in Flight Oct. 1980 5 p refs

Avail: NTIS HC A05/MF A01

Spatial disorientation, visual restrictions, and illusions were examined as the possible causal factors in aircraft accidents. A number of aircraft accidents were analyzed in which visual illusions appear to be a significant or contributing factor in the accident. It is shown that such factors as rain on the windshield,

BEST DOCUMENT AVAILABLE

flashblindness by high intensity strobe lights, disorientation by flickering lights, and ground light intensity variations appear to have led to errors in judgement, thus directly contributing to the aircraft accident. It is concluded that a studied awareness of these factors is the pilot's best corrective action available.
R.C.T.

N81-17704# Army Air Corps, Stockbridge (England).
DISORIENTATION IN ARMY HELICOPTER OPERATIONS: A GENERAL REVIEW
K. Edgingtom and C. J. Box *In* AGARD Spatial Disorientation in Flight Oct. 1980 9 p refs

Avail: NTIS HC A05/MF A01

Accidents involving aircraft mishandled during takeoff, landing or tactical low flying (or nap of the earth flight) were investigated. Special emphasis was placed on examining those accidents which occurred as a result of flight disorientation. Orientation error rates, the type of accidents as well as influencing factors were reviewed. Significant results are reported. R.C.T.

N81-17705# Centre d'Essais en Vol, Bretigny-sur-Orge (France). Lab. de Medecine Aerospatiale.
ILLUSIONS OF ATTITUDE AND MOVEMENT DURING EARTH-HORIZONTAL ROTATION
Alain Leger, Jack P. Landolt, and Kenneth E. Money *In* AGARD Spatial Disorientation in Flight Oct. 1980 19 p refs In ENGLISH and FRENCH Prepared in cooperation with Defence and Civil Inst. of Environmental Medicine, Downsview, Ontario

Avail: NTIS HC A05/MF A01

Ten voluntary males underwent a sequence of experiments to determine the effect of rotation about the horizontal axis. Each subject underwent nine separate tests of rotation about the horizontal axis. The number of tests was determined by the number of combinations of the three subject axes (X, Y and Z) and three visual conditions (no visual reference, internal visual reference, and external visual reference). In the first condition, the subject was in total darkness (NVR). The internal visual reference (IVR) was produced by lighting the interior of the gondola. Finally, in the external visual reference (EVR) condition, the gondola hatch was left open and the subject could see the surrounding laboratory, with a visual field of about 60 X 50 deg. The order of tests for each subject was determined by a nine by nine Latin square. In spite of the strong visual input, convincing illusions of attitude and movement were found in the IVR condition. Similar illusions, of course, were experienced in the NVR condition. Comparable illusions occurred during the X-axis and Y-axis rotations, as well as during the (usually employed) Z-axis rotations. In most subjects, the illusions were absent in the EVR condition, but, in some subjects, there was perceptible illusory movement inspite of clear visual reference to the real motion. R.C.T.

N81-17706# Institute of Aviation Medicine, Fuerstenfeldbruck (West Germany).
ORTHOSTATIC DISORDER. A CONTRIBUTING FACTOR TO MOTION SICKNESS?
G. R. Froehlich *In* AGARD Spatial Disorientation in Flight Oct. 1980 4 p refs

Avail: NTIS HC A05/MF A01

Pilot candidates were subjected to the vestibular adroitness test to determine the effects of orthostatic disorders on motion sickness. The test consisted of bending the head once 60 degrees downward and back to the upright position while being rotated at 180 degrees/sec. The test was divided into four categories; each category producing a varying degree of motion sickness symptoms (i.e., mild nausea to severe nausea). Significant results as well as the conclusions are presented in detail. R.C.T.

N81-17707# Defence and Civil Inst. of Environmental Medicine, Downsview (Ontario). Head/Biodynamics Section.
A GENERALIZED TRANSFER FUNCTION FOR DESCRIBING MECHANONEURAL SEMICIRCULAR-CANAL DYNAMICS
Jack P. Landolt (Texas Univ., Galveston) and Manning J. Correia *In* AGARD Spatial Disorientation in Flight Oct. 1980 10 p refs
Avail: NTIS HC A05/MF A01

The dynamic response characteristics of the semicircular canal to rotational head movements were determined via a generalized transfer function. The adequacy of the model was tested by recording the neural activity of the primary efferent fibers inervating the semicircular canals as they respond to appropriate stimulation. Specifically the mechanoneural response characteristics of primary afferent, semicircular canal units in the pigeon were studied to determine whether the model could be used in describing the neurodynamics in other species. R.C.T.

N81-17708# Naval Aerospace Medical Research Lab., Pensacola, Fla.
A MULTISTATION SPATIAL DISORIENTATION DEMONSTRATOR
Fred E. Guedry, Jr. *In* AGARD Spatial Disorientation in Flight Oct. 1980 P refs

Avail: NTIS HC A05/MF A01

A disorientation familiarization trainer was designed and constructed for demonstrating a range of visual and acceleratory conditions that induce disorientation. The demonstrator provides students with memorable personal experiences with various classes of disorientating conditions coupled with an introduction to disorientation-error prevention. R.C.T.

N81-17709# Royal Air Force Inst. of Aviation Medicine, Farnborough (England).
THE ROYAL AIR FORCE SPATIAL DISORIENTATION FAMILIARISATION DEVICES (SDFD)
A. J. Benson *In* AGARD Spatial Disorientation in Flight Oct. 1980 10 p refs
Avail: NTIS HC A05/MF A01

The Spatial Disorientation Familiarization Device (SDFD) was designed to demonstrate to aircrew the fallibility of their senses and the errors of perception that can lead to spatial disorientation in flight. The SDFD is a servocontrolled turntable on which the subject is seated 1 m from the axis of rotation, inside a light-tight cab. Displays within the cab show the subject that his sensations of rotation and attitude are in error, and permit the demonstration of oculogyral, oculogravic, cross coupled (Coriolis) and autokinetic phenomena. Control of the velocity trajectory of the turntable and the illumination of the various displays may be preprogrammed and recorded along with a commentary on magnetic tape. This facility allows an optimized training sequence to be delivered consistently, even by relatively unskilled operators. R.C.T.

N81-17710# Forschungsinstitut fuer Anthropotechnik, Meckenheim (West Germany). Forschungsgesellschaft fuer Angewandte Naturwissenschaften e. V.
ON THE PRACTICE OF MEASURING SENSORY THRESHOLDS: SIGNAL DETECTION AND THE ADAPTIVE METHOD [ZUR PRAXIS DER WAHRNEHMUNGSSCHWELLENMESSUNG: SIGNALENTDECKUNGSANALYSE UND ADAPTIVE VERFAHREN]
S. Trispel May 1979 117 p refs In GERMAN; ENGLISH summary Prepared in cooperation with Helmholtz-Inst. fuer Biomed. Tech.
(FB-43) Avail: NTIS HC A06/MF A01; Fachinformationszentrum, Karlsruhe, West Ger. DM 10

After an introduction to the principles of psychophysical threshold measurement, the fundamentals of signal detection theory and of adaptive measurement techniques, in each case confined to absolute threshold measurement, are discussed. Both procedures are compared regarding their practical usefulness and levels of significance. The application of both procedures is described for the same situation, subjects had to detect a step like velocity change (with a given a priori probability) of a horizontally moving object on a CRT screen. The results, gathered from relatively small groups of subjects, demonstrate in detail some of the inherent effects of these procedures. An adaptive, automatized test for visual acuity measurement is described as an example for the construction of an adaptive measurement strategy. Finally, the differences between both procedures as to

BEST DOCUMENT AVAILABLE

their range of applications are considered. It is concluded that the results of signal detection analysis yield true threshold values, whereas results from adaptive experiments often are influenced by the employed adaptive logic. Author (ESA)

N81-17711*# San Jose State Univ. Foundation, Calif.
MAGNITUDE OF VISUAL ACCOMMODATION TO A HEAD-UP DISPLAY
Edward F. Leitner and Richard F. Haines Feb. 1981 12 p refs
(NASA-TP-1796; A-8379; HUD-15) Avail: NTIS HC A02/MF A01 CSCL 01D

The virtual image symbology of head-up displays (HUDs) is presented at optical infinity to the pilot. This design feature is intended to help pilots maintain visual focus distance at optical infinity. However, the accommodation response could be nearer than optical infinity, due to an individual's dark focus response. Accommodation responses were measured of two age groups of airline pilots to: (1) static symbology on a HUD; (2) a landing site background at optical infinity; (3) the combination of the HUD symbology and the landing site background; and (4) complete darkness. Results indicate that magnitude of accommodation to HUD symbology, with and without the background, is not significantly different from an infinity focus response for either age group. The dark focus response is significantly closer than optical infinity for the younger pilots, but not the older pilots, a finding consistent with previous research. R.C.T.

N81-17712# DBA Systems, Inc., Lanham, Md. Research Inst.
DESIGNER'S GUIDE FOR THE PANEL PROGRAM Technical Interim Report
Medhat Korna and Nilss Aume Oct. 1980 68 p
(Contract F33615-78-C-0507; AF Proj. 7184)
(AD-A093989; UDR-TR-80-64; AMRL-TR-80-124) Avail: NTIS HC A04/MF A01 CSCL 09/2

This designer's guide describes an interactive computer graphics program intended for the computer aided design of avionics control and display panels. Using this program, a designer can specify the basic panel on which all other components will be mounted as well as the components themselves. Also, he can locate and relocate the components, add graphic elements (text, lines, circles), and call for printed, punched, or hard copy (plot) output. The requirements and considerations of several applicable MIL-STANDARDS have been incorporated into the program to facilitate the design process. The Guide to the operation of the PANEL program includes descriptions of the processing available for each of the program functions and subfunctions. A listing of the program is also included along with a brief description of most of the subroutines. GRA

N81-17713# General Electric Co., Syracuse, N.Y. Military Electronic Systems Operation.
COMPUTER-AIDED DEVELOPMENT OF CONTROL CONSOLE, CONTROL PANEL, AND DISPLAY USER INSTRUCTIONS AND TRAINING MATERIALS
S. A. Solow and W. O. Mills Oct. 1980 13 p
(AD-A093891; R80EMH9) Avail: NTIS HC A02/MF A01 CSCL 09/2

This technical information series (TIS) outlines a procedure for developing instructions and training materials for control panel operation and indicator and display interpretation. The method is particularly advantageous when the operator has to observe and respond to large amounts of data and manipulate many controls. The process is described in this TIS as it is applied to the preparation of information for the tactical towed array sonar (TACTAS) System Operator's Manual. However, it can be applied with slight modification to systems having similarly complex man-machine interfaces. Data input, storage, processing, and output are performed by the time-share subsystem (TSS) of the Honeywell 520 Data Processing System (level 66). GRA

N81-17714# Ingenieurbuero fuer Ergonomie, Munich (West Germany).
ERGONOMIC STUDY OF THE INFLUENCE OF ROTARY VIBRATIONS [ERGONOMISCHE UNTERSUCHUNGEN UEBER DIE EINWIRKUNG ROTATORISCHER SCHWINGUNGEN. BEANSPRUCHUNG DURCH ROLLSCHWINGUNGSBELASTUNG]
Wilhelm Ilgmann Bonn Bundesministerium fuer Verteidigung 1979 133 p refs In GERMAN; ENGLISH summary Sponsored by Bundesministerium fuer Verteidigung
(BMVg-FBWT-79-33) Avail: NTIS HC A01/MF A01; DOKZENTBW, Bonn DM 40

For the measurement of the effects of sinusoidal rotary whole-body vibrations on man, a two-degree of freedom motion simulator for roll and pitch vibrations was designed and built. Using the method of producing stimuli ratios, roll vibration strain up to the tolerance limit was investigated in the frequency range from 1 to 10 Hz. Results demonstrate that the psychophysical law of Stevens is appropriate to describe the relationship between vibration stress and subjective sensation. Although the deviation between subjects is quite large, in the frequency range investigated the exponent of the psychophysical law is found to be constant. The correlation between subject's individual reaction and physiological data, such as weight and stature, is small. In consequence of the divergent results concerning the magnitude of sensation related to the same intensity level of vibration, percentiles are recommended to set exposure limits.
Author (ESA)

N81-17715*# Forschungsinstitut fuer Anthropotechnik, Meckenheim (West Germany). Forschungsgesellschaft fuer Angewandte Naturwissenschaften e. V.
MONITORING AND DECISION MAKING BY PEOPLE IN MAN MACHINE SYSTEMS [UEBERWACHUNGS- UND ENTSCHEIDUNGSVERHALTEN DES MENSCHEN IN MENSCH-MASCHINE-SYSTEMEN]
G. Johannsen May 1979 92 p refs Partly in GERMAN and ENGLISH
(Grant NSG-2119)
(NASA-CR-164026; FB-44) Avail: NTIS HC A05/MF A01; Fachinformationszentrum, Karlsruhe, West Germany DM 10 CSCL 05H

The analysis of human monitoring and decision making behavior as well as its modeling are described. Classic and optimal control theoretical, monitoring models are surveyed. The relationship between attention allocation and eye movements is discussed. As an example of applications, the evaluation of predictor displays by means of the optimal control model is explained. Fault detection involving continuous signals and decision making behavior of a human operator engaged in fault diagnosis during different operation and maintenance situations are illustrated. Computer aided decision making is considered as a queueing problem. It is shown to what extent computer aids can be based on the state of human activity as measured by psychophysiological quantities. Finally, management information systems for different application areas are mentioned. The possibilities of mathematical modeling of human behavior in complex man machine systems are also critically assessed.
Author (ESA)

N81-17716# Office of Technology Assessment, Washington, D. C.
ENVIRONMENTAL CONTAMINANTS IN FOOD. VOLUME 2, PART B: WORKING PAPERS
Jan. 1980 557 p refs Sponsored by Office of Technology Assessment, Washington
(PB81-116774-Vol-2-Pt-B) Avail: NTIS HC A24/MF A01 CSCL 06F

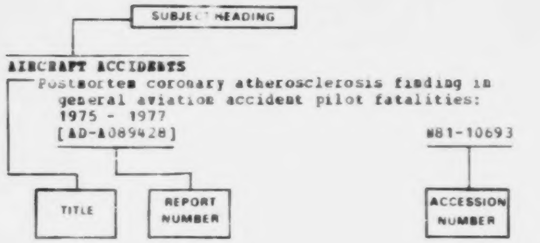
The contents include: toxic substances in food information systems: design and management; assessment of carcinogenic risks from PCBs in food; economic analysis of alternative action levels in the regulation of environmental contaminants in food and analysis of foods for radioactivity. Approaches to monitoring environmental contaminants in food and analytical systems for the determination of metals in food and water supplies are described. Assessment of methods for regulating 'unavoidable' contaminants in the food supply and consumer risk from environmental contaminants in food were determined. GRA

BEST DOCUMENT AVAILABLE

SUBJECT INDEX

AEROSPACE MEDICINE AND BIOLOGY / *A Continuing Bibliography (Suppl. 219)* MAY 1981

Typical Subject Index Listing


SUBJECT HEADING
AIRCRAFT ACCIDENTS
Postmortem coronary atherosclerosis finding in general aviation accident pilot fatalities: 1975 - 1977
[AD-A089428]
N81-10693
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ACCELERATION STRESSES (PHYSIOLOGY)
Frequency domain measures of human performance under G-stress A81-20500
The response of a realistic computer model for sitting humans to different types of shocks A81-22550

ACCIDENT INVESTIGATION
Spatial disorientation in flight: Current problems [AGARD-CP-287] N81-17698
Visual illusions as a probable cause of aircraft accidents N81-17703
Disorientation in Army helicopter operations: A general review --- accident investigation N81-17704

ACCOMMODATION
Magnitude of visual accommodation to a head-up display [NASA-TP-1796] N81-17711

ACID BASE EQUILIBRIUM
Hemorheological changes, the state of microcirculation, and blood acid-base balance in rats under conditions of a 30-day limiting of the motor activity [NASA-TM-76464] N81-16719

ACTIVITY (BIOLOGY)
Phytoplankton studies and nutrient concentrations in the vicinity of the C. P. Crane Generating Station [PB81-114746] N81-17693

AEROSPACE ENVIRONMENTS
Further study for fabrication, evaluation, and testing of monolayer woven materials for space suit insulation [NASA-CR-166140] N81-16740

AEROSPACE MEDICINE
Long-term follow-up of lung volume measurements in initially healthy young aviators A81-22105
Postmortem coronary atherosclerosis findings in general aviation accident pilot fatalities - 1975-77 A81-22109
Effect of body supination angle on subjective response to whole-body vibration A81-22110
Relative toxicity testing of spacecraft materials. 1: Spacecraft materials --- lethality of pyrolysates [NASA-CR-160906] N81-16731
Physiological mechanisms of spatial disorientation not of visual origin N81-17699

AIR TRAFFIC CONTROL
Evaluation and prediction of the vertical situation from a horizontal situation display --- pilot perception of motion and separation in cockpit display of air traffic information A81-20503
Cockpit displayed traffic information and distributed management in air traffic control A81-20916

AIRBORNE/SPACEBORNE COMPUTERS
Brain/computer communication to reduce human error - A perspective A81-22111

AIRCRAFT ACCIDENTS
Postmortem coronary atherosclerosis findings in general aviation accident pilot fatalities - 1975-77 A81-22109
Visual illusions as a probable cause of aircraft accidents N81-17703

AIRCRAFT CONSTRUCTION MATERIALS
Relative toxicity testing of spacecraft materials. 2: Aircraft materials [NASA-CR-160907] N81-16732

AIRCRAFT INSTRUMENTS
Technical evaluation report of the Aerospace Medical Panel Working Group WG-06 on Evaluation of Methods to Assess Workload [AGARD-AR-139] N81-16739

AIRCRAFT NOISE
Effects of internal noise on helicopter operation - An aircrew view A81-20052
The effective acoustic environment of helicopter crewman A81-20056
Acceptance and control of aircraft interior noise and vibration A81-20057
Factors affecting acceptable noise levels in helicopters A81-20059

AIRCRAFT PILOTS
Effects of internal noise on helicopter operation - An aircrew view A81-20052
Human factors by descent energy management A81-20467
Helicopter pilot performance and workload as a function of night vision symbologies A81-20502
An integrated training approach A81-21727
Long-term follow-up of lung volume measurements in initially healthy young aviators A81-22105
Postmortem coronary atherosclerosis findings in general aviation accident pilot fatalities - 1975-77 A81-22109

AIRCRAFT SPECIFICATIONS
Factors affecting acceptable noise levels in helicopters A81-20059

ALTITUDE
Neuroendocrine strategies for adaptation to high altitude N81-16717

ALTITUDE ACCLIMATIZATION
Antidiuretic hormone excretion at high altitude A81-22112

BEST DOCUMENT AVAILABLE

2,3-diphosphoglycerate and night vision A81-22113
Neuroendocrine strategies for adaptation to high altitude N81-16717

ANECHOIC CHAMBERS
Evaluation of simulated radiofrequency heating procedures [AD-A092731] N81-16735

ANNUAL VARIATIONS
Physiological and hematological responses to summer and winter dry-heat acclimation [AD-A093194] N81-17695

ANTIBODIES
Antibodies to myofibril antigens in cosmonauts after spaceflights [NASA-TM-76300] N81-16722

ANTIDIURETICS
Plasma volume, osmolality, vasopressin, and renin activity during graded exercise in man A81-21473
Antidiuretic hormone excretion at high altitude A81-22112

ANTIGENS
Antibodies to myofibril antigens in cosmonauts after spaceflights [NASA-TM-76300] N81-16722

AORTA
Hydroelastic effects in the aorta bifurcation zone [NASA-TM-75432] N81-16728

ARRHYTHMIA
The role of biochemical factors in ventricular dysrhythmia accompanying ischemia A81-19720

ARTERIOSCLEROSIS
Postmortem coronary atherosclerosis findings in general aviation accident pilot fatalities - 1975-77 A81-22109

ARTIFICIAL HEART VALVES
Development of percutaneous energy transmission systems [PB81-109381] N81-16737

ASSEMBLING
A hierarchical programming approach to robot assembly A81-19841

ATMOSPHERIC ENTRY SIMULATION
Cardiovascular and biochemical response to simulated space flight entry A81-22107

ATTITUDE (INCLINATION)
Spatial disorientation in flight: Current problems [AGARD-CP-287] N81-17698
Physiological mechanisms of spatial disorientation not of visual origin N81-17699
An update of findings regarding spatial disorientation in flight: A reconsideration of underlying mechanisms N81-17700
The ambient visual system and spatial orientation --- flight stress (biology) N81-17702
Disorientation in Army helicopter operations: A general review --- accident investigation N81-17704
Illusions of attitude and movement during Earth-horizontal rotation --- oculogravic illusions N81-17705
A multistation spatial disorientation demonstrator N81-17708
The Royal Air Force Spatial Disorientation Familiarisation Devices (SDFD) N81-17709

AUDITORY DEFECTS
Implications of a critical level in the ear for assessment of noise hazard at high intensities A81-20925
Rheoencephalography in Meniere's disease [NASA-TM-76387] N81-16727

AUDITORY PERCEPTION
Implications of a critical level in the ear for assessment of noise hazard at high intensities A81-20925
On the binaural processing of stimuli with different interaural phase relations --- Thesis A81-21450

AUDITORY STIMULI
On the binaural processing of stimuli with different interaural phase relations --- Thesis A81-21450
Analysis and modeling of the cephalic response of a human operator subjected to binaural stimulation in a sound localization task --- French thesis A81-21923

AUDITORY TASKS
Development of a secondary task method for measuring operator workload. II - A change of secondary task performance with acquisition of flying skill by Link Trainer A81-21987

AUTOMATIC CONTROL
Advanced control techniques for teleoperation in earth orbit A81-22610

AUTOPSIES
Postmortem coronary atherosclerosis findings in general aviation accident pilot fatalities - 1975-77 A81-22109

AVIONICS
Designer's guide for the panel program [AD-A093989] N81-17712

B

BEHAVIOR
Relative toxicity testing of spacecraft materials. 2: Aircraft materials [NASA-CR-160907] N81-16732

BINAURAL HEARING
On the binaural processing of stimuli with different interaural phase relations --- Thesis A81-21450
Analysis and modeling of the cephalic response of a human operator subjected to binaural stimulation in a sound localization task --- French thesis A81-21923

BIOASSAY
Relative toxicity testing of spacecraft materials. 2: Aircraft materials [NASA-CR-160907] N81-16732

BIOASTRONAUTICS
The flowering and ripening of Arabidopsis seeds under weightlessness conditions - Biosatellite Kosmos 1129 experiment A81-20849
Cardiovascular and biochemical response to simulated space flight entry A81-22107

BIOCHEMISTRY
The role of biochemical factors in ventricular dysrhythmia accompanying ischemia A81-19720
Cardiovascular and biochemical response to simulated space flight entry A81-22107
2,3-diphosphoglycerate and night vision A81-22113

BIODYNAMICS
Crew station assessment using the Boman modeling system A81-22092
A generalized transfer function for describing mechanoneural semicircular-canal dynamics N81-17707

BIOLOGICAL EFFECTS
Cardiorespiratory and perceptual recovery from a marathon run by novice and experienced women marathon runners N81-16720
Pharmacological activity and toxicity of some neurotropic agents under conditions of experimental hypodynamia [NASA-TM-76371] N81-16724
Phytoplankton studies and nutrient concentrations in the vicinity of the C. P. Crane Generating Station [PB81-114746] N81-17693
Toxicology and metabolism of nickel compounds: Comprehensive report of overall activities during the three-year period from 1 December 1977 - 30 November 1980 [DOE/EV-03140/5-T1] N81-17697

BEST DOCUMENT AVAILABLE

BIOLOGICAL EVOLUTION
Hominid evolution and SETI
A81-23093
BIOLOGICAL MODELS (MATHEMATICS)
The response of a realistic computer model for sitting humans to different types of shocks
A81-22550
A generalized transfer function for describing mechanoneural semicircular-canal dynamics
N81-17707
BIOMAGNETISM
Magnetic fields of the cerebral cortex
[AD-A086288] N81-16736
BIOMASS
Phytoplankton studies and nutrient concentrations in the vicinity of the C. P. Crane Generating Station
[PB81-114746] N81-17693
BIOMEDICAL DATA
Cardiorespiratory and perceptual recovery from a marathon run by novice and experienced women marathon runners
N81-16720
BIOSPHERE
Heliobiological research - Present status and prospects
A81-19678
BIOTECHNOLOGY
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737
BLOOD CIRCULATION
Hemorheological changes, the state of microcirculation, and blood acid-base balance in rats under conditions of a 30-day limiting of the motor activity
[NASA-TM-76464] N81-16719
Autoregulation of cerebral blood circulation under orthostatic tests
[NASA-TM-76372] N81-16725
BLOOD FLOW
Pressure-flow hysteresis in the pulmonary vasculature
N81-16721
Hydroelastic effects in the aorta bifurcation zone
[NASA-TM-75432] N81-16728
BLOOD PLASMA
Plasma volume, osmolality, vasopressin, and renin activity during graded exercise in man
A81-21473
BLOOD PRESSURE
Statistical studies on blood pressure of JASDF pilots. III - Relationship between physical constitution and blood pressure
A81-21990
Autoregulation of cerebral blood circulation under orthostatic tests
[NASA-TM-76372] N81-16725
BLOOD PUMPS
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737
BLOOD VESSELS
Pressure-flow hysteresis in the pulmonary vasculature
N81-16721
BLOOD VOLUME
Plasma volume, osmolality, vasopressin, and renin activity during graded exercise in man
A81-21473
BODIES OF REVOLUTION
Illusions of attitude and movement during Earth-horizontal rotation --- oculogravic illusions
N81-17705
BODY MEASUREMENT (BIOLOGY)
Long-term follow-up of lung volume measurements in initially healthy young aviators
A81-22105
BODY TEMPERATURE
Data acquisition system for thermal stress studies --- cutaneous heat flow and temperature monitors for individual human body sites
[ASME PAPER 80-WA/OCE-14] A81-21125
Thermal comfort in an era of energy shortage
[AD-A093193] N81-17696
BODY WEIGHT
Statistical studies on blood pressure of JASDF pilots. III - Relationship between physical constitution and blood pressure
A81-21990
BONE MARROW
The colony-forming
A81-20845
BREATHING
Control of breathing during prolonged exercise
A81-21471
BREATHING APPARATUS
Evaluation of full-head enclosed breathing system for extended exposure at high altitude
A81-22077

C

CABIN ATMOSPHERES
Onboard oxygen generation
A81-22082
CARDIAC VENTRICLES
Premature ventricular complexes - Therapeutic dilemmas and decisions
A81-19719
CARDIOGRAPHY
Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979
A81-19711
CARDIOLOGY
Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979
A81-19711
Two-dimensional echocardiography - Methodology and application in clinical cardiology
A81-19714
Echocardiographic studies evaluating the effects of exercise training on the heart
A81-19715
Electrocardiographic stress testing - The debate goes on /probably/
A81-19716
Detection and management of the asymptomatic patient with coronary artery disease
A81-19717
Does exercise protect from coronary artery disease
A81-19718
Premature ventricular complexes - Therapeutic dilemmas and decisions
A81-19719
Cardiorespiratory and perceptual recovery from a marathon run by novice and experienced women marathon runners
N81-16720
CARDIOVASCULAR SYSTEM
Cardiovascular and biochemical response to simulated space flight entry
A81-22107
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737
CAROTID SINUS BODY
Response to transient haemorrhage after acute and chronic section of the carotid sinus nerves
A81-22106
CELL DIVISION
The colony-forming
A81-20845
CELLS (BIOLOGY)
Dynamics of the state of redox systems in structural elements of the cerebral cortex during oxygen deficiency /cytophotometric study in vivo/
A81-19900
Histochemical study of lipid-like material in photochemically formed jeewanu, the protocell, with formaldehyde partially replaced by other organic sources
A81-23092
Development of guayule (Parthenium argentatum) research in cell culture
[NASA-CR-163945] N81-17691

BEST DOCUMENT AVAILABLE

CEREBRAL CORTEX
Dynamics of the state of redox systems in structural elements of the cerebral cortex during oxygen deficiency /cytophotometric study in vivo/ A81-19900
Magnetic fields of the cerebral cortex [AD-A086288] N81-16736
CEREBRUM
Autoregulation of cerebral blood circulation under orthostatic tests [NASA-TM-76372] N81-16725
CHEMICAL EVOLUTION
Histochemical study of lipid-like material in photochemically formed jeewanu, the protocell, with formaldehyde partially replaced by other organic sources A81-23092
CHEMOTHERAPY
Dopaminergic agonists and conditioned avoidance response in normoxic or hypoxic rats A81-22108
CIRCULATORY SYSTEM
Development of percutaneous energy transmission systems [PB81-109381] N81-16737
CLINICAL MEDICINE
Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979 A81-19711
Acute mountain sickness - The clinical approach A81-19713
Two-dimensional echocardiography - Methodology and application in clinical cardiology A81-19714
Echocardiographic studies evaluating the effects of exercise training on the heart A81-19715
Electrocardiographic stress testing - The debate goes on /probably/ A81-19716
Detection and management of the asymptomatic patient with coronary artery disease A81-19717
CLOTHING
Thermal comfort in an era of energy shortage [AD-A093193] N81-17696
COCKPIT SIMULATORS
An integrated training approach A81-21727
COCKPITS
Evaluation and prediction of the vertical situation from a horizontal situation display --- pilot perception of motion and separation in cockpit display of air traffic information A81-20503
Cockpit displayed traffic information and distributed management in air traffic control A81-20916
Effects of ozone (0.30 parts per million, approximately 600 mu g/m 3) on sedentary men representative of airline passengers and cockpit crewmembers [AD-A092268] N81-16734
COLD WATER
Effectiveness and wearability of immersion hypothermia protection equipment A81-22086
COMBUSTION PRODUCTS
Relative toxicity testing of spacecraft materials. 1: Spacecraft materials --- lethality of pyrolysates [NASA-CR-160908] N81-16731
Relative toxicity testing of spacecraft materials. 2: Aircraft materials [NASA-CR-160907] N81-16732
COMPENSATORY TRACKING
A stochastic differential game theory approach to human operators in adversary tracking encounters A81-21023
COMPOSITION (PROPERTY)
Effects of ozone (0.30 parts per million, approximately 600 mu g/m 3) on sedentary men representative of airline passengers and cockpit crewmembers [AD-A092268] N81-16734
COMPUTER GRAPHICS
Designer's guide for the panel program [AD-A093989] N81-17712
COMPUTER PROGRAMMING
A hierarchical programming approach to robot assembly A81-19841
COMPUTERIZED DESIGN
Partly unmanned machining A81-19842
Navy manager's guide for the design sections of MIL-M-46855 [AD-A092009] N81-16742
Designer's guide for the panel program [AD-A093989] N81-17712
COMPUTERIZED SIMULATION
Task segmentation - An approach to simulator task fidelity A81-21728
The response of a realistic computer model for sitting humans to different types of shocks A81-22550
CONDITIONED REFLEXES
Dopaminergic agonists and conditioned avoidance response in normoxic or hypoxic rats A81-22108
CONFERENCES
Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979 A81-19711
Spatial disorientation in flight: Current problems [AGARD-CP-287] N81-17698
CONFIGURATION MANAGEMENT
Navy manager's guide for the design sections of MIL-M-46855 [AD-A092009] N81-16742
CONSCIOUSNESS
Structural analysis of factor patterns on EEG under various states of consciousness A81-21989
CONSOLES
Computer-aided development of control console, control panel, and display user instructions and training materials [AD-A093891] N81-17713
CONTAMINANTS
Environmental contaminants in food. Volume 2, part B: Working papers [PB81-116774-VOL-2-PT-B] N81-17716
CONTROL BOARDS
Designer's guide for the panel program [AD-A093989] N81-17712
Computer-aided development of control console, control panel, and display user instructions and training materials [AD-A093891] N81-17713
CORONARY ARTERY DISEASE
Detection and management of the asymptomatic patient with coronary artery disease A81-19717
Does exercise protect from coronary artery disease A81-19718
The role of biochemical factors in ventricular dysrhythmia accompanying ischemia A81-19720
Postmortem coronary atherosclerosis findings in general aviation accident pilot fatalities - 1975-77 A81-22109
COSMIC RAYS
Dosimetric investigations of cosmic radiation aboard the Kosmos-936 AES (joint Soviet-American experiment K-206) [NASA-TM-75772] N81-16730
COSMONAUTS
Antibodies to myofibril antigens in cosmonauts after spaceflights [NASA-TM-76300] N81-16722
CREW STATIONS
Crew station assessment using the Bioman modeling system A81-22092
CULTURE TECHNIQUES
Development of guayule (Parthenium argentatum) research in cell culture [NASA-CR-163945] N81-17691

BEST DOCUMENT AVAILABLE

22

CYTOGENESIS
Development of guayule (Parthenium argentatum) research in cell culture [NASA-CR-163985] N81-17691

D

DARK ADAPTATION
2,3-diphosphoglycerate and night vision A81-22113

DATA ACQUISITION
Data acquistion system for thermal stress studies --- cutaneous heat flow and temperature monitors for individual human body sites [ASME PAPER 80-WA/OCE-14] A81-21125

DECISION MAKING
Mental workload in decision and control A81-20499
Monitoring and decision making by people in man machine systems [NASA-CR-164026] N81-17715

DECONTAMINATION
Environmental contaminants in food. Volume 2, part B: Working papers [PB81-116774-VOL-2-PT-B] N81-17716

DESCENT TRAJECTORIES
Human factors by descent energy management A81-20467

DIAGNOSIS
Two-dimensional echocardiography - Methodology and application in clinical cardiology A81-19714
Electrocardiographic stress testing - The debate goes on /probably/ A81-19716
Detection and management of the asymptomatic patient with coronary artery disease A81-19717
Premature ventricular complexes - Therapeutic dilemmas and decisions A81-19719

DIFFUSION
Autoregulation of cerebral blood circulation under orthostatic tests [NASA-TM-76372] N81-16725

DISORIENTATION
Physiological mechanisms of spatial disorientation not of visual origin N81-17699

DISPLACEMENT
Displacement detection in human vision A81-23098
Direction-specific and position-specific effects upon detection of displacements during saccadic eye movements A81-23099

DISPLAY DEVICES
Evaluation and prediction of the vertical situation from a horizontal situation display --- pilot perception of motion and separation in cockpit display of air traffic information A81-20503
An analysis of the human as a predictor model A81-20511
Cockpit displayed traffic information and distributed management in air traffic control A81-20916
Human visual performance and flat panel display image quality [AD-A092685] N81-16743
Designer's guide for the panel program [AD-A093989] N81-17712
Computer-aided development of control console, control panel, and display user instructions and training materials [AD-A093891] N81-17713

DOPA
Dopaminergic agonists and conditioned avoidance response in normoxic or hypoxic rats A81-22108

DOSAGE
Pharmacological activity and toxicity of some neurotropic agents under conditions of experimental hypodynamia [NASA-TM-76371] N81-16724

DOSIMETERS
Dosimetric investigations of cosmic radiation aboard the Kosmos-936 AES (joint Soviet-American experiment K-206) [NASA-TM-75772] N81-16730

DRY HEAT
Responses to dry heat of men and women with similar aerobic capacities A81-21472
Physiological and hematological responses to summer and winter dry-heat acclimation [AD-A093194] N81-17695

DURABILITY
Further study for fabrication, evaluation, and testing of monolayer woven materials for space suit insulation [NASA-CR-166140] N81-16740

DYNAMIC CONTROL
A recursive Lagrangian formulation of manipulator dynamics and a comparative study of dynamics formulation complexity A81-21020

DYNAMIC RESPONSE
The response of a realistic computer model for sitting humans to different types of shocks A81-22550

E

EAR
Implications of a critical level in the ear for assessment of noise hazard at high intensities A81-20925

EARTH ORBITS
Advanced control techniques for teleoperation in earth orbit A81-22610

ECHOCARDIOGRAPHY
Two-dimensional echocardiography - Methodology and application in clinical cardiology A81-19714
Echocardiographic studies evaluating the effects of exercise training on the heart A81-19715

EDEMA
Speculations on the pathogenesis of high-altitude pulmonary edema A81-19712

EDUCATION
Computer-aided development of control console, control panel, and display user instructions and training materials [AD-A093891] N81-17713

EFFERENT NERVOUS SYSTEMS
Effect of cervicolabyrinthine impulsation on the spinal reflex apparatus [NASA-TM-76375] N81-16726

EJECTION SEATS
Development of an automatic opening lap belt buckle for aircrew restraint systems A81-22083
Crew station assessment using the Bioman modeling system A81-22092

ELECTRIC FIELDS
Life of the onion not knowing up from down [NASA-TM-76353] N81-16718

ELECTRICAL RESISTANCE
Use of an electrical resistance hygrometer to measure human sweat rates [NASA-TM-81223] N81-17692

ELECTROCARDIOGRAPHY
Electrocardiographic stress testing - The debate goes on /probably/ A81-19716

ELECTROENCEPHALOGRAPHY
Structural analysis of factor patterns on EEG under various states of consciousness A81-21989

ELECTRONIC EQUIPMENT
Data acquistion system for thermal stress studies --- cutaneous heat flow and temperature monitors for individual human body sites [ASME PAPER 80-WA/OCE-14] A81-21125

ELECTROPHYSIOLOGY
The role of biochemical factors in ventricular dysrhythmia accompanying ischemia A81-19720

BEST DOCUMENT AVAILABLE

ENCOUNTERS
A stochastic differential game theory approach to human operators in adversary tracking encounters
A81-21023
ENDOCRINOLOGY
Neuroendocrine strategies for adaptation to high altitude
N81-16717
ENERGY CONSERVATION
Human factors by descent energy management
A81-20467
ENERGY TRANSFER
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737
ENZYME ACTIVITY
Plasma volume, osmolality, vasopressin, and renin activity during graded exercise in man
A81-21473
ERRORS
Errors in human performance
[AD-A091925] N81-16738
EULER-LAGRANGE EQUATION
A recursive Lagrangian formulation of manipulator dynamics and a comparative study of dynamics formulation complexity
A81-21020
EVALUATION
Evaluation of simulated radiofrequency heating procedures
[AD-A092731] N81-16735
Use of an electrical resistance hygrometer to measure human sweat rates
[NASA-TM-81223] N81-17692
EVAPORATION
Use of an electrical resistance hygrometer to measure human sweat rates
[NASA-TM-81223] N81-17692
EXERCISE PHYSIOLOGY
Ways of increasing muscular activity by means of isometric muscular exertion
[NASA-TM-76307] N81-16723
EXOBIOLOGY
The flowering and ripening of Arabidopsis seeds under weightlessness conditions - Biosatellite Kosmos 1129 experiment
A81-20849
EXPECTATION
The effect of expectations on slow oculomotor control. III - Guessing unpredictable target displacements
A81-23097
EYE MOVEMENTS
The effect of expectations on slow oculomotor control. III - Guessing unpredictable target displacements
A81-23097

F

FABRICS
Further study for fabrication, evaluation, and testing of monolayer woven materials for space suit insulation
[NASA-CR-166140] N81-16740
FACTOR ANALYSIS
Structural analysis of factor patterns on EEG under various states of consciousness
A81-21989
Thermal comfort in an era of energy shortage
[AD-A093193] N81-17696
FLIGHT CLOTHING
Development and fabrication of an advanced liquid cooling garment
[NASA-CR-152101] N81-16741
FLIGHT CREWS
The effective acoustic environment of helicopter crewman
A81-20056
Development of an automatic opening lap belt buckle for aircrew restraint systems
A81-22093
Effects of ozone (0.30 parts per million, approximately 600 mu g/m 3) on sedentary men representative of airline passengers and cockpit crewmembers
[AD-A092268] N81-16734
Technical evaluation report of the Aerospace Medical Panel Working Group WG-08 on Evaluation of Methods to Assess Workload
[AGARD-AR-139] N81-16739
FLIGHT OPERATIONS
Disorientation in Army helicopter operations: A general review --- accident investigation
N81-17704
FLIGHT SAFETY
New developments in restraint systems
A81-22084
Brain/computer communication to reduce human error - A perspective
A81-22111
FLIGHT SIMULATION
The role of simulation in Space Shuttle training
A81-21726
FLIGHT SIMULATORS
Development of a secondary task method for measuring operator workload. II - A change of secondary task performance with acquisition of flying skill by Link Trainer
A81-21987
FLIGHT STRESS
Frequency domain measures of human performance under G-stress
A81-20500
FLIGHT STRESS (BIOLOGY)
Spatial disorientation in flight: Current problems
[AGARD-CP-287] N81-17698
Physiological mechanisms of spatial disorientation not of visual origin
N81-17699
An update of findings regarding spatial disorientation in flight: A reconsideration of underlying mechanisms
N81-17700
Perceptual errors in flight: A survey of 100 military pilots on active duty
N81-17701
FLIGHT TRAINING
Development of a secondary task method for measuring operator workload. II - A change of secondary task performance with acquisition of flying skill by Link Trainer
A81-21987
A multistation spatial disorientation demonstrator
N81-17708
FLIR DETECTORS
Dynamic target acquisiton: Empirical models of operator performance
[AD-A092263] N81-16733
FLOW EQUATIONS
Hydroelastic effects in the aorta bifurcation zone
[NASA-TM-75432] N81-16728
FLOW RESISTANCE
Pressure-flow hysteresis in the pulmonary vasculature
N81-16721
FLUID DYNAMICS
Hydroelastic effects in the aorta bifurcation zone
[NASA-TM-75432] N81-16728
FLUID FLOW
Pressure-flow hysteresis in the pulmonary vasculature
N81-16721
FLUORESCENCE
Antibodies to myofibril antigens in cosmonauts after spaceflights
[NASA-TM-76300] N81-16722
FOOD PROCESSING
Environmental contaminants in food. Volume 2, part B: Working papers
[PB81-116774-VOL-2-PT-B] N81-17716
FORMALDEHYDE
Histochemical study of lipid-like material in photochemically formed jeewanu, the protocell, with formaldehyde partially replaced by other organic sources
A81-23092

G

GAME THEORY
A stochastic differential game theory approach to human operators in adversary tracking encounters
A81-21023

BEST DOCUMENT AVAILABLE

GRAVITATIONAL EFFECTS
Life of the onion not knowing up from down [NASA-TM-76353] N81-16718

H

HAZARDS
The effective acoustic environment of helicopter crewman A81-20056
Implications of a critical level in the ear for assessment of noise hazard at high intensities A81-20925

HEAD (ANATOMY)
Development and fabrication of an advanced liquid cooling garment [NASA-CR-152101] N81-16741

HEAD-UP DISPLAYS
Magnitude of visual accommodation to a head-up display [NASA-TP-1796] N81-17711

HEART DISEASES
Current concepts in clinical cardiology; Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979 A81-19711
Premature ventricular complexes - Therapeutic dilemmas and decisions A81-19719

HEART FUNCTION
Echocardiographic studies evaluating the effects of exercise training on the heart A81-19715

HEART RATE
Cardiorespiratory and perceptual recovery from a marathon run by novice and experienced women marathon runners N81-16720

HEAT ACCLIMATIZATION
Responses to dry heat of men and women with similar aerobic capacities A81-21472
Physiological and hematological responses to summer and winter dry-heat acclimation [AD-A093194] N81-17695

HEAT TOLERANCE
Responses to dry heat of men and women with similar aerobic capacities A81-21472
Thermal comfort in an era of energy shortage [AD-A093193] N81-17696

HEAT TRANSFER
Evaluation of simulated radiofrequency heating procedures [AD-A092731] N81-16735
Use of an electrical resistance hygrometer to measure human sweat rates [NASA-TM-81223] N81-17692

HEAVY NUCLEI
Dosimetric investigations of cosmic radiation aboard the Kosmos-936 AES (joint Soviet-American experiment K-206) [NASA-TM-75772] N81-16730

HELICOPTER PERFORMANCE
The effective acoustic environment of helicopter crewman A81-20056

HELICOPTERS
Effects of internal noise on helicopter operation - An aircrew view A81-20052
Acceptance and control of aircraft interior noise and vibration A81-20057
Factors affecting acceptable noise levels in helicopters A81-20059
Helicopter pilot performance and workload as a function of night vision symbologies A81-20502
Disorientation in Army helicopter operations: A general review --- accident investigation N81-17704

HELMETS
Development and fabrication of an advanced liquid cooling garment [NASA-CR-152101] N81-16741

HEMATOLOGY
2,3-diphosphoglycerate and night vision A81-22113
Toxicology and metabolism of nickel compounds: Comprehensive report of overall activities during the three-year period from 1 December 1977 - 30 November 1980 [DOE/EV-03140/5-T1] N81-17697

HEMODYNAMIC RESPONSES
Hemorheological changes, the state of microcirculation, and blood acid-base balance in rats under conditions of a 30-day limiting of the motor activity [NASA-TM-76464] N81-16719

HEMORRHAGES
Response to transient haemorrhage after acute and chronic section of the carotid sinus nerves A81-22106

HIGH ALTITUDE BREATHING
Speculations on the pathogenesis of high-altitude pulmonary edema A81-19712
Acute mountain sickness - The clinical approach A81-19713
Evaluation of full-head enclosed breathing system for extended exposure at high altitude A81-22077
An improved oxygen mask for high-altitude protection A81-22081

HIGH ALTITUDE ENVIRONMENTS
Acute mountain sickness - The clinical approach A81-19713
Antidiuretic hormone excretion at high altitude A81-22112
2,3-diphosphoglycerate and night vision A81-22113

HISTOCHEMICAL ANALYSIS
Histochemical study of lipid-like material in photochemically formed jeewanu, the protocell, with formaldehyde partially replaced by other organic sources A81-23092

HOMEOSTASIS
Physiological and hematological responses to summer and winter dry-heat acclimation [AD-A093194] N81-17695

HORIZONTAL ORIENTATION
Evaluation and prediction of the vertical situation from a horizontal situation display --- pilot perception of motion and separation in cockpit display of air traffic information A81-20503

HORMONES
Antidiuretic hormone excretion at high altitude A81-22112

HUMAN BEINGS
Hominid evolution and SETI A81-23093

HUMAN BODY
The response of a realistic computer model for sitting humans to different types of shocks A81-22550
Use of an electrical resistance hygrometer to measure human sweat rates [NASA-TM-81223] N81-17692

HUMAN FACTORS ENGINEERING
Human factors by descent energy management A81-20467
Crew station assessment using the Bioman modeling system A81-22092
Navy manager's guide for the design sections of MIL-H-46855 [AD-A092009] N81-16742
Human visual performance and flat panel display image quality [AD-A092685] N81-16743
Magnitude of visual accommodation to a head-up display [NASA-TP-1796] N81-17711
Ergonomic study of the influence of rotary vibrations [BMVG-FBWT-79-33] N81-17714

HUMAN PERFORMANCE
Errors in human performance [AD-A091925] N81-16738

BEST DOCUMENT AVAILABLE

Technical evaluation report of the Aerospace Medical Panel Working Group WG-08 on Evaluation of Methods to Assess Workload [AGARD-AR-139] N81-16739
Human visual performance and flat panel display image quality [AD-A092685] N81-16743

HUMAN TOLERANCES
Responses to dry heat of men and women with similar aerobic capacities A81-21472
Effectiveness and wearability of immersion hypothermia protection equipment A81-22086
Physiological and hematological responses to summer and winter dry-heat acclimation [AD-A093194] N81-17695
Thermal comfort in an era of energy shortage [AD-A093193] N81-17696

HYDROELASTICITY
Hydroelastic effects in the aorta bifurcation zone [NASA-TM-75432] N81-16728

HYGROMETERS
Use of an electrical resistance hygrometer to measure human sweat rates [NASA-TM-81223] N81-17692

HYPERCAPNIA
Experimental studies on the survival capacity in the sealed environment. I - Effect of cooping up in the individual sealed chamber of various volume on survival time in rats of various body weight A81-21988

HYPODYNAMIA
Hemorheological changes, the state of microcirculation, and blood acid-base balance in rats under conditions of a 30-day limiting of the motor activity [NASA-TM-76464] N81-16719
Ways of increasing muscular activity by means of isometric muscular exertion [NASA-TM-76307] N81-16723
Pharmacological activity and toxicity of some neurotropic agents under conditions of experimental hypodynamia [NASA-TM-76371] N81-16724

HYPOTENSION
Orthostatic hypotension [NASA-TM-75433] N81-16729

HYPOTHERMIA
Effectiveness and wearability of immersion hypothermia protection equipment A81-22086

HYPOXIA
Speculations on the pathogenesis of high-altitude pulmonary edema A81-19712
Dynamics of the state of redox systems in structural elements of the cerebral cortex during oxygen deficiency /cytophotometric study in vivo/ A81-19900
Diffusing capacity of the lung during hypoxia - Role of capillary recruitment A81-21474
Experimental studies on the survival capacity in the sealed environment. I - Effect of cooping up in the individual sealed chamber of various volume on survival time in rats of various body weight A81-21988
Dopaminergic agonists and conditioned avoidance response in normoxic or hypoxic rats A81-22108
Neuroendocrine strategies for adaptation to high altitude N81-16717

HYSTERESIS
Pressure-flow hysteresis in the pulmonary vasculature N81-16721

I

IMAGERY
Human visual performance and flat panel display image quality [AD-A092685] N81-16743

IMMUNOLOGY
Antibodies to myofibril antigens in cosmonauts after spaceflights [NASA-TM-76300] N81-16722

IMPACT LOADS
The response of a realistic computer model for sitting humans to different types of shocks A81-22550

INDUSTRIAL PLANTS
Phytoplankton studies and nutrient concentrations in the vicinity of the C. P. Crane Generating Station [PB81-114746] N81-17693

INFORMATION MANAGEMENT
Cockpit displayed traffic information and distributed management in air traffic control A81-20916

INFORMATION SYSTEMS
Cockpit displayed traffic information and distributed management in air traffic control A81-20916

ISCHEMIA
The role of biochemical factors in ventricular dysrhythmia accompanying ischemia A81-19720

L

LEARNING MACHINES
Learning and control for a compliant computer-controlled manipulator A81-21031

LETHALITY
Relative toxicity testing of spacecraft materials. 1: Spacecraft materials --- lethality of pyrolysates [NASA-CR-160908] N81-16731

LIPIDS
Histochemical study of lipid-like material in photochemically formed jeewanu, the protocell, with formaldehyde partially replaced by other organic sources A81-23092

LIQUID COOLING
Development and fabrication of an advanced liquid cooling garment [NASA-CR-152101] N81-16741

LUNG MORPHOLOGY
Diffusing capacity of the lung during hypoxia - Role of capillary recruitment A81-21474

LUNGS
Speculations on the pathogenesis of high-altitude pulmonary edema A81-19712
Long-term follow-up of lung volume measurements in initially healthy young aviators A81-22105

M

MACHINING
Partly unmanned machining A81-19842

MAGNETIC FIELDS
Magnetic fields of the cerebral cortex [AD-A086288] N81-16736

MAN MACHINE SYSTEMS
Human controller modeling in environments that include non-control tasks A81-20501
Evaluation and prediction of the vertical situation from a horizontal situation display --- pilot perception of motion and separation in cockpit display of air traffic information A81-20503
An analysis of the human as a predictor model A81-20511
Master-slave manipulator performance for various dynamic characteristics and positioning task parameters A81-21024
Crew station assessment using the Bioman modeling system A81-22092
Brain/computer communication to reduce human error - A perspective A81-22111

BEST DOCUMENT AVAILABLE

Errors in human performance
[AD-A091925] N81-16738
An assessment of undersea teleoperators
[PB81-102535] N81-16744
Computer-aided development of control console, control panel, and display user instructions and training materials
[AD-A093891] N81-17713
Monitoring and decision making by people in man machine systems
[NASA-CR-164026] N81-17715

MANIPULATORS
A hierarchical programming approach to robot assembly
A81-19841
A recursive Lagrangian formulation of manipulator dynamics and a comparative study of dynamics formulation complexity
A81-21020
Master-slave manipulator performance for various dynamic characteristics and positioning task parameters
A81-21024
Learning and control for a compliant computer-controlled manipulator
A81-21031
An assessment of undersea teleoperators
[PB81-102535] N81-16744

MANUAL CONTROL
Mental workload in decision and control
A81-20499
A stochastic differential game theory approach to human operators in adversary tracking encounters
A81-21023
Master-slave manipulator performance for various dynamic characteristics and positioning task parameters
A81-21024

MANUFACTURING
Partly unmanned machining
A81-19842

MATHEMATICAL MODELS
Analysis and modeling of the cephalic response of a human operator subjected to binaural stimulation in a sound localization task --- French thesis
A81-21923
Hydroelastic effects in the aorta bifurcation zone
[NASA-TM-75432] N81-16728
Dynamic target acquisiton: Empirical models of operator performance
[AD-A092263] N81-16733

MEDICAL ELECTRONICS
Two-dimensional echocardiography - Methodology and application in clinical cardiology
A81-19714

MENTAL PERFORMANCE
Mental workload in decision and control
A81-20499

METABOLISM
Toxicology and metabolism of nickel compounds: Comprehensive report of overall activities during the three-year period from 1 December 1977 - 30 November 1980
[DOE/EV-03140/5-T1] N81-17697

MICROPROCESSORS
Brain/computer communication to reduce human error - A perspective
A81-22111

MILITARY AIRCRAFT
Onboard oxygen generation
A81-22082
Technical evaluation report of the Aerospace Medical Panel Working Group WG-08 on Evaluation of Methods to Assess Workload
[AGARD-AR-139] N81-16739

MILITARY PSYCHOLOGY
The physician's determination of personnel reliability in sensitive occupations
A81-22114

MILITARY TECHNOLOGY
New developments in restraint systems
A81-22084

MISSION PLANNING
Technical evaluation report of the Aerospace Medical Panel Working Group WG-08 on Evaluation of Methods to Assess Workload
[AGARD-AR-139] N81-16739

MOLECULAR BIOLOGY
Dynamics of the state of redox systems in structural elements of the cerebral cortex during oxygen deficiency /cytophotometric study in vivo/
A81-19900

MORTALITY
Experimental studies on the survival capacity in the sealed environment. I - Effect of cooping up in the individual sealed chamber of various volume on survival time in rats of various body weight
A81-21988

MOTION PERCEPTION
Displacement detection in human vision
A81-23098
Direction-specific and position-specific effects upon detection of displacements during saccadic eye movements
A81-23099

MOTION SICKNESS
Orthostatic disorder. A contributing factor to motion sickness?
N81-17706

MOTION SIMULATORS
Task segmentation - An approach to simulator task fidelity
A81-21728

MUSCULAR FUNCTION
Effect of cervicolabyrinthine impulsation on the spinal reflex apparatus
[NASA-TM-76375] N81-16726

MYOCARDIUM
Antibodies to myofibril antigens in cosmonauts after spaceflights
[NASA-TM-76300] N81-16722

N

NAVIGATION AIDS
Cockpit displayed traffic information and distributed management in air traffic control
A81-20916

NERVES
Response to transient haemorrhage after acute and chronic section of the carotid sinus nerves
A81-22106

NEUROPHYSIOLOGY
Brain/computer communication to reduce human error - A perspective
A81-22111

NEUROTRANSMITTERS
Neuroendocrine strategies for adaptation to high altitude
N81-16717

NEUROTROPISM
Pharmacological activity and toxicity of some neurotropic agents under conditions of experimental hypodynamia
[NASA-TM-76371] N81-16724

NEUTRON IRRADIATION
Dosimetric investigations of cosmic radiation aboard the Kosmos-936 AES (joint Soviet-American experiment K-206)
[NASA-TM-75772] N81-16730

NEWTONIAN FLUIDS
Hydroelastic effects in the aorta bifurcation zone
[NASA-TM-75432] N81-16728

NICKEL COMPOUNDS
Toxicology and metabolism of nickel compounds: Comprehensive report of overall activities during the three-year period from 1 December 1977 - 30 November 1980
[DOE/EV-03140/5-T1] N81-17697

NIGHT VISION
Helicopter pilot performance and workload as a function of night vision symbologies
A81-20502
2,3-diphosphoglycerate and night vision
A81-22113

NOISE INTENSITY
The effective acoustic environment of helicopter crewman
A81-20056
Factors affecting acceptable noise levels in helicopters
A81-20059

BEST DOCUMENT AVAILABLE

Implications of a critical level in the ear for assessment of noise hazard at high intensities
A81-20925

NOISE REDUCTION
Effects of internal noise on helicopter operation - An aircrew view
A81-20052
The effective acoustic environment of helicopter crewman
A81-20056
Acceptance and control of aircraft interior noise and vibration
A81-20057
Factors affecting acceptable noise levels in helicopters
A81-20059

NOISE TOLERANCE
Implications of a critical level in the ear for assessment of noise hazard at high intensities
A81-20925

NUMERICAL CONTROL
A hierarchical programming approach to robot assembly
A81-19841
A recursive Lagrangian formulation of manipulator dynamics and a comparative study of dynamics formulation complexity
A81-21020
Learning and control for a compliant computer-controlled manipulator
A81-21031

O

OCCUPATION
The physician's determination of personnel reliability in sensitive occupations
A81-22114

OCULOGRAVIC ILLUSIONS
Illusions of attitude and movement during Earth-horizontal rotation --- oculogravic illusions
N81-17705

OCULOMOTOR NERVES
The effect of expectations on slow oculomotor control. III - Guessing unpredictable target displacements
A81-23097

OPERATING SYSTEMS (COMPUTERS)
Computer-aided development of control console, control panel, and display user instructions and training materials
[AD-A093891] N81-17713

OPERATOR PERFORMANCE
Mental workload in decision and control
A81-20499
Predicting search performance for multiple targets --- in human operator visual tasks
A81-20917
A stochastic differential game theory approach to human operators in adversary tracking encounters
A81-21023
Master-slave manipulator performance for various dynamic characteristics and positioning task parameters
A81-21024
Analysis and modeling of the cephalic response of a human operator subjected to binaural stimulation in a sound localization task --- French thesis
A81-21923
Dynamic target acquisiton: Empirical models of operator performance
[AD-A092263] N81-16733

OPERATORS (PERSONNEL)
Monitoring and decision making by people in man machine systems
[NASA-CR-164026] N81-17715

OPTICAL ILLUSION
Visual illusions as a probable cause of aircraft accidents
N81-17703

OPTIMAL CONTROL
Monitoring and decision making by people in man machine systems
[NASA-CR-164026] N81-17715

ORBITAL SERVICING
Advanced control techniques for teleoperation in earth orbit
A81-22610

ORTHOSTATIC TOLERANCE
Cardiovascular and biochemical response to simulated space flight entry
A81-22107
Autoregulation of cerebral blood circulation under orthostatic tests
[NASA-TM-76372] N81-16725
Orthostatic hypotension
[NASA-TM-75433] N81-16729
Orthostatic disorder. A contributing factor to motion sickness?
N81-17706

OXYGEN CONSUMPTION
Cardiorespiratory and perceptual recovery from a marathon run by novice and experienced women marathon runners
N81-16720

OXYGEN MASKS
Evaluation of full-head enclosed breathing system for extended exposure at high altitude
A81-22077
An improved oxygen mask for high-altitude protection
A81-22081

OXYGEN SUPPLY EQUIPMENT
Onboard oxygen generation
A81-22082

OZONE
Effects of ozone (0.30 parts per million, approximately 600 mu g/m 3) on sedentary men representative of airline passengers and cockpit crewmembers
[AD-A092268] N81-16734

P

PASSENGER AIRCRAFT
Acceptance and control of aircraft interior noise and vibration
A81-20057

PASSENGERS
Effects of ozone (0.30 parts per million, approximately 600 mu g/m 3) on sedentary men representative of airline passengers and cockpit crewmembers
[AD-A092268] N81-16734

PATHOGENESIS
Speculations on the pathogenesis of high-altitude pulmonary edema
A81-19712

PATHOLOGY
Orthostatic hypotension
[NASA-TM-75433] N81-16729

PERCEPTUAL ERRORS
Evaluation and prediction of the vertical situation from a horizontal situation display --- pilot perception of motion and separation in cockpit display of air traffic information
A81-20503

PERFORMANCE PREDICTION
An analysis of the human as a predictor model
A81-20511
Predicting search performance for multiple targets --- in human operator visual tasks
A81-20917

PERSONALITY
The physician's determination of personnel reliability in sensitive occupations
A81-22114

PERSONNEL SELECTION
The physician's determination of personnel reliability in sensitive occupations
A81-22114

PERSPIRATION
Use of an electrical resistance hygrometer to measure human sweat rates
[NASA-TM-81223] N81-17692
Thermal comfort in an era of energy shortage
[AD-A093193] N81-17696

PHARMACOLOGY
Dopaminergic agonists and conditioned avoidance response in normoxic or hypoxic rats
A81-22108

BEST DOCUMENT AVAILABLE

Pharmacological activity and toxicity of some neurotropic agents under conditions of experimental hypodynamia
[NASA-TM-76371] N81-16724

PHOTOCHEMICAL REACTIONS
Histochemical study of lipid-like material in photochemically formed jeewanu, the protocell, with formaldehyde partially replaced by other organic sources
A81-23092

PHYSICAL EXAMINATIONS
Statistical studies on blood pressure of JASDF pilots. III - Relationship between physical constitution and blood pressure
A81-21990

PHYSICAL EXERCISE
Echocardiographic studies evaluating the effects of exercise training on the heart
A81-19715
Electrocardiographic stress testing - The debate goes on /probably/
A81-19716
Does exercise protect from coronary artery disease
A81-19718
Control of breathing during prolonged exercise
A81-21471
Plasma volume, osmolality, vasopressin, and renin activity during graded exercise in man
A81-21473
Ways of increasing muscular activity by means of isometric muscular exertion
[NASA-TM-76307] N81-16723

PHYSICAL FACTORS
Does exercise protect from coronary artery disease
A81-19718

PHYSIOLOGICAL EFFECTS
Echocardiographic studies evaluating the effects of exercise training on the heart
A81-19715
Ways of increasing muscular activity by means of isometric muscular exertion
[NASA-TM-76307] N81-16723
Effects of ozone (0.30 parts per million, approximately 600 mu g/m 3) on sedentary men representative of airline passengers and cockpit crewmembers
[AD-A092268] N81-16734
Toxicology and metabolism of nickel compounds: Comprehensive report of overall activities during the three-year period from 1 December 1977 - 30 November 1980
[DOE/EV-03140/5-T1] N81-17697
Orthostatic disorder. A contributing factor to motion sickness?
N81-17706

PHYSIOLOGICAL RESPONSES
Acute mountain sickness - The clinical approach
A81-19713
The role of biochemical factors in ventricular dysrhythmia accompanying ischemia
A81-19720
Responses to dry heat of men and women with similar aerobic capacities
A81-21472
Analysis and modeling of the cephalic response of a human operator subjected to binaural stimulation in a sound localization task --- French thesis
A81-21923
Physiological responses of human subjects wearing thermal protective clothing assemblies in varying environments
A81-22085
Response to transient haemorrhage after acute and chronic section of the carotid sinus nerves
A81-22106
Cardiovascular and biochemical response to simulated space flight entry
A81-22107
Dopaminergic agonists and conditioned avoidance response in normoxic or hypoxic rats
A81-22108
Effect of body supination angle on subjective response to whole-body vibration
A81-22110
Antidiuretic hormone excretion at high altitude
A81-22112
Effect of cervicolabyrinthine impulsation on the spinal reflex apparatus
[NASA-TM-76375] N81-16726
Physiological and hematological responses to summer and winter dry-heat acclimation
[AD-A093194] N81-17695
Spatial disorientation in flight: Current problems
[AGARD-CP-287] N81-17698
Physiological mechanisms of spatial disorientation not of visual origin
N81-17699

PHYSIOLOGICAL TESTS
Diffusing capacity of the lung during hypoxia - Role of capillary recruitment
A81-21474
Experimental studies on the survival capacity in the sealed environment. I - Effect of cooping up in the individual sealed chamber of various volume on survival time in rats of various body weight
A81-21988

PHYSIOLOGY
Orthostatic hypotension
[NASA-TM-75433] N81-16729
Use of an electrical resistance hygrometer to measure human sweat rates
[NASA-TM-81223] N81-17692

PILOT ERROR
Perceptual errors in flight: A survey of 100 military pilots on active duty
N81-17701

PILOT PERFORMANCE
Mental workload in decision and control
A81-20499
Frequency domain measures of human performance under G-stress
A81-20500
Human controller modeling in environments that include non-control tasks
A81-20501
Helicopter pilot performance and workload as a function of night vision symbologies
A81-20502
An analysis of the human as a predictor model
A81-20511
Development of a secondary task method for measuring operator workload. II - A change of secondary task performance with acquisition of flying skill by Link Trainer
A81-21987
Statistical studies on blood pressure of JASDF pilots. III - Relationship between physical constitution and blood pressure
A81-21990
Physiological responses of human subjects wearing thermal protective clothing assemblies in varying environments
A81-22085
Brain/computer communication to reduce human error - A perspective
A81-22111

PILOT TRAINING
An integrated training approach
A81-21727
Task segmentation - An approach to simulator task fidelity
A81-21728
The Royal Air Force Spatial Disorientation Familiarisation Devices (SDFD)
N81-17709

PITCH (INCLINATION)
Ergonomic study of the influence of rotary vibrations
[BMVG-FBWT-79-33] N81-17714

PLANKTON
Phytoplankton studies and nutrient concentrations in the vicinity of the C. P. Crane Generating Station
[PB81-114746] N81-17693

PLANT STRESS
Life of the onion not knowing up from down
[NASA-TM-76353] N81-16718

PLANTS (BOTANY)
The flowering and ripening of Arabidopsis seeds under weightlessness conditions - Biosatellite Kosmos 1129 experiment
A81-20849
Life of the onion not knowing up from down
[NASA-TM-76353] N81-16718

BEST DOCUMENT AVAILABLE

PORTABLE LIFE SUPPORT SYSTEMS
An improved oxygen mask for high-altitude protection
A81-22081
POSITION (LOCATION)
Direction-specific and position-specific effects upon detection of displacements during saccadic eye movements
A81-23099
POTABLE WATER
Environmental contaminants in food. Volume 2, part B: Working papers
[PB81-116774-VOL-2-PT-B] N81-17716
PRESSURE EFFECTS
Pressure-flow hysteresis in the pulmonary vasculature
N81-16721
PROBABILITY DISTRIBUTION FUNCTIONS
Predicting search performance for multiple targets --- in human operator visual tasks
A81-20917
PROCESS CONTROL (INDUSTRY)
A hierarchical programming approach to robot assembly
A81-19841
Partly unmanned machining
A81-19842
PRODUCT DEVELOPMENT
Development and fabrication of an advanced liquid cooling garment
[NASA-CR-152101] N81-16741
PRODUCTION MANAGEMENT
Partly unmanned machining
A81-19842
PROJECT SETI
Hominid evolution and SETI
A81-23093
PROTECTIVE CLOTHING
Physiological responses of human subjects wearing thermal protective clothing assemblies in varying environments
A81-22085
Effectiveness and wearability of immersion hypothermia protection equipment
A81-22086
Development and fabrication of an advanced liquid cooling garment
[NASA-CR-152101] N81-16741
PSYCHOLOGICAL FACTORS
The physician's determination of personnel reliability in sensitive occupations
A81-22114
PSYCHOLOGICAL SETS
The effect of expectations on slow oculomotor control. III - Guessing unpredictable target displacements
A81-23097
PSYCHOMETRICS
On the practice of measuring sensory thresholds: Signal detection and the adaptive method
[FB-43] N81-17710
PSYCHOPHYSICS
Displacement detection in human vision
A81-23098
On the practice of measuring sensory thresholds: Signal detection and the adaptive method
[FB-43] N81-17710
PSYCHOPHYSIOLOGY
The ambient visual system and spatial orientation --- flight stress (biology)
N81-17702
PUBLIC HEALTH
Heliobiological research - Present status and prospects
A81-19678
Toxicology and metabolism of nickel compounds: Comprehensive report of overall activities during the three-year period from 1 December 1977 - 30 November 1980
[DOE/EV-03140/5-T1] N81-17697
Environmental contaminants in food. Volume 2, part B: Working papers
[PB81-116774-VOL-2-PT-B] N81-17716
PULMONARY CIRCULATION
Diffusing capacity of the lung during hypoxia - Role of capillary recruitment
A81-21474
Pressure-flow hysteresis in the pulmonary vasculature
N81-16721
PULMONARY FUNCTIONS
Long-term follow-up of lung volume measurements in initially healthy young aviators
A81-22105
PURSUIT TRACKING
The effect of expectations on slow oculomotor control. III - Guessing unpredictable target displacements
A81-23097
PYROLYSIS
Relative toxicity testing of spacecraft materials. 2: Aircraft materials
[NASA-CR-160907] N81-16732

R

RADIATION DOSAGE
Dosimetric investigations of cosmic radiation aboard the Kosmos-936 AES (joint Soviet-American experiment K-206)
[NASA-TM-75772] N81-16730
RADIO FREQUENCY HEATING
Evaluation of simulated radiofrequency heating procedures
[AD-A092731] N81-16735
RADIOBIOLOGY
The colony-forming
A81-20845
RATS
Hemorheological changes, the state of microcirculation, and blood acid-base balance in rats under conditions of a 30-day limiting of the motor activity
[NASA-TM-76464] N81-16719
RECURSIVE FUNCTIONS
A recursive Lagrangian formulation of manipulator dynamics and a comparative study of dynamics formulation complexity
A81-21020
REDOX CELLS
Dynamics of the state of redox systems in structural elements of the cerebral cortex during oxygen deficiency /cytophotometric study in vivo/
A81-19900
REFLEXES
Effect of cervicolabyrinthine impulsation on the spinal reflex apparatus
[NASA-TM-76375] N81-16726
REMOTE CONTROL
Advanced control techniques for teleoperation in earth orbit
A81-22610
REMOTE HANDLING
Master-slave manipulator performance for various dynamic characteristics and positioning task parameters
A81-21024
RESPIRATORY DISEASES
Speculations on the pathogenesis of high-altitude pulmonary edema
A81-19712
RESPIRATORY PHYSIOLOGY
Control of breathing during prolonged exercise
A81-21471
Diffusing capacity of the lung during hypoxia - Role of capillary recruitment
A81-21474
RESPIRATORY RATE
Cardiorespiratory and perceptual recovery from a marathon run by novice and experienced women marathon runners
N81-16720
RHEOENCEPHALOGRAPHY
Rheoencephalography in Meniere's disease
[NASA-TM-76387] N81-16727
RHEOLOGY
Hemorheological changes, the state of microcirculation, and blood acid-base balance in rats under conditions of a 30-day limiting of the motor activity
[NASA-TM-76464] N81-16719
RISK
Pharmacological activity and toxicity of some neurotropic agents under conditions of experimental hypodynamia
[NASA-TM-76371] N81-16724

BEST DOCUMENT AVAILABLE

ROBOTS
A hierarchical programming approach to robot assembly
A81-19841
Partly unmanned machining
A81-19842

ROLL
Ergonomic study of the influence of rotary vibrations
[BMVG-FBWT-79-33] N81-17714

RUBBER
Development of guayule (Parthenium argentatum) research in cell culture
[NASA-CR-163945] N81-17691

RUNNING
Cardiorespiratory and perceptual recovery from a marathon run by novice and experienced women marathon runners
N81-16720

S

SACCADIC EYE MOVEMENTS
Direction-specific and position-specific effects upon detection of displacements during saccadic eye movements
A81-23099

SAFETY DEVICES
New developments in restraint systems
A81-22084

SEARCHING
Predicting search performance for multiple targets --- in human operator visual tasks
A81-20917

SEAT BELTS
Development of an automatic opening lap belt buckle for aircrew restraint systems
A81-22083

SEEDS
The flowering and ripening of Arabidopsis seeds under weightlessness conditions - Biosatellite Kosmos 1129 experiment
A81-20849

SEMICIRCULAR CANALS
A generalized transfer function for describing mechanoneural semicircular-canal dynamics
N81-17707

SENSORIMOTOR PERFORMANCE
The ambient visual system and spatial orientation --- flight stress (biology)
N81-17702

SENSORY PERCEPTION
Spatial disorientation in flight: Current problems
[AGARD-CP-287] N81-17698
Physiological mechanisms of spatial disorientation not of visual origin
N81-17699

SEX FACTOR
Responses to dry heat of men and women with similar aerobic capacities
A81-21472

SIGNATURE ANALYSIS
Dynamic target acquisiton: Empirical models of operator performance
[AD-A092263] N81-16733

SIMULATION
Evaluation of simulated radiofrequency heating procedures
[AD-A092731] N81-16735

SINUSES
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737

SITTING POSITION
The response of a realistic computer model for sitting humans to different types of shocks
A81-22550

SKIN TEMPERATURE (BIOLOGY)
Data acquistion system for thermal stress studies --- cutaneous heat flow and temperature monitors for individual human body sites
[ASME PAPER 80-WA/OCE-14] A81-21125

SOCIOLOGY
Errors in human performance
[AD-A091925] N81-16738

SOLAR ACTIVITY EFFECTS
Heliobiological research - Present status and prospects
A81-19678

SOLAR RADIATION
Heliobiological research - Present status and prospects
A81-19678

SOLAR TERRESTRIAL INTERACTIONS
Heliobiological research - Present status and prospects
A81-19678

SOUND LOCALIZATION
Analysis and modeling of the cephalic response of a human operator subjected to binaural stimulation in a sound localization task --- French thesis
A81-21923

SPACE FLIGHT
Antibodies to myofibril antigens in cosmonauts after spaceflights
[NASA-TM-76300] N81-16722

SPACE FLIGHT STRESS
Cardiovascular and biochemical response to simulated space flight entry
A81-22107

SPACE FLIGHT TRAINING
The role of simulation in Space Shuttle training
A81-21726

SPACE SHUTTLE ORBITERS
The role of simulation in Space Shuttle training
A81-21726

SPACE SUITS
Further study for fabrication, evaluation, and testing of monolayer woven materials for space suit insulation
[NASA-CR-166140] N81-16740

SPACEBORNE EXPERIMENTS
The flowering and ripening of Arabidopsis seeds under weightlessness conditions - Biosatellite Kosmos 1129 experiment
A81-20849

SPACECRAFT CONSTRUCTION MATERIALS
Relative toxicity testing of spacecraft materials. 1: Spacecraft materials --- lethality of pyrolysates
[NASA-CR-160908] N81-16731

SPACECRAFT ENVIRONMENTS
Life of the onion not knowing up from down
[NASA-TM-76353] N81-16718

SPINAL CORD
Effect of cervicolabyrinthine impulsation on the spinal reflex apparatus
[NASA-TM-76375] N81-16726

STOCHASTIC PROCESSES
A stochastic differential game theory approach to human operators in adversary tracking encounters
A81-21023

STRESS (PHYSIOLOGY)
Electrocardiographic stress testing - The debate goes on /probably/
A81-19716
An update of findings regarding spatial disorientation in flight: A reconsideration of underlying mechanisms
N81-17700

SUBMERGING
Effectiveness and wearability of immersion hypothermia protection equipment
A81-22086

SUPINE POSITION
Effect of body supination angle on subjective response to whole-body vibration
A81-22110

SURVIVAL EQUIPMENT
Onboard oxygen generation
A81-22082

SWITZERLAND
Orthostatic hypotension
[NASA-TM-75433] N81-16729

SYSTEMS EFFECTIVENESS
Effectiveness and wearability of immersion hypothermia protection equipment
A81-22086

T

TARGET ACQUISITION
The effect of expectations on slow oculomotor control. III - Guessing unpredictable target displacements
A81-23097

BEST DOCUMENT AVAILABLE

Displacement detection in human vision
A81-23098
Direction-specific and position-specific effects upon detection of displacements during saccadic eye movements
A81-23099
Dynamic target acquisiton: Empirical models of operator performance
[AD-A092263] N81-16733

TARGET RECOGNITION
Predicting search performance for multiple targets --- in human operator visual tasks
A81-20917

TASK COMPLEXITY
Human controller modeling in environments that include non-control tasks
A81-20501
Task segmentation - An approach to simulator task fidelity
A81-21728

TECHNOLOGY ASSESSMENT
Human visual performance and flat panel display image quality
[AD-A092685] N81-16743
An assessment of undersea teleoperators
[PB81-102535] N81-16744

TELEOPERATORS
Learning and control for a compliant computer-controlled manipulator
A81-21031
Advanced control techniques for teleoperation in earth orbit
A81-22610
An assessment of undersea teleoperators
[PB81-102535] N81-16744

TEMPERATURE CONTROL
Evaluation of simulated radiofrequency heating procedures
[AD-A092731] N81-16735

TEMPERATURE SENSORS
Data acquistion system for thermal stress studies --- cutaneous heat flow and temperature monitors for individual human body sites
[ASME PAPER 80-WA/OCE-14] A81-21125

THERAPY
Premature ventricular complexes - Therapeutic dilemmas and decisions
A81-19719

THERMAL DEGRADATION
Relative toxicity testing of spacecraft materials. 1: Spacecraft materials --- lethality of pyrolysates
[NASA-CR-160908] N81-16731

THERMAL INSULATION
Further study for fabrication, evaluation, and testing of monolayer woven materials for space suit insulation
[NASA-CR-166140] N81-16740
Thermal comfort in an era of energy shortage
[AD-A093193] N81-17696

THERMAL PROTECTION
Physiological responses of human subjects wearing thermal protective clothing assemblies in varying environments
A81-22085

THERMAL STRESSES
Data acquistion system for thermal stress studies --- cutaneous heat flow and temperature monitors for individual human body sites
[ASME PAPER 80-WA/OCE-14] A81-21125

THRESHOLDS (PERCEPTION)
Displacement detection in human vision
A81-23098
On the practice of measuring sensory thresholds: Signal detection and the adaptive method
[PB-43] N81-17710

TISSUES (BIOLOGY)
The colony-forming
A81-20845

TOXIC HAZARDS
Relative toxicity testing of spacecraft materials. 2: Aircraft materials
[NASA-CR-160907] N81-16732
Environmental contaminants in food. Volume 2, part B: Working papers
[PB81-116774-VOL-2-PT-B] N81-17716

TOXICITY
Pharmacological activity and toxicity of some neurotropic agents under conditions of experimental hypodynamia
[NASA-TM-76371] N81-16724
Relative toxicity testing of spacecraft materials. 1: Spacecraft materials --- lethality of pyrolysates
[NASA-CR-160908] N81-16731

TOXICOLOGY
Toxicology and metabolism of nickel compounds: Comprehensive report of overall activities during the three-year period from 1 December 1977 - 30 November 1980
[DOE/EV-03140/5-T1] N81-17697

TRACKING (POSITION)
An analysis of the human as a predictor model
A81-20511

TRAINING DEVICES
An integrated training approach
A81-21727

TRAINING SIMULATORS
Task segmentation - An approach to simulator task fidelity
A81-21728
The Royal Air Force Spatial Disorientation Familiarisation Devices (SDFD)
N81-17709

TRAJECTORY OPTIMIZATION
Human controller modeling in environments that include non-control tasks
A81-20501

TRANSFER FUNCTIONS
A generalized transfer function for describing mechanoneural semicircular-canal dynamics
N81-17707

U

UNDERWATER VEHICLES
An assessment of undersea teleoperators
[PB81-102535] N81-16744

URINE
Antidiuretic hormone excretion at high altitude
A81-22112

V

VASCULAR SYSTEM
Rheoencephalography in Meniere's disease
[NASA-TM-76387] N81-16727

VEGETATION GROWTH
Life of the onion not knowing up from down
[NASA-TM-76353] N81-16718

VENTILATION
Control of breathing during prolonged exercise
A81-21471

VERTICAL PERCEPTION
Evaluation and prediction of the vertical situation from a horizontal situation display --- pilot perception of motion and separation in cockpit display of air traffic information
A81-20503

VERTIGO
Rheoencephalography in Meniere's disease
[NASA-TM-76387] N81-16727

VIBRATION DAMPING
Acceptance and control of aircraft interior noise and vibration
A81-20057

VIBRATION PERCEPTION
Ergonomic study of the influence of rotary vibrations
[BMVG-FBWT-79-33] N81-17714

VIBRATIONAL STRESS
Effect of body supination angle on subjective response to whole-body vibration
A81-22110

VISUAL ACUITY
Displacement detection in human vision
A81-23098

VISUAL AIDS
Magnitude of visual accommodation to a head-up display
[NASA-TP-1796] N81-17711

VISUAL FIELDS
The ambient visual system and spatial orientation --- flight stress (biology)
N81-17702

BEST DOCUMENT AVAILABLE

A multistation spatial disorientation demonstrator
N81-17708

VISUAL PERCEPTION
Direction-specific and position-specific effects upon detection of displacements during saccadic eye movements
A81-23099
Visual illusions as a probable cause of aircraft accidents
N81-17703

VISUAL STIMULI
The ambient visual system and spatial orientation --- flight stress (biology)
N81-17702

VISUAL TASKS
Predicting search performance for multiple targets --- in human operator visual tasks
A81-20917
Task segmentation - An approach to simulator task fidelity
A81-21728

W

WATER POLLUTION
Phytoplankton studies and nutrient concentrations in the vicinity of the C. P. Crane Generating Station
[PB81-114746] N81-17693

WEAPON SYSTEMS
Navy manager's guide for the design sections of MIL-H-46855
[AD-A092009] N81-16742

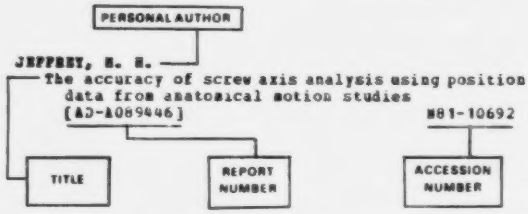
WORK CAPACITY
Technical evaluation report of the Aerospace Medical Panel Working Group WG-08 on Evaluation of Methods to Assess Workload
[AGARD-AR-139] N81-16739

WORKLOADS (PSYCHOPHYSIOLOGY)
Mental workload in decision and control
A81-20499
Helicopter pilot performance and workload as a function of night vision symbologies
A81-20502
Development of a secondary task method for measuring operator workload. II - A change of secondary task performance with acquisition of flying skill by Link Trainer
A81-21987
Perceptual errors in flight: A survey of 100 military pilots on active duty
N81-17701

BEST DOCUMENT AVAILABLE

PERSONAL AUTHOR INDEX

Typical Personal Author Index Listing


PERSONAL AUTHOR
JEFFREY, R. H.
The accuracy of screw axis analysis using position data from anatomical motion studies
[AD-A089446]
N81-10692
TITLE
REPORT NUMBER
ACCESSION NUMBER

The title of the document is used to provide the user with a brief description of the subject matter. The NASA or AIAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

A

ABRAMOVA, V. N.
The flowering and ripening of Arabidopsis seeds under weightlessness conditions - Biosatellite Kosmos 1129 experiment
A81-20849

ADAMS, J. D.
Evaluation of full-head enclosed breathing system for extended exposure at high altitude
A81-22077

AKANA, S. F.
Neuroendocrine strategies for adaptation to high altitude
N81-16717

ALDANESE, E.
A stochastic differential game theory approach to human operators in adversary tracking encounters
A81-21023

ARAMAKI, S.
Development of a secondary task method for measuring operator workload. II - A change of secondary task performance with acquisition of flying skill by Link Trainer
A81-21987

AUNE, N.
Designer's guide for the panel program
[AD-A093989] N81-17712

B

BAHADUR, K.
Histochemical study of lipid-like material in photochemically formed jeewanu, the protocell, with formaldehyde partially replaced by other organic sources
A81-23092

BALL, E. A.
Development of guayule (Parthenium argentatum) research in cell culture
[NASA-CR-163945] N81-17691

BARTON, S. A.
2,3-diphosphoglycerate and night vision
A81-22113

BECK, K. C.
Pressure-flow hysteresis in the pulmonary vasculature
N81-16721

BEIDEMAN, L. R.
Dynamic target acquisiton: Empirical models of operator performance
[AD-A092263] N81-16733

BEJCZY, A. K.
Advanced control techniques for teleoperation in earth orbit
A81-22610

BENEVOLENSKII, V. N.
Heliobiological research - Present status and prospects
A81-19678

BENSON, A. J.
Spatial disorientation in flight: Current problems
[AGARD-CP-287] N81-17698
The Royal Air Force Spatial Disorientation Familiarisation Devices (SDFD)
N81-17709

BENTON, E. V.
Dosimetric investigations of cosmic radiation aboard the Kosmos-936 AES (joint Soviet-American experiment K-206)
[NASA-TM-75772] N81-16730

BERNAUER, E. M.
Plasma volume, osmolality, vasopressin, and renin activity during graded exercise in man
A81-21473

BILODEAU, J. W.
The role of simulation in Space Shuttle training
A81-21726

BJORKE, O.
Partly unmanned machining
A81-19842

BOISMARE, F.
Dopaminergic agonists and conditioned avoidance response in normoxic or hypoxic rats
A81-22108

BOLDING, F. A.
Postmortem coronary atherosclerosis findings in general aviation accident pilot fatalities - 1975-77
A81-22109

BOOK, W. J.
Master-slave manipulator performance for various dynamic characteristics and positioning task parameters
A81-21024

BOOZE, C. F.
Postmortem coronary atherosclerosis findings in general aviation accident pilot fatalities - 1975-77
A81-22109

BORREL, P.
Learning and control for a compliant computer-controlled manipulator
A81-21031

BOURRIERES, J.-P.
Analysis and modeling of the cephalic response of a human operator subjected to binaural stimulation in a sound localization task
A81-21923

BOX, C. J.
Disorientation in Army helicopter operations: A general review
N81-17704

BROOKS, T. L.
Advanced control techniques for teleoperation in earth orbit
A81-22610

BROUWER, W.
An integrated training approach
A81-21727

BURR, J. C.
Evaluation of simulated radiofrequency heating procedures
[AD-A092731] N81-16735

BEST DOCUMENT AVAILABLE

C

CAMP, R. T., JR.
The effective acoustic environment of helicopter crewman
A81-20056

CAMPBELL, F. W.
Displacement detection in human vision
A81-23098

CAPEN, R. L.
Diffusing capacity of the lung during hypoxia - Role of capillary recruitment
A81-21474

CHRISTENSEN, C. L.
Cardiorespiratory and perceptual recovery from a marathon run by novice and experienced women marathon runners
N81-16720

CHURCHER, J.
Direction-specific and position-specific effects upon detection of displacements during saccadic eye movements
A81-23099

CLENCH, J.
2,3-diphosphoglycerate and night vision
A81-22113

COFFEY, E. J.
Hominid evolution and SETI
A81-23093

COLIN, J.
Physiological mechanisms of spatial disorientation not of visual origin
N81-17699

CONTI, C. R.
Detection and management of the asymptomatic patient with coronary artery disease
A81-19717

CONVERTINO, V. A.
Plasma volume, osmolality, vasopressin, and renin activity during graded exercise in man
A81-21473

CORR, P. B.
The role of biochemical factors in ventricular dysrhythmia accompanying ischemia
A81-19720

CORREIA, M. J.
A generalized transfer function for describing mechanoneural semicircular-canal dynamics
N81-17707

CURRY, R. E.
Human factors by descent energy management
A81-20467

D

DALY, B. D. T.
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737

DANILOVA, T. A.
Antibodies to myofibril antigens in cosmonauts after spaceflights
[NASA-TM-76300] N81-16722

DAULERIO, L. A.
Crew station assessment using the Bioman modeling system
A81-22092

DAVIS, A. W.
Postmortem coronary atherosclerosis findings in general aviation accident pilot fatalities - 1975-77
A81-22109

DEDIUYEVA, I. I.
Antibodies to myofibril antigens in cosmonauts after spaceflights
[NASA-TM-76300] N81-16722

DEGIOSA, P.
Perceptual errors in flight: A survey of 100 military pilots on active duty
N81-17701

DEMPSEY, D.
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737

DERII, A. N.
Dynamics of the state of redox systems in structural elements of the cerebral cortex during oxygen deficiency /cytophotometric study in vivo/
A81-19900

DIAMOND, G. A.
Electrocardiographic stress testing - The debate goes on /probably/
A81-19716

DICHGANS, J.
The ambient visual system and spatial orientation
N81-17702

DIXON, G.
Evaluation of full-head enclosed breathing system for extended exposure at high altitude
A81-22077

DOMBRE, E.
Learning and control for a compliant computer-controlled manipulator
A81-21031

DONAHUE, B. E.
Evaluation of simulated radiofrequency heating procedures
[AD-A092731] N81-16735

DRURY, C. G.
Predicting search performance for multiple targets
A81-20917

DUDKIN, V. E.
Dosimetric investigations of cosmic radiation aboard the Kosmos-936 AES (joint Soviet-American experiment K-206)
[NASA-TM-75772] N81-16730

E

EDGINGTON, K.
Disorientation in Army helicopter operations: A general review
N81-17704

ENGLISH, N.
Navy manager's guide for the design sections of MIL-H-46855
[AD-A092009] N81-16742

ERNSTING, J.
An improved oxygen mask for high-altitude protection
A81-22081

F

FARRIS, L.
New developments in restraint systems
A81-22084

FERRELL, R. E.
2,3-diphosphoglycerate and night vision
A81-22113

FORRESTER, J. S.
Electrocardiographic stress testing - The debate goes on /probably/
A81-19716

FRISCH, G. D.
Crew station assessment using the Bioman modeling system
A81-22092

FROEHLICH, G. R.
Orthostatic disorder. A contributing factor to motion sickness?
N81-17706

FROELICHER, V. F.
Echocardiographic studies evaluating the effects of exercise training on the heart
A81-19715
Does exercise protect from coronary artery disease
A81-19718

FRYE, A. J.
Responses to dry heat of men and women with similar aerobic capacities
A81-21472

FUJIWARA, H.
Experimental studies on the survival capacity in the sealed environment. I - Effect of cooping up in the individual sealed chamber of various volume on survival time in rats of various body weight
A81-21988

BEST DOCUMENT AVAILABLE

G

GAYEVYY, M. D.
Autoregulation of cerebral blood circulation under orthostatic tests
[NASA-TM-76372] N81-16725

GEBHARDT, U.
Cardiovascular and biochemical response to simulated space flight entry
A81-22107

GERSHTEYN, G. S.
Hydroelastic effects in the aorta bifurcation zone
[NASA-TM-75432] N81-16728

GOLDMAN, R. F.
Thermal comfort in an era of energy shortage
[AD-A093193] N81-17696

GOLDSMITH, R. I.
2,3-diphosphoglycerate and night vision
A81-22113

GOSSE, F. E.
Dynamic target acquisiton: Empirical models of operator performance
[AD-A092263] N81-16733

GORDEYEV, A.
Life of the onion not knowing up from down
[NASA-TM-76353] N81-16718

GOVINDARAJ, T.
Human controller modeling in environments that include non-control tasks
A81-20501

GRAYBIEL, A.
Long-term follow-up of lung volume measurements in initially healthy young aviators
A81-22105

GREENLEAF, J. E.
Plasma volume, osmolality, vasopressin, and renin activity during graded exercise in man
A81-21473

GRIMM, J. J.
Orthostatic hypotension
[NASA-TM-75433] N81-16729

GROVER, R. F.
Speculations on the pathogenesis of high-altitude pulmonary edema
A81-19712

GUEDRY, F. E., JR.
A multistation spatial disorientation demonstrator
N81-17708

H

HACKETT, P. H.
Acute mountain sickness - The clinical approach
A81-19713

HAGIHARA, H.
Development of a secondary task method for measuring operator workload. II - A change of secondary task performance with acquisition of flying skill by Link Trainer
A81-21987

HAINES, R. F.
Magnitude of visual accommodation to a head-up display
[NASA-TP-1796] N81-17711

HAMILL, D. A.
Evaluation of simulated radiofrequency heating procedures
[AD-A092731] N81-16735

HANNEMA, D. P.
Master-slave manipulator performance for various dynamic characteristics and positioning task parameters
A81-21024

HARBER, M. J.
Antidiuretic hormone excretion at high altitude
A81-22112

HARLAN, W. R.
Long-term follow-up of lung volume measurements in initially healthy young aviators
A81-22105

HARNETT, R. M.
Effectiveness and wearability of immersion hypothermia protection equipment
A81-22086

HARRAH, C. B.
Effect of body supination angle on subjective response to whole-body vibration
A81-22110

HART, S. G.
Evaluation and prediction of the vertical situation from a horizontal situation display
A81-20503

HARTMAN, B. O.
Technical evaluation report of the Aerospace Medical Panel Working Group WG-08 on Evaluation of Methods to Assess Workload
[AGARD-AR-139] N81-16739

HARTZELL, E. J.
Helicopter pilot performance and workload as a function of night vision symbologies
A81-20502

HAUDENSCHILD, C. C.
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737

HEYWOOD, S.
Direction-specific and position-specific effects upon detection of displacements during saccadic eye movements
A81-23099

HIGGINS, E. A.
Effects of ozone (0.30 parts per million, approximately 600 mu g/m 3) on sedentary men representative of airline passengers and cockpit crewmembers
[AD-A092260] N81-16734

HIXON, C. W.
Development and fabrication of an advanced liquid cooling garment
[NASA-CR-152101] N81-16741

HOLDEN, R.
An improved oxygen mask for high-altitude protection
A81-22081

HOLLERBACH, J. M.
A recursive Lagrangian formulation of manipulator dynamics and a comparative study of dynamics formulation complexity
A81-21020

HORDINSKY, J. R.
Cardiovascular and biochemical response to simulated space flight entry
A81-22107

HORN, A.
Response to transient haemorrhage after acute and chronic section of the carotid sinus nerves
A81-22106

HUBBARD, R. W.
Physiological and hematological responses to summer and winter dry-heat acclimation
[AD-A093194] N81-17695

I

IKELS, K. G.
Onboard oxygen generation
A81-22082

ILGMANN, H.
Ergonomic study of the influence of rotary vibrations
[BMVG-FBWT-79-33] N81-17714

J

JOHANNSEN, G.
Monitoring and decision making by people in man machine systems
[NASA-CR-164026] N81-17715

JOHANSON, D. C.
Physiological responses of human subjects wearing thermal protective clothing assemblies in varying environments
A81-22085

K

KAMON, E.
Responses to dry heat of men and women with similar aerobic capacities
A81-21472

KARWAN, M. H.
Predicting search performance for multiple targets
A81-20917

KAUFMAN, L.
Magnetic fields of the cerebral cortex
[AD-A086288] N81-16736

BEST DOCUMENT AVAILABLE

KEIL, L. C.
Plasma volume, osmolality, vasopressin, and renin activity during graded exercise in man
A81-21473

KENTSMITH, D. K.
The physician's determination of personnel reliability in sensitive occupations
A81-22114

KENNIE, R. D.
Development of an automatic opening lap belt buckle for aircrew restraint systems
A81-22083

KIMBROUGH, C. B.
Physiological and hematological responses to summer and winter dry-heat acclimation
[AD-A093194] N81-17695

KIRICHEK, L. T.
Pharmacological activity and toxicity of some neurotropic agents under conditions of experimental hypodynamia
[NASA-TM-76371] N81-16724

KLEINMAN, D. L.
Frequency domain measures of human performance under G-stress
A81-20500

KORN, J.
Frequency domain measures of human performance under G-stress
A81-20500

KORNA, M.
Designer's guide for the panel program
[AD-A093989] N81-17712

KOVALIK, A. V.
Ways of increasing muscular activity by means of isometric muscular exertion
[NASA-TM-76307] N81-16723

KOVALYEV, Y. Y.
Dosimetric investigations of cosmic radiation aboard the Kosmos-936 AES (joint Soviet-American experiment K-206)
[NASA-TM-75772] N81-16730

KOWLER, E.
The effect of expectations on slow oculomotor control. III - Guessing unpredictable target displacements
A81-23097

KREIFELDT, J. G.
An analysis of the human as a predictor model
A81-20511
Cockpit displayed traffic information and distributed management in air traffic control
A81-20916

KRUPP, J. H.
Evaluation of simulated radiofrequency heating procedures
[AD-A092731] N81-16735

KRUTZ, R., JR.
An improved oxygen mask for high-altitude protection
A81-22081

KURIHARA, Y.
Structural analysis of factor patterns on EEG under various states of consciousness
A81-21989
Statistical studies on blood pressure of JASDF pilots. III - Relationship between physical constitution and blood pressure
A81-21990

L

LANDOLT, J. P.
Illusions of attitude and movement during Earth-horizontal rotation
N81-17705
A generalized transfer function for describing mechanoneural semicircular-canal dynamics
N81-17707

LATEGOLA, M. T.
Effects of ozone (0.30 parts per million, approximately 600 mu g/m 3) on sedentary men representative of airline passengers and cockpit crewmembers
[AD-A092268] N81-16734

LATHAM, L. P.
Diffusing capacity of the lung during hypoxia - Role of capillary recruitment
A81-21474

LAWRENCE, W. H.
Relative toxicity testing of spacecraft materials. 1: Spacecraft materials
[NASA-CR-160908] N81-16731
Relative toxicity testing of spacecraft materials. 2: Aircraft materials
[NASA-CR-160907] N81-16732

LAYTON, R. P.
Data acquistion system for thermal stress studies
[ASME PAPER 80-WA/OCE-14] A81-21125

LEATHERWOOD, J. D.
Acceptance and control of aircraft interior noise and vibration
A81-20057

LECLERC, J.-L.
Dopaminergic agonists and conditioned avoidance response in normoxic or hypoxic rats
A81-22108

LEGENKOV, V. I.
Antibodies to myofibril antigens in cosmonauts after spaceflights
[NASA-TM-76300] N81-16722

LEGER, A.
Illusions of attitude and movement during Earth-horizontal rotation
N81-17705

LEGGE, G. E.
Displacement detection in human vision
A81-23098

LEITNER, E. F.
Magnitude of visual accommodation to a head-up display
[NASA-TP-1796] N81-17711

LESNYAK, A. T.
Antibodies to myofibril antigens in cosmonauts after spaceflights
[NASA-TM-76300] N81-16722

LEVINE, S. H.
Dynamic target acquisiton: Empirical models of operator performance
[AD-A092263] N81-16733

LEWIS, H. B.
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737

LIEBOWITZ, H. W.
The ambient visual system and spatial orientation
N81-17702

LIEGEOIS, A.
Learning and control for a compliant computer-controlled manipulator
A81-21031

LOOMIS, L. L.
Evaluation and prediction of the vertical situation from a horizontal situation display
A81-20503

LUSKUS, L. J.
Onboard oxygen generation
A81-22082

LYONS, L. A.
Phytoplankton studies and nutrient concentrations in the vicinity of the C. P. Crane Generating Station
[PB81-114746] N81-17693

M

MACINTYRE, N. R.
Long-term follow-up of lung volume measurements in initially healthy young aviators
A81-22105

MAHONEY, R. K.
Phytoplankton studies and nutrient concentrations in the vicinity of the C. P. Crane Generating Station
[PB81-114746] N81-17693

MAITLAND, J. E.
Effects of internal noise on helicopter operation - An aircrew view
A81-20052

MALTSEV, V. G.
Autoregulation of cerebral blood circulation under orthostatic tests
[NASA-TM-76372] N81-16725

MARTIN, B. J.
Control of breathing during prolonged exercise
A81-21471

BEST DOCUMENT AVAILABLE

MARTIN, R. P.
Two-dimensional echocardiography - Methodology and application in clinical cardiology
A81-19714

MASLEN, K. R.
Factors affecting acceptable noise levels in helicopters
A81-20059

MELIONES, J. N.
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737

MELTON, C. E.
Effects of ozone (0.30 parts per million, approximately 600 mu g/m 3) on sedentary men representative of airline passengers and cockpit crewmembers
[AD-A092268] N81-16734

MERTENS, H.
The response of a realistic computer model for sitting humans to different types of shocks
A81-22550

MERTSALOVA, O. N.
Rheoencephalography in Meniere's disease
[NASA-TM-76387] N81-16727

MILLER, R. L.
Onboard oxygen generation
A81-22082

MILLS, W. O.
Computer-aided development of control console, control panel, and display user instructions and training materials
[AD-A093891] N81-17713

MINTS, W. H., JR.
Data acquistion system for thermal stress studies
[ASME PAPER 80-WA/OCE-14] A81-21125

MITCHELL, R. E.
Long-term follow-up of lung volume measurements in initially healthy young aviators
A81-22105

MONESI, F. H.
An update of findings regarding spatial disorientation in flight: A reconsideration of underlying mechanisms
N81-17700

MONEY, K. E.
Illusions of attitude and movement during Earth-horizontal rotation
N81-17705

MOORE, A.
Evaluation of full-head enclosed breathing system for extended exposure at high altitude
A81-22077

MOORE, W.
Dopaminergic agonists and conditioned avoidance response in normoxic or hypoxic rats
A81-22108

MORAWSKI, T.
Predicting search performance for multiple targets
A81-20917

MORGAN, W. J.
Control of breathing during prolonged exercise
A81-21471

MORTON, J. J.
Antidiuretic hormone excretion at high altitude
A81-22112

N

NAGASAWA, Y.
Development of a secondary task method for measuring operator workload. II - A change of secondary task performance with acquisition of flying skill by Link Trainer
A81-21987

NICHOLSON, A. N.
Response to transient haemorrhage after acute and chronic section of the carotid sinus nerves
A81-22106

NIKOLAYEV, N. P.
Rheoencephalography in Meniere's disease
[NASA-TM-76387] N81-16727

NORMAN, D. A.
Errors in human performance
[AD-A091925] N81-16738

O

OBERMAN, A.
Long-term follow-up of lung volume measurements in initially healthy young aviators
A81-22105

OBRIEN, E. M.
Effectiveness and wearability of immersion hypothermia protection equipment
A81-22086

OLSON, M. H.
Phytoplankton studies and nutrient concentrations in the vicinity of the C. P. Crane Generating Station
[PB81-114746] N81-17693

P

PANDOLF, K. B.
Physiological and hematological responses to summer and winter dry-heat acclimation
[AD-A093194] N81-17695

PARFENOV, G. P.
The flowering and ripening of Arabidopsis seeds under weightlessness conditions - Biosatellite Kosmos 1129 experiment
A81-20849

PERDRIEL, G.
Spatial disorientation in flight: Current problems
[AGARD-CP-287] N81-17698

PERRY, E. S.
Phytoplankton studies and nutrient concentrations in the vicinity of the C. P. Crane Generating Station
[PB81-114746] N81-17693

PIDKOWICZ, J. K.
Postmortem coronary atherosclerosis findings in general aviation accident pilot fatalities - 1975-77
A81-22109

POGORELYY, V. E.
Autoregulation of cerebral blood circulation under orthostatic tests
[NASA-TM-76372] N81-16725

POIRIER, V. L.
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737

PRICE, G. R.
Implications of a critical level in the ear for assessment of noise hazard at high intensities
A81-20925

PRUITT, J. B.
Effectiveness and wearability of immersion hypothermia protection equipment
A81-22086

PURINYA, B. A.
Hydroelastic effects in the aorta bifurcation zone
[NASA-TM-75432] N81-16728

R

RAATGEVER, J.
On the binaural processing of stimuli with different interaural phase relations
A81-21450

REEPS, S. M.
Physiological responses of human subjects wearing thermal protective clothing assemblies in varying environments
A81-22085

REPPERGER, D. W.
Frequency domain measures of human performance under G-stress
A81-20500

ROLSTADAS, A.
Partly unmanned machining
A81-19842

ROOT, D.
An improved oxygen mask for high-altitude protection
A81-22081

ROTHHAMMER, F.
2,3-diphosphoglycerate and night vision
A81-22113

ROUSE, W. B.
Human controller modeling in environments that include non-control tasks
A81-20501

BEST DOCUMENT AVAILABLE

S

SALIGAUT, C.
Dopaminergic agonists and conditioned avoidance response in normoxic or hypoxic rats
A81-22108

SAHU, S.
A stochastic differential game theory approach to human operators in adversary tracking encounters
A81-21023

SAMOILOV, N. G.
Dynamics of the state of redox systems in structural elements of the cerebral cortex during oxygen deficiency /cytophotometric study in vivo/
A81-19900

SANTAMARIA, L. J.
Physiological responses of human subjects wearing thermal protective clothing assemblies in varying environments
A81-22085

SCHAEFER, G.
Cardiovascular and biochemical response to simulated space flight entry
A81-22107

SCHELLER, C. E.
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737

SCHULL, W. J.
2,3-diphosphoglycerate and night vision
A81-22113

SEARS, W.
An improved oxygen mask for high-altitude protection
A81-22081

SELLNER, K. G.
Phytoplankton studies and nutrient concentrations in the vicinity of the C. P. Crane Generating Station
[PB81-114746] N81-17693

SELTZER, D. S.
A hierarchical programming approach to robot assembly
A81-19841

SEM-JACOBSEN, C. W.
Brain/computer communication to reduce human error - A perspective
A81-22111

SEMENOV, D. G.
Dynamics of the state of redox systems in structural elements of the cerebral cortex during oxygen deficiency /cytophotometric study in vivo/
A81-19900

SHAFFSTALL, R.
An improved oxygen mask for high-altitude protection
A81-22081

SHAPIRO, Y.
Physiological and hematological responses to summer and winter dry-heat acclimation
[AD-A093194] N81-17695

SHERIDAN, D. J.
Premature ventricular complexes - Therapeutic dilemmas and decisions
A81-19719

SHERIDAN, T. B.
Mental workload in decision and control
A81-20499

An assessment of undersea teleoperators
[PB81-102535] N81-16744

SHOENBERGER, R. W.
Effect of body supination angle on subjective response to whole-body vibration
A81-22110

SHORT, R.
Further study for fabrication, evaluation, and testing of monolayer woven materials for space suit insulation
[NASA-CR-166140] N81-16740

SHTYKHNO, Y. M.
Hemorheological changes, the state of microcirculation, and blood acid-base balance in rats under conditions of a 30-day limiting of the motor activity
[NASA-TM-76464] N81-16719

SIAS, F. R.
Effectiveness and wearability of immersion hypothermia protection equipment
A81-22086

SNYDER, D. W.
Premature ventricular complexes - Therapeutic dilemmas and decisions
A81-19719

SNYDER, H. L.
Human visual performance and flat panel display image quality
[AD-A092685] N81-16743

SOBEL, B. E.
Premature ventricular complexes - Therapeutic dilemmas and decisions
A81-19719

The role of biochemical factors in ventricular dysrhythmia accompanying ischemia
A81-19720

SOFYANOS, T. N.
An assessment of undersea teleoperators
[PB81-102535] N81-16744

SOLOW, S. A.
Computer-aided development of control console, control panel, and display user instructions and training materials
[AD-A093891] N81-17713

SPEYER, J. L.
A stochastic differential game theory approach to human operators in adversary tracking encounters
A81-21023

STARK, E. A.
Task segmentation - An approach to simulator task fidelity
A81-21728

STEINMAN, R. M.
The effect of expectations on slow oculomotor control. III - Guessing unpredictable target displacements
A81-23097

STEPHENS, D. G.
Acceptance and control of aircraft interior noise and vibration
A81-20057

SUGA, T.
Use of an electrical resistance hygrometer to measure human sweat rates
[NASA-TM-81223] N81-17692

SUNDERMAN, F. W., JR.
Toxicology and metabolism of nickel compounds: Comprehensive report of overall activities during the three-year period from 1 December 1977 - 30 November 1980
[DOE/EV-03140/5-T1] N81-17697

SZYCHER, M.
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737

T

TASHPULATOV, R. Y.
Antibodies to myofibril antigens in cosmonauts after spaceflights
[NASA-TM-76300] N81-16722

TREDICI, T. J.
Visual illusions as a probable cause of aircraft accidents
N81-17703

TRISPEL, S.
On the practice of measuring sensory thresholds: Signal detection and the adaptive method
[FB-43] N81-17710

U

UDOVICHENKO, V. I.
Hemorheological changes, the state of microcirculation, and blood acid-base balance in rats under conditions of a 30-day limiting of the motor activity
[NASA-TM-76464] N81-16719

UTSUKI, N.
Development of a secondary task method for measuring operator workload. II - A change of secondary task performance with acquisition of flying skill by Link Trainer
A81-21987

V

VARMA, P. K.
Histochemical study of lipid-like material in photochemically formed jeewanu, the protocell, with formaldehyde partially replaced by other organic sources
A81-23092

VAUGHAN, J. A.
Effects of ozone (0.30 parts per million, approximately 600 mu g/m 3) on sedentary men representative of airline passengers and cockpit crewmembers
[AD-A092268] N81-16734

VOGEL, J. H. K.
Current concepts in clinical cardiology: Proceedings of the Tenth Conference on Cardiovascular Disease, Aspen, Colo., January 15-19, 1979
A81-19711

VOGT, L.
The response of a realistic computer model for sitting humans to different types of shocks
A81-22550

VOLMIR, A. S.
Hydroelastic effects in the aorta bifurcation zone
[NASA-TM-75432] N81-16728

VOSKRESENSKII, A. D.
Heliobiological research - Present status and prospects
A81-19678

W

WAGNER, W. W., JR.
Diffusing capacity of the lung during hypoxia - Role of capillary recruitment
A81-21474

WARREN, R. G.
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737

WEGMANN, H. M.
Cardiovascular and biochemical response to simulated space flight entry
A81-22107

WEIL, J. V.
Control of breathing during prolonged exercise
A81-21471

WILLIAMS, J. D.
Antidiuretic hormone excretion at high altitude
A81-22112

WILLIAMSON, S. J.
Magnetic fields of the cerebral cortex
[AD-A086288] N81-16736

WINDSOR, A. D.
An integrated training approach
A81-21727

WORTHINGTON, H.
Development of percutaneous energy transmission systems
[PB81-109381] N81-16737

Y

YAROTSKIY, A. I.
Effect of cervicolabyrinthine impulsation on the spinal reflex apparatus
[NASA-TM-76375] N81-16726

Z

ZNAMENSKIY, V. S.
Antibodies to myofibril antigens in cosmonauts after spaceflights
[NASA-TM-76300] N81-16722

ZWILLICH, C. W.
Control of breathing during prolonged exercise
A81-21471

BEST DOCUMENT AVAILABLE

BEST DOCUMENT AVAILABLE

1. Report No. NASA SP-7011(219)	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle AEROSPACE MEDICINE AND BIOLOGY A Continuing Bibliography (Supplement 219)		5. Report Date May 1981
		6. Performing Organization Code
7. Author(s)		8. Performing Organization Report No.
		10. Work Unit No.
9. Performing Organization Name and Address National Aeronautics and Space Administration Washington, D.C. 20546		11. Contract or Grant No.
		13. Type of Report and Period Covered
12. Sponsoring Agency Name and Address		14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

This bibliography lists 118 reports, articles, and other documents introduced into the NASA scientific and technical information system in April 1981.

17. Key Words (Suggested by Author(s)) Aerospace Medicine Bibliographies Biological Effects	18. Distribution Statement Unclassified - Unlimited

19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 52	22. Price* $7.00 HC

*For sale by the National Technical Information Service, Springfield, Virginia 22161

41

NASA-Langley, 1981

PUBLIC COLLECTIONS OF NASA DOCUMENTS

DOMESTIC

NASA distributes its technical documents and bibliographic tools to eleven special libraries located in the organizations listed below. Each library is prepared to furnish the public such services as reference assistance, interlibrary loans, photocopy service, and assistance in obtaining copies of NASA documents for retention.

CALIFORNIA
University of California, Berkeley
COLORADO
University of Colorado, Boulder
DISTRICT OF COLUMBIA
Library of Congress
GEORGIA
Georgia Institute of Technology, Atlanta
ILLINOIS
The John Crerar Library, Chicago
MASSACHUSETTS
Massachusetts Institute of Technology, Cambridge
MISSOURI
Linda Hall Library, Kansas City
NEW YORK
Columbia University, New York
OKLAHOMA
University of Oklahoma, Bizzell Library
PENNSYLVANIA
Carnegie Library of Pittsburgh
WASHINGTON
University of Washington, Seattle

NASA publications (those indicated by an "*" following the accession number) are also received by the following public and free libraries:

CALIFORNIA
Los Angeles Public Library
San Diego Public Library
COLORADO
Denver Public Library
CONNECTICUT
Hartford Public Library
MARYLAND
Enoch Pratt Free Library, Baltimore
MASSACHUSETTS
Boston Public Library
MICHIGAN
Detroit Public Library
MINNESOTA
Minneapolis Public Library
MISSOURI
Kansas City Public Library
St. Louis Public Library
NEW JERSEY
Trenton Public Library
NEW YORK
Brooklyn Public Library
Buffalo and Erie County Public Library
Rochester Public Library
New York Public Library
OHIO
Akron Public Library
Cincinnati Public Library
Cleveland Public Library
Dayton Public Library
Toledo Public Library
TENNESSEE
Memphis Public Library
TEXAS
Dallas Public Library
Fort Worth Public Library
WASHINGTON
Seattle Public Library
WISCONSIN
Milwaukee Public Library

An extensive collection of NASA and NASA-sponsored documents and aerospace publications available to the public for reference purposes is maintained by the American Institute of Aeronautics and Astronautics, Technical Information Service, 555 West 57th Street, 12th Floor, New York, New York 10019

EUROPEAN

An extensive collection of NASA and NASA-sponsored publications is maintained by the British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. By virtue of arrangements other than with NASA, the British Library Lending Division also has available many of the non-NASA publications cited in *STAR*. European requesters may purchase facsimile copy of microfiche of NASA and NASA-sponsored documents, those identified by both the symbols "#" and "*", from: ESA - Information Retrieval Service, European Space Agency, 8-10 rue Mario-Nikis, 75738 Paris CEDEX 15, France.

BEST DOCUMENT AVAILABLE

National Aeronautics and
Space Administration

Washington, D.C.
20546

Official Business
Penalty for Private Use, $300

THIRD-CLASS BULK RATE

Postage and Fees Paid
National Aeronautics and
Space Administration
NASA-451

U.S.MAIL

10 2 SP-7011, 052281 S02378DU
GOVERNMENT PRINTING OFFICE
LIBRARY DIV
ATTN: MAE S COLLINS, CHIEF LIBRARY DIV
5236 EISENHOWER AVE
ALEXANDRIA VA 22304

NASA

POSTMASTER: If Undeliverable (Section 158 Postal Manual) Do Not Return

---

NASA CONTINUING BIBLIOGRAPHY SERIES

NUMBER	TITLE	FREQUENCY
NASA SP-7011	AEROSPACE MEDICINE AND BIOLOGY Aviation medicine, space medicine, and space biology	Monthly
NASA SP-7037	AERONAUTICAL ENGINEERING Engineering, design, and operation of aircraft and aircraft components	Monthly
NASA SP-7039	NASA PATENT ABSTRACTS BIBLIOGRAPHY NASA patents and applications for patent	Semiannually
NASA SP-7041	EARTH RESOURCES Remote sensing of earth resources by aircraft and spacecraft	Quarterly
NASA SP-7043	ENERGY Energy sources, solar energy, energy conversion, transport, and storage	Quarterly
NASA SP-7500	MANAGEMENT Program, contract, and personnel management, and management techniques	Annually

Details on the availability of these publications may be obtained from:

SCIENTIFIC AND TECHNICAL INFORMATION OFFICE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Washington, D.C. 20546

BEST DOCUMENT AVAILABLE 43